

**NVIDIA Performance Primitives (NPP)**  
Version 9.0

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# Chapter 1

## NVIDIA Performance Primitives

Note: The static NPP libraries depend on a common thread abstraction layer library called cuLIBOS (lib-culibos.a) that is now distributed as part of the toolkit. Consequently, cuLIBOS must be provided to the linker when the static library is being linked against. To minimize library loading and CUDA runtime startup times it is recommended to use the static library(s) whenever possible. To improve loading and runtime performance when using dynamic libraries, NPP 9.0 has deprecated the full sized nppi library and replaced it with a full set of nppi sub-libraries. Linking to only the sub-libraries that contain functions that your application uses can significantly improve load time and runtime startup performance. Some nppi functions make calls to other nppi and/or npps functions internally so you may need to link to a few extra libraries depending on what function calls your application makes. The nppi sub-libraries are split into sections corresponding to the way that nppi header files are split. This list of sub-libraries is as follows:

```
nppial arithmetic and logical operation functions in nppi_arithmetic_and_logical_operations.h
nppicc color conversion and sampling functions in nppi_color_conversion.h
nppicom JPEG compression and decompression functions in nppi_compression_functions.h
nppidei data exchange and initialization functions in nppi_data_exchange_and_initialization.h
nppif filtering and computer vision functions in nppi_filter_functions.h
nppig geometry transformation functions found in nppi_geometry_transforms.h
nppim morphological operation functions found in nppi_morphological_operations.h
nppist statistics and linear transform in nppi_statistics_functions.h and nppi_linear_transforms.h
nppisu memory support functions in nppi_support_functions.h
nppitc threshold and compare operation functions in nppi_threshold_and_compare_operations.h
```

For example, on Linux, to compile a small application foo using NPP against the dynamic library, the following command can be used:

```
nvcc foo.c -lnppi -o foo
```

Whereas to compile against the static NPP library, the following command has to be used:

```
nvcc foo.c -lnppi_static -lculibos -o foo
```

It is also possible to use the native host C++ compiler. Depending on the host operating system, some additional libraries like pthread or dl might be needed on the linking line. The following command on Linux is suggested:

```
g++ foo.c -lnppi_static -lculibos -lcudart_static -lpthread -ldl
-I <cuda-toolkit-path>/include -L <cuda-toolkit-path>/lib64 -o foo
```

NPP is a stateless API, as of NPP 6.5 the ONLY state that NPP remembers between function calls is the current stream ID, i.e. the stream ID that was set in the most recent nppSetStream call and a few bits

of device specific information about that stream. The default stream ID is 0. If an application intends to use NPP with multiple streams then it is the responsibility of the application to call `nppSetStream` whenever it wishes to change stream IDs. Several NPP functions may call other NPP functions internally to complete their functionality. For this reason it is recommended that `cudaDeviceSynchronize` (or at least `cudaStreamSynchronize`) be called before making an `nppSetStream` call to change to a new stream ID. This will insure that any internal function calls that have not yet occurred will be completed using the current stream ID before it changes to a new ID. Calling `cudaDeviceSynchronize` frequently call kill performance so minimizing the frequency of these calls is critical for good performance. It is not necessary to call `cudaDeviceSynchronize` for stream management while the same stream ID is used for multiple NPP calls. All NPP functions should be thread safe except for the following functions:

```
nppiDCTQuantFwd8x8LS_JPEG_8u16s_C1R
nppiDCTQuantInv8x8LS_JPEG_16s8u_C1R
```

## 1.1 What is NPP?

NVIDIA NPP is a library of functions for performing CUDA accelerated processing. The initial set of functionality in the library focuses on imaging and video processing and is widely applicable for developers in these areas. NPP will evolve over time to encompass more of the compute heavy tasks in a variety of problem domains. The NPP library is written to maximize flexibility, while maintaining high performance.

NPP can be used in one of two ways:

- A stand-alone library for adding GPU acceleration to an application with minimal effort. Using this route allows developers to add GPU acceleration to their applications in a matter of hours.
- A cooperative library for interoperating with a developer's GPU code efficiently.

Either route allows developers to harness the massive compute resources of NVIDIA GPUs, while simultaneously reducing development times.

## 1.2 Documentation

- [General API Conventions](#)
- [Signal-Processing Specific API Conventions](#)
- [Imaging-Processing Specific API Conventions](#)

## 1.3 Technical Specifications

Supported Platforms:

- Microsoft Windows 7, 8, and 10 (64-bit and 32-bit)
- Microsoft Windows Vista (64-bit and 32-bit)
- Linux (Centos, Ubuntu, and several others) (64-bit and 32-bit)
- Mac OS X (64-bit)
- Android on Arm (32-bit and 64-bit)

## 1.4 Files

NPP is comprised of the following files:

### 1.4.1 Header Files

- [nppdefs.h](#)
- [nppcore.h](#)
- [nppi.h](#)
- [npps.h](#)
- [nppversion.h](#)
- [npp.h](#)

All those header files are located in the CUDA Toolkit's

```
/include/
```

directory.

### 1.4.2 Library Files

Starting with Version 5.5 NPP's functionality is now split up into 3 distinct library groups:

- A core library (NPPC) containing basic functionality from the `npp.h` header files as well as functionality shared by the other two libraries.
- The image processing library NPPI. Any functions from the `nppi.h` header file (or the various header files named "`nppi_XXX.h`") are bundled into the NPPI library.
- The signal processing library NPPS. Any function from the `npps.h` header file (or the various header files named "`npps_XXX.h`") are bundled into the NPPS library.

On the Windows platform the NPP stub libraries are found in the CUDA Toolkit's library directory:

```
/lib/nppc.lib
```

```
/lib/nppial.lib
```

```
/lib/nppicc.lib
```

```
/lib/nppicom.lib
```

```
/lib/nppidei.lib
```

```
/lib/nppif.lib
```

```
/lib/nppig.lib
```

```
/lib/nppim.lib
```

```
/lib/nppist.lib
```

```
/lib/nppisu.lib
```

```
/lib/nppitc.lib
```

```
/lib/npps.lib
```

The matching DLLs are located in the CUDA Toolkit's binary directory. Example

```
/bin/nppial64_90_<build_no>.dll // Dynamic image-processing library for 64-bit Windows.
```

On Linux and Mac platforms the dynamic libraries are located in the lib directory

```
/lib/libnppc.so.9.0.<build_no> // NPP dynamic core library for Linux
```

```
/lib/libnpps.9.0.dylib // NPP dynamic signal processing library for Mac
```

## 1.5 Supported NVIDIA Hardware

NPP runs on all CUDA capable NVIDIA hardware. For details please see [http://www.nvidia.com/object/cuda\\_learn\\_products.html](http://www.nvidia.com/object/cuda_learn_products.html)



## **Chapter 2**

# **General API Conventions**

## 2.1 Memory Management

The design of all the NPP functions follows the same guidelines as other NVIDIA CUDA libraries like cuFFT and cuBLAS. That is that all pointer arguments in those APIs are device pointers.

This convention enables the individual developer to make smart choices about memory management that minimize the number of memory transfers. It also allows the user the maximum flexibility regarding which of the various memory transfer mechanisms offered by the CUDA runtime is used, e.g. synchronous or asynchronous memory transfers, zero-copy and pinned memory, etc.

The most basic steps involved in using NPP for processing data is as follows:

1. Transfer input data from the host to device using

```
cudaMemcpy(...)
```

2. Process data using one or several NPP functions or custom CUDA kernels

3. Transfer the result data from the device to the host using

```
cudaMemcpy(...)
```

### 2.1.1 Scratch Buffer and Host Pointer

Some primitives of NPP require additional device memory buffers (scratch buffers) for calculations, e.g. signal and image reductions (Sum, Max, Min, MinMax, etc.). In order to give the NPP user maximum control regarding memory allocations and performance, it is the user's responsibility to allocate and delete those temporary buffers. For one this has the benefit that the library will not allocate memory unbeknownst to the user. It also allows developers who invoke the same primitive repeatedly to allocate the scratch only once, improving performance and potential device-memory fragmentation.

Scratch-buffer memory is unstructured and may be passed to the primitive in uninitialized form. This allows for reuse of the same scratch buffers with any primitive require scratch memory, as long as it is sufficiently sized.

The minimum scratch-buffer size for a given primitive (e.g. `nppsSum_32f()`) can be obtained by a companion function (e.g. `nppsSumGetBufferSize_32f()`). The buffer size is returned via a host pointer as allocation of the scratch-buffer is performed via CUDA runtime host code.

An example to invoke signal sum primitive and allocate and free the necessary scratch memory:

```
// pSrc, pSum, pDeviceBuffer are all device pointers.
Npp32f * pSrc;
Npp32f * pSum;
Npp8u * pDeviceBuffer;
int nLength = 1024;

// Allocate the device memroy.
cudaMalloc((void **)&pSrc, sizeof(Npp32f) * nLength);
nppsSet_32f(1.0f, pSrc, nLength);
cudaMalloc((void **)&pSum, sizeof(Npp32f) * 1);

// Compute the appropriate size of the scratch-memory buffer
int nBufferSize;
nppsSumGetBufferSize_32f(nLength, &nBufferSize);
// Allocate the scratch buffer
cudaMalloc((void **)&pDeviceBuffer, nBufferSize);

// Call the primitive with the scratch buffer
```

```
nppsSum_32f(pSrc, nLength, pSum, pDeviceBuffer);
Npp32f nSumHost;
cudaMemcpy(&nSumHost, pSum, sizeof(Npp32f) * 1, cudaMemcpyDeviceToHost);
printf("sum = %f\n", nSumHost); // nSumHost = 1024.0f;

// Free the device memory
cudaFree(pSrc);
cudaFree(pDeviceBuffer);
cudaFree(pSum);
```

## 2.2 Function Naming

Since NPP is a C API and therefore does not allow for function overloading for different data-types the NPP naming convention addresses the need to differentiate between different flavors of the same algorithm or primitive function but for various data types. This disambiguation of different flavors of a primitive is done via a suffix containing data type and other disambiguating information.

In addition to the flavor suffix, all NPP functions are prefixed with by the letters "npp". Primitives belonging to NPP's image-processing module add the letter "i" to the npp prefix, i.e. are prefixed by "nppi". Similarly signal-processing primitives are prefixed with "npps".

The general naming scheme is:

```
npp<module info><PrimitiveName>_<data-type info>[_<additional flavor info>](<parameter list>)
```

The data-type information uses the same names as the [Basic NPP Data Types](#). For example the data-type information "8u" would imply that the primitive operates on [Npp8u](#) data.

If a primitive consumes different type data from what it produces, both types will be listed in the order of consumed to produced data type.

Details about the "additional flavor information" is provided for each of the NPP modules, since each problem domain uses different flavor information suffixes.

## 2.3 Integer Result Scaling

NPP signal processing and imaging primitives often operate on integer data. This integer data is usually a fixed point fractional representation of some physical magnitue (e.g. luminance). Because of this fixed-point nature of the representation many numerical operations (e.g. addition or multiplication) tend to produce results exceeding the original fixed-point range if treated as regular integers.

In cases where the results exceed the original range, these functions clamp the result values back to the valid range. E.g. the maximum positive value for a 16-bit unsigned integer is 32767. A multiplication operation of  $4 * 10000 = 40000$  would exceed this range. The result would be clamped to be 32767.

To avoid the level of lost information due to clamping most integer primitives allow for result scaling. Primitives with result scaling have the "Sfs" suffix in their name and provide a parameter "nScaleFactor" that controls the amount of scaling. Before the results of an operation are clamped to the valid output-data range by multiplying them with  $2^{-nScaleFactor}$ .

Example: The primitive `nppsSqr_8u_Sfs()` computes the square of 8-bit unsigned sample values in a signal (1D array of values). The maximum value of a 8-bit value is 255. The square of  $255^2 = 65025$  which would be clamped to 255 if no result scaling is performed. In order to map the maximum value of 255 to 255 in the result, one would specify an integer result scaling factor of 8, i.e. multiply each result with  $2^{-8} = \frac{1}{2^8} = \frac{1}{256}$ . The final result for a signal value of 255 being squared and scaled would be:

$$255^2 \cdot 2^{-8} = 254.00390625$$

which would be rounded to a final result of 254.

A medium gray value of 128 would result in

$$128^2 * 2^{-8} = 64$$

## 2.4 Rounding Modes

Many NPP functions require converting floating-point values to integers. The [NppRoundMode](#) enum lists NPP's supported rounding modes. Not all primitives in NPP that perform rounding as part of their functionality allow the user to specify the round-mode used. Instead they use NPP's default rounding mode, which is [NPP\\_RND\\_FINANCIAL](#).

### 2.4.1 Rounding Mode Parameter

A subset of NPP functions performing rounding as part of their functionality do allow the user to specify which rounding mode is used through a parameter of the [NppRoundMode](#) type.

## **Chapter 3**

# **Signal-Processing Specific API Conventions**

## 3.1 Signal Data

Signal data is passed to and from NPPS primitives via a pointer to the signal's data type.

The general idea behind this fairly low-level way of passing signal data is ease-of-adoption into existing software projects:

- Passing the data pointer rather than a higher-level signal struct allows for easy adoption by not requiring a specific signal representation (that could include total signal size offset, or other additional information). This avoids awkward packing and unpacking of signal data from the host application to an NPP specific signal representation.

### 3.1.1 Parameter Names for Signal Data

There are three general cases of image-data passing throughout NPP detailed in the following sections.

Those are signals consumed by the algorithm.

#### 3.1.1.1 Source Signal Pointer

The source signal data is generally passed via a pointer named

```
pSrc
```

The source signal pointer is generally defined constant, enforcing that the primitive does not change any image data pointed to by that pointer. E.g.

```
nppsPrimitive_32s(const Npp32s * pSrc, ...)
```

In case the primitive consumes multiple signals as inputs the source pointers are numbered like this:

```
pSrc1, pSrc2, ...
```

#### 3.1.1.2 Destination Signal Pointer

The destination signal data is generally passed via a pointer named

```
pDst
```

In case the primitive consumes multiple signals as inputs the source pointers are numbered like this:

```
pDst1, pDst2, ...
```

#### 3.1.1.3 In-Place Signal Pointer

In the case of in-place processing, source and destination are served by the same pointer and thus pointers to in-place signal data are called:

```
pSrcDst
```

### 3.1.2 Signal Data Alignment Requirements

NPP requires signal sample data to be naturally aligned, i.e. any pointer

```
NppType * p;
```

to a sample in a signal needs to fulfill:

```
assert(p % sizeof(p) == 0);
```

### 3.1.3 Signal Data Related Error Codes

All NPPI primitives operating on signal data validate the signal-data pointer for proper alignment and test that the point is not null.

Failed validation results in one of the following error codes being returned and the primitive not being executed:

- [NPP\\_NULL\\_POINTER\\_ERROR](#) is returned if the image-data pointer is 0 (NULL).
- [NPP\\_ALIGNMENT\\_ERROR](#) if the signal-data pointer address is not a multiple of the signal's data-type size.

## 3.2 Signal Length

The vast majority of NPPS functions take a

```
nLength
```

parameter that tells the primitive how many of the signal's samples starting from the given data pointer are to be processed.

### 3.2.1 Length Related Error Codes

All NPPS primitives taking a length parameter validate this input.

Failed validation results in the following error code being returned and the primitive not being executed:

- [NPP\\_SIZE\\_ERROR](#) is returned if the length is negative.





## **Chapter 4**

# **Imaging-Processing Specific API Conventions**

## 4.1 Function Naming

Image processing related functions use a number of suffixes to indicate various different flavors of a primitive beyond just different data types. The flavor suffix uses the following abbreviations:

- "A" if the image is a 4 channel image this indicates the result alpha channel is not affected by the primitive.
- "Cn" the image consists of n channel packed pixels, where n can be 1, 2, 3 or 4.
- "Pn" the image consists of n separate image planes, where n can be 1, 2, 3 or 4.
- "C" (following the channel information) indicates that the primitive only operates on one of the color channels, the "channel-of-interest". All other output channels are not affected by the primitive.
- "I" indicates that the primitive works "in-place". In this case the image-data pointer is usually named "pSrcDst" to indicate that the image data serves as source and destination at the same time.
- "M" indicates "masked operation". These types of primitives have an additional "mask image" as input. Each pixel in the destination image corresponds to a pixel in the mask image. Only pixels with a corresponding non-zero mask pixel are being processed.
- "R" indicates the primitive operates only on a rectangular "region-of-interest" or "ROI". All ROI primitives take an additional input parameter of type [NppiSize](#), which specifies the width and height of the rectangular region that the primitive should process. For details on how primitives operate on ROIs see: [Region-of-Interest \(ROI\)](#).
- "Sfs" indicates the result values are processed by fixed scaling and saturation before they're written out.

The suffixes above always appear in alphabetical order. E.g. a 4 channel primitive not affecting the alpha channel with masked operation, in place and with scaling/saturation and ROI would have the postfix: "AC4IMRSfs".

## 4.2 Image Data

Image data is passed to and from NPPI primitives via a pair of parameters:

1. A pointer to the image's underlying data type.
2. A line step in bytes (also sometimes called line stride).

The general idea behind this fairly low-level way of passing image data is ease-of-adoption into existing software projects:

- Passing a raw pointer to the underlying pixel data type, rather than structured (by color) channel pixel data allows usage of the function in a wide variety of situations avoiding risky type cast or expensive image data copies.
- Passing the data pointer and line step individually rather than a higher- level image struct again allows for easy adoption by not requiring a specific image representation and thus avoiding awkward packing and unpacking of image data from the host application to an NPP specific image representation.

### 4.2.1 Line Step

The line step (also called "line stride" or "row step") allows lines of oddly sized images to start on well-aligned addresses by adding a number of unused bytes at the ends of the lines. This type of line padding has been common practice in digital image processing for a long time and is not particular to GPU image processing.

The line step is the number of bytes in a line **including the padding**. An other way to interpret this number is to say that it is the number of bytes between the first pixel of successive rows in the image, or generally the number of bytes between two neighboring pixels in any column of pixels.

The general reason for the existence of the line step it is that uniformly aligned rows of pixel enable optimizations of memory-access patterns.

Even though all functions in NPP will work with arbitrarily aligned images, best performance can only be achieved with well aligned image data. Any image data allocated with the NPP image allocators or the 2D memory allocators in the CUDA runtime, is well aligned.

Particularly on older CUDA capable GPUs it is likely that the performance decrease for misaligned data is substantial (orders of magnitude).

All image data passed to NPPI primitives requires a line step to be provided. It is important to keep in mind that this line step is always specified in terms of bytes, not pixels.

### 4.2.2 Parameter Names for Image Data

There are three general cases of image-data passing throughout NPP detailed in the following sections.

#### 4.2.2.1 Passing Source-Image Data

Those are images consumed by the algorithm.

##### 4.2.2.1.1 Source-Image Pointer

The source image data is generally passed via a pointer named

```
pSrc
```

The source image pointer is generally defined constant, enforcing that the primitive does not change any image data pointed to by that pointer. E.g.

```
nppiPrimitive_32s_C1R(const Npp32s * pSrc, ...)
```

In case the primitive consumes multiple images as inputs the source pointers are numbered like this:

```
pSrc1, pSrc2, ...
```

##### 4.2.2.1.2 Source-Planar-Image Pointer Array

The planar source image data is generally passed via an array of pointers named

```
pSrc[]
```

The planar source image pointer array is generally defined a constant array of constant pointers, enforcing that the primitive does not change any image data pointed to by those pointers. E.g.

```
nppiPrimitive_8u_P3R(const Npp8u * const pSrc[3], ...)
```

Each pointer in the array points to a different image plane.

#### 4.2.2.1.3 Source-Planar-Image Pointer

The multiple plane source image data is passed via a set of pointers named

```
pSrc1, pSrc2, ...
```

The planar source image pointer is generally defined as one of a set of constant pointers with each pointer pointing to a different input image plane.

#### 4.2.2.1.4 Source-Image Line Step

The source image line step is the number of bytes between successive rows in the image. The source image line step parameter is

```
nSrcStep
```

or in the case of multiple source images

```
nSrcStep1, nSrcStep2, ...
```

#### 4.2.2.1.5 Source-Planar-Image Line Step Array

The source planar image line step array is an array where each element of the array contains the number of bytes between successive rows for a particular plane in the input image. The source planar image line step array parameter is

```
rSrcStep[]
```

#### 4.2.2.1.6 Source-Planar-Image Line Step

The source planar image line step is the number of bytes between successive rows in a particular plane of the multiplane input image. The source planar image line step parameter is

```
nSrcStep1, nSrcStep2, ...
```

#### 4.2.2.2 Passing Destination-Image Data

Those are images produced by the algorithm.

#### 4.2.2.2.1 Destination-Image Pointer

The destination image data is generally passed via a pointer named

```
pDst
```

In case the primitive generates multiple images as outputs the destination pointers are numbered like this:

```
pDst1, pDst2, ...
```

#### 4.2.2.2.2 Destination-Planar-Image Pointer Array

The planar destination image data pointers are generally passed via an array of pointers named

```
pDst[]
```

Each pointer in the array points to a different image plane.

#### 4.2.2.2.3 Destination-Planar-Image Pointer

The destination planar image data is generally passed via a pointer to each plane of a multiplane output image named

```
pDst1, pDst2, ...
```

#### 4.2.2.2.4 Destination-Image Line Step

The destination image line step parameter is

```
nDstStep
```

or in the case of multiple destination images

```
nDstStep1, nDstStep2, ...
```

#### 4.2.2.2.5 Destination-Planar-Image Line Step Array

The destination planar image line step array is an array where each element of the array contains the number of bytes between successive rows for a particular plane in the output image. The destination planar image line step array parameter is

```
rDstStep[]
```

#### 4.2.2.2.6 Destination-Planar-Image Line Step

The destination planar image line step is the number of bytes between successive rows for a particular plane in a multiplane output image. The destination planar image line step parameter is

```
nDstStep1, nDstStep2, ...
```

### 4.2.2.3 Passing In-Place Image Data

#### 4.2.2.3.1 In-Place Image Pointer

In the case of in-place processing, source and destination are served by the same pointer and thus pointers to in-place image data are called:

```
pSrcDst
```

#### 4.2.2.3.2 In-Place-Image Line Step

The in-place line step parameter is

```
nSrcDstStep
```

### 4.2.2.4 Passing Mask-Image Data

Some image processing primitives have variants supporting [Masked Operation](#).

#### 4.2.2.4.1 Mask-Image Pointer

The mask-image data is generally passed via a pointer named

```
pMask
```

#### 4.2.2.4.2 Mask-Image Line Step

The mask-image line step parameter is

```
nMaskStep
```

### 4.2.2.5 Passing Channel-of-Interest Data

Some image processing primitives support [Channel-of-Interest API](#).

#### 4.2.2.5.1 Channel\_of\_Interest Number

The channel-of-interest data is generally an integer (either 1, 2, or 3):

```
nCOI
```

## 4.2.3 Image Data Alignment Requirements

NPP requires pixel data to adhere to certain alignment constraints: For 2 and 4 channel images the following alignment requirement holds: `data_pointer % (#channels * sizeof(channel type)) == 0`. E.g. a 4 channel image with underlying type [Npp8u](#) (8-bit unsigned) would require all pixels to fall on addresses that are multiples of 4 (4 channels \* 1 byte size).

As a logical consequence of all pixels being aligned to their natural size the image line steps of 2 and 4 channel images also need to be multiples of the pixel size.

1 and 3 channel images only require that pixel pointers are aligned to the underlying data type, i.e. `pData % sizeof(data type) == 0`. And consequentially line steps are also held to this requirement.

#### 4.2.4 Image Data Related Error Codes

All NPPI primitives operating on image data validate the image-data pointer for proper alignment and test that the point is not null. They also validate the line stride for proper alignment and guard against the step being less or equal to 0. Failed validation results in one of the following error codes being returned and the primitive not being executed:

- `NPP_STEP_ERROR` is returned if the data step is 0 or negative.
- `NPP_NOT_EVEN_STEP_ERROR` is returned if the line step is not a multiple of the pixel size for 2 and 4 channel images.
- `NPP_NULL_POINTER_ERROR` is returned if the image-data pointer is 0 (NULL).
- `NPP_ALIGNMENT_ERROR` if the image-data pointer address is not a multiple of the pixel size for 2 and 4 channel images.

### 4.3 Region-of-Interest (ROI)

In practice processing a rectangular sub-region of an image is often more common than processing complete images. The vast majority of NPPI's image-processing primitives allow for processing of such sub regions also referred to as regions-of-interest or ROIs.

All primitives supporting ROI processing are marked by a "R" in their name suffix. In most cases the ROI is passed as a single `NppiSize` struct, which provides the width and height of the ROI. This raises the question how the primitive knows where in the image this rectangle of (width, height) is located. The "start pixel" of the ROI is implicitly given by the image-data pointer. I.e. instead of explicitly passing a pixel coordinate for the upper-left corner (lowest memory address), the user simply offsets the image-data pointers to point to the first pixel of the ROI.

In practice this means that for an image (`pSrc`, `nSrcStep`) and the start-pixel of the ROI being at location (`x`, `y`), one would pass

```
pSrcOffset = pSrc + y * nSrcStep + x * PixelSize;
```

as the image-data source to the primitive. `PixelSize` is typically computed as

```
PixelSize = NumberOfColorChannels * sizeof(PixelDataType).
```

E.g. for a primitive like `nppiSet_16s_C4R()` we would have

- `NumberOfColorChannels == 4;`
- `sizeof(Npp16s) == 2;`
- and thus `PixelSize = 4 * 2 = 8;`

#### 4.3.1 ROI Related Error Codes

All NPPI primitives operating on ROIs of image data validate the ROI size and image's step size. Failed validation results in one of the following error codes being returned and the primitive not being executed:

- `NPP_SIZE_ERROR` is returned if either the ROI width or ROI height are negative.
- `NPP_STEP_ERROR` is returned if the ROI width exceeds the image's line step. In mathematical terms  $(\text{widthROI} * \text{PixelSize}) > \text{nLinStep}$  indicates an error.

## 4.4 Masked Operation

Some primitive support masked operation. An "M" in the suffix of those variants indicates masked operation. Primitives supporting masked operation consume an additional input image provided via a [Mask-Image Pointer](#) and [Mask-Image Line Step](#). The mask image is interpreted by these primitives as a boolean image. The values of type `Npp8u` are interpreted as boolean values where a values of 0 indicates false, any non-zero values true.

Unless otherwise indicated the operation is only performed on pixels where its spatially corresponding mask pixel is true (non-zero). E.g. a masked copy operation would only copy those pixels in the ROI that have corresponding non-zero mask pixels.

## 4.5 Channel-of-Interest API

Some primitives allow restricting operations to a single channel of interest within a multi-channel image. These primitives are suffixed with the letter "C" (after the channel information, e.g. `nppiCopy_8u_C3CR(...)`). The channel-of-interest is generally selected by offsetting the image-data pointer to point directly to the channel- of-interest rather than the base of the first pixel in the ROI. Some primitives also explicitly specify the selected channel number and pass it via an integer, e.g. `nppiMean_StdDev_8u_C3CR(...)`.

### 4.5.1 Select-Channel Source-Image Pointer

This is a pointer to the channel-of-interest within the first pixel of the source image. E.g. if `pSrc` is the pointer to the first pixel inside the ROI of a three channel image. Using the appropriate select-channel copy primitive one could copy the second channel of this source image into the first channel of a destination image given by `pDst` by offsetting the pointer by one:

```
nppiCopy_8u_C3CR(pSrc + 1, nSrcStep, pDst, nDstStep, oSizeROI);
```

### 4.5.2 Select-Channel Source-Image

Some primitives allow the user to select the channel-of-interest by specifying the channle number (`nCOI`). This approach is typically used in the image statistical functions. For example,

```
nppiMean_StdDev_8u_C3CR(pSrc, nSrcStep, oSizeROI, nCOI, pDeviceBuffer, pMean, pStdDev );
```

The channel-of-interest number can be either 1, 2, or 3.

### 4.5.3 Select-Channel Destination-Image Pointer

This is a pointer to the channel-of-interest within the first pixel of the destination image. E.g. if `pDst` is the pointer to the first pixel inside the ROI of a three channel image. Using the appropriate select-channel



copy primitive one could copy data into the second channel of this destination image from the first channel of a source image given by pSrc by offsetting the destination pointer by one:

```
nppiCopy_8u_C3CR(pSrc, nSrcStep, pDst + 1, nDstStep, oSizeROI);
```

## 4.6 Source-Image Sampling

A large number of NPP image-processing functions consume at least one source image and produce an output image (e.g. [nppiAddC\\_8u\\_C1RSfs\(\)](#) or [nppiFilterBox\\_8u\\_C1R\(\)](#)). All NPP functions falling into this category also operate on ROIs (see [Region-of-Interest \(ROI\)](#)) which for these functions should be considered to describe the destination ROI. In other words the ROI describes a rectangular region in the destination image and all pixels inside of this region are being written by the function in question.

In order to use such functions successfully it is important to understand how the user defined destination ROI affects which pixels in the input image(s) are being read by the algorithms. To simplify the discussion of ROI propagation (i.e. given a destination ROI, what are the ROIs in the source(s)), it makes sense to distinguish two major cases:

1. Point-Wise Operations: These are primitives like [nppiAddC\\_8u\\_C1RSfs\(\)](#). Each output pixel requires exactly one input pixel to be read.
2. Neighborhood Operations: These are primitives like [nppiFilterBox\\_8u\\_C1R\(\)](#), which require a group of pixels from the source image(s) to be read in order to produce a single output.

### 4.6.1 Point-Wise Operations

As mentioned above, point-wise operations consume a single pixel from the input image (or a single pixel from each input image, if the operation in question has more than one input image) in order to produce a single output pixel.

### 4.6.2 Neighborhood Operations

In the case of neighborhood operations a number of input pixels (a "neighborhood" of pixels) is read in the input image (or images) in order to compute a single output pixel. All of the functions for [image\\_filtering\\_functions](#) and [image\\_morphological\\_operations](#) are neighborhood operations.

Most of these functions have parameters that affect the size and relative location of the neighborhood: a mask-size structure and an anchor-point structure. Both parameters are described in more detail in the next subsections.

#### 4.6.2.1 Mask-Size Parameter

Many NPP neighborhood operations allow the user to specify the size of the neighborhood via a parameter usually named oMaskSize of type [NppiSize](#). In those cases the neighborhood of pixels read from the source(s) is exactly the size of the mask. Assuming the mask is anchored at location (0, 0) (see [Anchor-Point Parameter](#) below) and has a size of (w, h), i.e.

```
assert(oMaskSize.w == w);
assert(oMaskSize.h == h);
assert(oAnchor.x == 0);
assert(oAnchor.y == 0);
```

a neighborhood operation would read the following source pixels in order to compute destination pixel  $D_{i,j}$ :

$$\begin{array}{cccc} S_{i,j} & S_{i,j+1} & \cdots & S_{i,j+w-1} \\ S_{i+1,j} & S_{i+1,j+1} & \cdots & S_{i+1,j+w-1} \\ \vdots & \vdots & \ddots & \vdots \\ S_{i+h-1,j} & S_{i+h-1,j+1} & \cdots & S_{i+h-1,j+w-1} \end{array}$$

#### 4.6.2.2 Anchor-Point Parameter

Many NPP primitives performing neighborhood operations allow the user to specify the relative location of the neighborhood via a parameter usually named `oAnchor` of type [NppiPoint](#). Using the anchor a developer can choose the position of the mask (see [Mask-Size Parameter](#)) relative to current pixel index.

Using the same example as in [Mask-Size Parameter](#), but this time with an anchor position of (a, b):

```
assert(oMaskSize.w == w);
assert(oMaskSize.h == h);
assert(oAnchor.x == a);
assert(oAnchor.y == b);
```

the following pixels from the source image would be read:

$$\begin{array}{cccc} S_{i-a,j-b} & S_{i-a,j-b+1} & \cdots & S_{i-a,j-b+w-1} \\ S_{i-a+1,j-b} & S_{i-a+1,j-b+1} & \cdots & S_{i-a+1,j-b+w-1} \\ \vdots & \vdots & \ddots & \vdots \\ S_{i-a+h-1,j-b} & S_{i-a+h-1,j-b+1} & \cdots & S_{i-a+h-1,j-b+w-1} \end{array}$$

#### 4.6.2.3 Sampling Beyond Image Boundaries

NPP primitives in general and NPP neighborhood operations in particular require that all pixel locations read and written are valid and within the boundaries of the respective images. Sampling outside of the defined image data regions results in undefined behavior and may lead to system instability.

This poses a problem in practice: when processing full-size images one cannot choose the destination ROI to be the same size as the source image. Because neighborhood operations read pixels from an enlarged source ROI, the destination ROI must be shrunk so that the expanded source ROI does not exceed the source image's size.

For cases where this "shrinking" of the destination image size is unacceptable, NPP provides a set of border-expanding Copy primitives. E.g. `nppiCopyConstBorder_8u_C1R()`, `nppiCopyReplicateBorder_8u_C1R()` and `nppiCopyWrapBorder_8u_C1R()`. The user can use these primitives to "expand" the source image's size using one of the three expansion modes. The expanded image can then be safely passed to a neighborhood operation producing a full-size result.

# Chapter 5

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# Chapter 6

## Data Structure Index

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# Chapter 7

## Module Documentation

### 7.1 NPP Core

Basic functions for library management, in particular library version and device property query functions.

#### Functions

- const [NppLibraryVersion](#) \* [nppGetLibVersion](#) (void)  
*Get the NPP library version.*
- [NppGpuComputeCapability](#) [nppGetGpuComputeCapability](#) (void)  
*What CUDA compute model is supported by the active CUDA device?*
- int [nppGetGpuNumSMs](#) (void)  
*Get the number of Streaming Multiprocessors (SM) on the active CUDA device.*
- int [nppGetMaxThreadsPerBlock](#) (void)  
*Get the maximum number of threads per block on the active CUDA device.*
- int [nppGetMaxThreadsPerSM](#) (void)  
*Get the maximum number of threads per SM for the active GPU.*
- int [nppGetGpuDeviceProperties](#) (int \*pMaxThreadsPerSM, int \*pMaxThreadsPerBlock, int \*pNumberOfSMs)  
*Get the maximum number of threads per SM, maximum threads per block, and number of SMs for the active GPU.*
- const char \* [nppGetGpuName](#) (void)  
*Get the name of the active CUDA device.*
- cudaStream\_t [nppGetStream](#) (void)  
*Get the NPP CUDA stream.*
- unsigned int [nppGetStreamNumSMs](#) (void)  
*Get the number of SMs on the device associated with the current NPP CUDA stream.*

- unsigned int `nppGetStreamMaxThreadsPerSM` (void)  
*Get the maximum number of threads per SM on the device associated with the current NPP CUDA stream.*
- void `nppSetStream` (cudaStream\_t hStream)  
*Set the NPP CUDA stream.*

### 7.1.1 Detailed Description

Basic functions for library management, in particular library version and device property query functions.

### 7.1.2 Function Documentation

#### 7.1.2.1 NppGpuComputeCapability nppGetGpuComputeCapability (void)

What CUDA compute model is supported by the active CUDA device?

Before trying to call any NPP functions, the user should make a call this function to ensure that the current machine has a CUDA capable device.

#### Returns:

An enum value representing if a CUDA capable device was found and what level of compute capabilities it supports.

#### 7.1.2.2 int nppGetGpuDeviceProperties (int \* pMaxThreadsPerSM, int \* pMaxThreadsPerBlock, int \* pNumberOfSMs)

Get the maximum number of threads per SM, maximum threads per block, and number of SMs for the active GPU.

#### Returns:

cudaSuccess for success, -1 for failure

#### 7.1.2.3 const char\* nppGetGpuName (void)

Get the name of the active CUDA device.

#### Returns:

Name string of the active graphics-card/compute device in a system.

#### 7.1.2.4 int nppGetGpuNumSMs (void)

Get the number of Streaming Multiprocessors (SM) on the active CUDA device.

#### Returns:

Number of SMs of the default CUDA device.



**7.1.2.5 const NppLibraryVersion\* nppGetLibVersion (void)**

Get the NPP library version.

**Returns:**

A struct containing separate values for major and minor revision and build number.

**7.1.2.6 int nppGetMaxThreadsPerBlock (void)**

Get the maximum number of threads per block on the active CUDA device.

**Returns:**

Maximum number of threads per block on the active CUDA device.

**7.1.2.7 int nppGetMaxThreadsPerSM (void)**

Get the maximum number of threads per SM for the active GPU.

**Returns:**

Maximum number of threads per SM for the active GPU

**7.1.2.8 cudaStream\_t nppGetStream (void)**

Get the NPP CUDA stream.

NPP enables concurrent device tasks via a global stream state variable. The NPP stream by default is set to stream 0, i.e. non-concurrent mode. A user can set the NPP stream to any valid CUDA stream. All CUDA commands issued by NPP (e.g. kernels launched by the NPP library) are then issued to that NPP stream.

**7.1.2.9 unsigned int nppGetStreamMaxThreadsPerSM (void)**

Get the maximum number of threads per SM on the device associated with the current NPP CUDA stream.

NPP enables concurrent device tasks via a global stream state variable. The NPP stream by default is set to stream 0, i.e. non-concurrent mode. A user can set the NPP stream to any valid CUDA stream. All CUDA commands issued by NPP (e.g. kernels launched by the NPP library) are then issued to that NPP stream. This call avoids a cudaGetDeviceProperties() call.

**7.1.2.10 unsigned int nppGetStreamNumSMs (void)**

Get the number of SMs on the device associated with the current NPP CUDA stream.

NPP enables concurrent device tasks via a global stream state variable. The NPP stream by default is set to stream 0, i.e. non-concurrent mode. A user can set the NPP stream to any valid CUDA stream. All CUDA commands issued by NPP (e.g. kernels launched by the NPP library) are then issued to that NPP stream. This call avoids a cudaGetDeviceProperties() call.

**7.1.2.11 void nppSetStream (cudaStream\_t *hStream*)**

Set the NPP CUDA stream.

**See also:**

[nppGetStream\(\)](#)

## 7.2 NPP Type Definitions and Constants

### Data Structures

- struct [NppLibraryVersion](#)
- struct [NppiPoint](#)  
*2D Point*
- struct [NppPointPolar](#)  
*2D Polar Point*
- struct [NppiSize](#)  
*2D Size This struct typically represents the size of a rectangular region in two space.*
- struct [NppiRect](#)  
*2D Rectangle This struct contains position and size information of a rectangle in two space.*
- struct [NppiHOGConfig](#)  
*The [NppiHOGConfig](#) structure defines the configuration parameters for the HOG descriptor:.*
- struct [NppiHaarClassifier\\_32f](#)
- struct [NppiHaarBuffer](#)

### Modules

- [Basic NPP Data Types](#)

### Defines

- #define [NPP\\_MIN\\_8U](#) ( 0 )  
*Minimum 8-bit unsigned integer.*
- #define [NPP\\_MAX\\_8U](#) ( 255 )  
*Maximum 8-bit unsigned integer.*
- #define [NPP\\_MIN\\_16U](#) ( 0 )  
*Minimum 16-bit unsigned integer.*
- #define [NPP\\_MAX\\_16U](#) ( 65535 )  
*Maximum 16-bit unsigned integer.*
- #define [NPP\\_MIN\\_32U](#) ( 0 )  
*Minimum 32-bit unsigned integer.*
- #define [NPP\\_MAX\\_32U](#) ( 4294967295U )  
*Maximum 32-bit unsigned integer.*
- #define [NPP\\_MIN\\_64U](#) ( 0 )  
*Minimum 64-bit unsigned integer.*

- #define `NPP_MAX_64U` ( 18446744073709551615ULL )  
*Maximum 64-bit unsigned integer.*
- #define `NPP_MIN_8S` (-127 - 1 )  
*Minimum 8-bit signed integer.*
- #define `NPP_MAX_8S` ( 127 )  
*Maximum 8-bit signed integer.*
- #define `NPP_MIN_16S` (-32767 - 1 )  
*Minimum 16-bit signed integer.*
- #define `NPP_MAX_16S` ( 32767 )  
*Maximum 16-bit signed integer.*
- #define `NPP_MIN_32S` (-2147483647 - 1 )  
*Minimum 32-bit signed integer.*
- #define `NPP_MAX_32S` ( 2147483647 )  
*Maximum 32-bit signed integer.*
- #define `NPP_MAX_64S` ( 9223372036854775807LL )  
*Maximum 64-bit signed integer.*
- #define `NPP_MIN_64S` (-9223372036854775807LL - 1)  
*Minimum 64-bit signed integer.*
- #define `NPP_MINABS_32F` ( 1.175494351e-38f )  
*Smallest positive 32-bit floating point value.*
- #define `NPP_MAXABS_32F` ( 3.402823466e+38f )  
*Largest positive 32-bit floating point value.*
- #define `NPP_MINABS_64F` ( 2.2250738585072014e-308 )  
*Smallest positive 64-bit floating point value.*
- #define `NPP_MAXABS_64F` ( 1.7976931348623158e+308 )  
*Largest positive 64-bit floating point value.*
- #define `NPP_HOG_MAX_CELL_SIZE` (16)  
*max horizontal/vertical pixel size of cell.*
- #define `NPP_HOG_MAX_BLOCK_SIZE` (64)  
*max horizontal/vertical pixel size of block.*
- #define `NPP_HOG_MAX_BINS_PER_CELL` (16)  
*max number of histogram bins.*
- #define `NPP_HOG_MAX_CELLS_PER_DESCRIPTOR` (256)

*max number of cells in a descriptor window.*

- #define `NPP_HOG_MAX_OVERLAPPING_BLOCKS_PER_DESCRIPTOR` (256)  
*max number of overlapping blocks in a descriptor window.*
- #define `NPP_HOG_MAX_DESCRIPTOR_LOCATIONS_PER_CALL` (128)  
*max number of descriptor window locations per function call.*

## Enumerations

- enum `NppiInterpolationMode` {  
`NPPI_INTER_UNDEFINED` = 0,  
`NPPI_INTER_NN` = 1,  
`NPPI_INTER_LINEAR` = 2,  
`NPPI_INTER_CUBIC` = 4,  
`NPPI_INTER_CUBIC2P_BSPLINE`,  
`NPPI_INTER_CUBIC2P_CATMULLROM`,  
`NPPI_INTER_CUBIC2P_B05C03`,  
`NPPI_INTER_SUPER` = 8,  
`NPPI_INTER_LANCZOS` = 16,  
`NPPI_INTER_LANCZOS3_ADVANCED` = 17,  
`NPPI_SMOOTH_EDGE` = (1 << 31) }  
*Filtering methods.*
- enum `NppiBayerGridPosition` {  
`NPPI_BAYER_BGGR` = 0,  
`NPPI_BAYER_RGBB` = 1,  
`NPPI_BAYER_GBRG` = 2,  
`NPPI_BAYER_GRBG` = 3 }  
*Bayer Grid Position Registration.*
- enum `NppiMaskSize` {  
`NPP_MASK_SIZE_1_X_3`,  
`NPP_MASK_SIZE_1_X_5`,  
`NPP_MASK_SIZE_3_X_1` = 100,  
`NPP_MASK_SIZE_5_X_1`,  
`NPP_MASK_SIZE_3_X_3` = 200,  
`NPP_MASK_SIZE_5_X_5`,  
`NPP_MASK_SIZE_7_X_7` = 400,  
`NPP_MASK_SIZE_9_X_9` = 500,  
`NPP_MASK_SIZE_11_X_11` = 600,  
`NPP_MASK_SIZE_13_X_13` = 700,  
`NPP_MASK_SIZE_15_X_15` = 800 }

*Fixed filter-kernel sizes.*

- enum `NppiDifferentialKernel` {  
    `NPP_FILTER_SOBEL`,  
    `NPP_FILTER_SCHARR` }

*Differential Filter types.*

- enum `NppStatus` {  
    `NPP_NOT_SUPPORTED_MODE_ERROR` = -9999,  
    `NPP_INVALID_HOST_POINTER_ERROR` = -1032,  
    `NPP_INVALID_DEVICE_POINTER_ERROR` = -1031,  
    `NPP_LUT_PALETTE_BITSIZE_ERROR` = -1030,  
    `NPP_ZC_MODE_NOT_SUPPORTED_ERROR` = -1028,  
    `NPP_NOT_SUFFICIENT_COMPUTE_CAPABILITY` = -1027,  
    `NPP_TEXTURE_BIND_ERROR` = -1024,  
    `NPP_WRONG_INTERSECTION_ROI_ERROR` = -1020,  
    `NPP_HAAR_CLASSIFIER_PIXEL_MATCH_ERROR` = -1006,  
    `NPP_MEMFREE_ERROR` = -1005,  
    `NPP_MEMSET_ERROR` = -1004,  
    `NPP_MEMCPY_ERROR` = -1003,  
    `NPP_ALIGNMENT_ERROR` = -1002,  
    `NPP_CUDA_KERNEL_EXECUTION_ERROR` = -1000,  
    `NPP_ROUND_MODE_NOT_SUPPORTED_ERROR` = -213,  
    `NPP_QUALITY_INDEX_ERROR` = -210,  
    `NPP_RESIZE_NO_OPERATION_ERROR` = -201,  
    `NPP_OVERFLOW_ERROR` = -109,  
    `NPP_NOT_EVEN_STEP_ERROR` = -108,  
    `NPP_HISTOGRAM_NUMBER_OF_LEVELS_ERROR` = -107,  
    `NPP_LUT_NUMBER_OF_LEVELS_ERROR` = -106,  
    `NPP_CORRUPTED_DATA_ERROR` = -61,  
    `NPP_CHANNEL_ORDER_ERROR` = -60,  
    `NPP_ZERO_MASK_VALUE_ERROR` = -59,  
    `NPP_QUADRANGLE_ERROR` = -58,  
    `NPP_RECTANGLE_ERROR` = -57,  
    `NPP_COEFFICIENT_ERROR` = -56,  
    `NPP_NUMBER_OF_CHANNELS_ERROR` = -53,  
    `NPP_COI_ERROR` = -52,  
    `NPP_DIVISOR_ERROR` = -51,  
    `NPP_CHANNEL_ERROR` = -47,  
    `NPP_STRIDE_ERROR` = -37,  
    `NPP_ANCHOR_ERROR` = -34,  
    `NPP_MASK_SIZE_ERROR` = -33,

```
NPP_RESIZE_FACTOR_ERROR = -23,  
NPP_INTERPOLATION_ERROR = -22,  
NPP_MIRROR_FLIP_ERROR = -21,  
NPP_MOMENT_00_ZERO_ERROR = -20,  
NPP_THRESHOLD_NEGATIVE_LEVEL_ERROR = -19,  
NPP_THRESHOLD_ERROR = -18,  
NPP_CONTEXT_MATCH_ERROR = -17,  
NPP_FFT_FLAG_ERROR = -16,  
NPP_FFT_ORDER_ERROR = -15,  
NPP_STEP_ERROR = -14,  
NPP_SCALE_RANGE_ERROR = -13,  
NPP_DATA_TYPE_ERROR = -12,  
NPP_OUT_OFF_RANGE_ERROR = -11,  
NPP_DIVIDE_BY_ZERO_ERROR = -10,  
NPP_MEMORY_ALLOCATION_ERR = -9,  
NPP_NULL_POINTER_ERROR = -8,  
NPP_RANGE_ERROR = -7,  
NPP_SIZE_ERROR = -6,  
NPP_BAD_ARGUMENT_ERROR = -5,  
NPP_NO_MEMORY_ERROR = -4,  
NPP_NOT_IMPLEMENTED_ERROR = -3,  
NPP_ERROR = -2,  
NPP_ERROR_RESERVED = -1,  
NPP_NO_ERROR = 0,  
NPP_SUCCESS = NPP_NO_ERROR,  
NPP_NO_OPERATION_WARNING = 1,  
NPP_DIVIDE_BY_ZERO_WARNING = 6,  
NPP_AFFINE_QUAD_INCORRECT_WARNING = 28,  
NPP_WRONG_INTERSECTION_ROI_WARNING = 29,  
NPP_WRONG_INTERSECTION_QUAD_WARNING = 30,  
NPP_DOUBLE_SIZE_WARNING = 35,  
NPP_MISALIGNED_DST_ROI_WARNING = 10000 }
```

*Error Status Codes.*

- `enum NppGpuComputeCapability` {  
    NPP\_CUDA\_UNKNOWN\_VERSION = -1,  
    NPP\_CUDA\_NOT\_CAPABLE = 0,  
    NPP\_CUDA\_1\_0 = 100,  
    NPP\_CUDA\_1\_1 = 110,  
    NPP\_CUDA\_1\_2 = 120,  
    NPP\_CUDA\_1\_3 = 130,  
}

```

NPP_CUDA_2_0 = 200,
NPP_CUDA_2_1 = 210,
NPP_CUDA_3_0 = 300,
NPP_CUDA_3_2 = 320,
NPP_CUDA_3_5 = 350,
NPP_CUDA_3_7 = 370,
NPP_CUDA_5_0 = 500,
NPP_CUDA_5_2 = 520,
NPP_CUDA_5_3 = 530,
NPP_CUDA_6_0 = 600,
NPP_CUDA_6_1 = 610,
NPP_CUDA_6_2 = 620,
NPP_CUDA_6_3 = 630,
NPP_CUDA_7_0 = 700 }
• enum NppiAxis {
  NPP_HORIZONTAL_AXIS,
  NPP_VERTICAL_AXIS,
  NPP_BOTH_AXIS }
• enum NppCmpOp {
  NPP_CMP_LESS,
  NPP_CMP_LESS_EQ,
  NPP_CMP_EQ,
  NPP_CMP_GREATER_EQ,
  NPP_CMP_GREATER }
• enum NppRoundMode {
  NPP_RND_NEAR,
  NPP_ROUND_NEAREST_TIES_TO_EVEN = NPP_RND_NEAR,
  NPP_RND_FINANCIAL,
  NPP_ROUND_NEAREST_TIES_AWAY_FROM_ZERO = NPP_RND_FINANCIAL,
  NPP_RND_ZERO,
  NPP_ROUND_TOWARD_ZERO = NPP_RND_ZERO }
  Rounding Modes.

• enum NppiBorderType {
  NPP_BORDER_UNDEFINED = 0,
  NPP_BORDER_NONE = NPP_BORDER_UNDEFINED,
  NPP_BORDER_CONSTANT = 1,
  NPP_BORDER_REPLICATE = 2,
  NPP_BORDER_WRAP = 3,
  NPP_BORDER_MIRROR = 4 }

```



- enum `NppHintAlgorithm` {  
    `NPP_ALG_HINT_NONE`,  
    `NPP_ALG_HINT_FAST`,  
    `NPP_ALG_HINT_ACCURATE` }
- enum `NppiAlphaOp` {  
    `NPPI_OP_ALPHA_OVER`,  
    `NPPI_OP_ALPHA_IN`,  
    `NPPI_OP_ALPHA_OUT`,  
    `NPPI_OP_ALPHA_ATOP`,  
    `NPPI_OP_ALPHA_XOR`,  
    `NPPI_OP_ALPHA_PLUS`,  
    `NPPI_OP_ALPHA_OVER_PREMUL`,  
    `NPPI_OP_ALPHA_IN_PREMUL`,  
    `NPPI_OP_ALPHA_OUT_PREMUL`,  
    `NPPI_OP_ALPHA_ATOP_PREMUL`,  
    `NPPI_OP_ALPHA_XOR_PREMUL`,  
    `NPPI_OP_ALPHA_PLUS_PREMUL`,  
    `NPPI_OP_ALPHA_PREMUL` }
- enum `NppsZCType` {  
    `nppZCR`,  
    `nppZCXor`,  
    `nppZCC` }
- enum `NppiHuffmanTableType` {  
    `nppiDCTable`,  
    `nppiACTable` }
- enum `NppiNorm` {  
    `nppiNormInf = 0`,  
    `nppiNormL1 = 1`,  
    `nppiNormL2 = 2` }

### 7.2.1 Define Documentation

#### 7.2.1.1 `#define NPP_HOG_MAX_BINS_PER_CELL (16)`

max number of histogram bins.

#### 7.2.1.2 `#define NPP_HOG_MAX_BLOCK_SIZE (64)`

max horizontal/vertical pixel size of block.

#### 7.2.1.3 `#define NPP_HOG_MAX_CELL_SIZE (16)`

max horizontal/vertical pixel size of cell.

**7.2.1.4 #define NPP\_HOG\_MAX\_CELLS\_PER\_DESCRIPTOR (256)**

max number of cells in a descriptor window.

**7.2.1.5 #define NPP\_HOG\_MAX\_DESCRIPTOR\_LOCATIONS\_PER\_CALL (128)**

max number of descriptor window locations per function call.

**7.2.1.6 #define NPP\_HOG\_MAX\_OVERLAPPING\_BLOCKS\_PER\_DESCRIPTOR (256)**

max number of overlapping blocks in a descriptor window.

**7.2.1.7 #define NPP\_MAX\_16S ( 32767 )**

Maximum 16-bit signed integer.

**7.2.1.8 #define NPP\_MAX\_16U ( 65535 )**

Maximum 16-bit unsigned integer.

**7.2.1.9 #define NPP\_MAX\_32S ( 2147483647 )**

Maximum 32-bit signed integer.

**7.2.1.10 #define NPP\_MAX\_32U ( 4294967295U )**

Maximum 32-bit unsigned integer.

**7.2.1.11 #define NPP\_MAX\_64S ( 9223372036854775807LL )**

Maximum 64-bit signed integer.

**7.2.1.12 #define NPP\_MAX\_64U ( 18446744073709551615ULL )**

Maximum 64-bit unsigned integer.

**7.2.1.13 #define NPP\_MAX\_8S ( 127 )**

Maximum 8-bit signed integer.

**7.2.1.14 #define NPP\_MAX\_8U ( 255 )**

Maximum 8-bit unsigned integer.

**7.2.1.15 #define NPP\_MAXABS\_32F ( 3.402823466e+38f )**

Largest positive 32-bit floating point value.

**7.2.1.16 #define NPP\_MAXABS\_64F ( 1.7976931348623158e+308 )**

Largest positive 64-bit floating point value.

**7.2.1.17 #define NPP\_MIN\_16S (-32767 - 1 )**

Minimum 16-bit signed integer.

**7.2.1.18 #define NPP\_MIN\_16U ( 0 )**

Minimum 16-bit unsigned integer.

**7.2.1.19 #define NPP\_MIN\_32S (-2147483647 - 1 )**

Minimum 32-bit signed integer.

**7.2.1.20 #define NPP\_MIN\_32U ( 0 )**

Minimum 32-bit unsigned integer.

**7.2.1.21 #define NPP\_MIN\_64S (-9223372036854775807LL - 1 )**

Minimum 64-bit signed integer.

**7.2.1.22 #define NPP\_MIN\_64U ( 0 )**

Minimum 64-bit unsigned integer.

**7.2.1.23 #define NPP\_MIN\_8S (-127 - 1 )**

Minimum 8-bit signed integer.

**7.2.1.24 #define NPP\_MIN\_8U ( 0 )**

Minimum 8-bit unsigned integer.

**7.2.1.25 #define NPP\_MINABS\_32F ( 1.175494351e-38f )**

Smallest positive 32-bit floating point value.

### 7.2.1.26 #define NPP\_MINABS\_64F ( 2.2250738585072014e-308 )

Smallest positive 64-bit floating point value.

## 7.2.2 Enumeration Type Documentation

### 7.2.2.1 enum NppCmpOp

Enumerator:

*NPP\_CMP\_LESS*

*NPP\_CMP\_LESS\_EQ*

*NPP\_CMP\_EQ*

*NPP\_CMP\_GREATER\_EQ*

*NPP\_CMP\_GREATER*

### 7.2.2.2 enum NppGpuComputeCapability

Enumerator:

*NPP\_CUDA\_UNKNOWN\_VERSION* Indicates that the compute-capability query failed.

*NPP\_CUDA\_NOT\_CAPABLE* Indicates that no CUDA capable device was found.

*NPP\_CUDA\_1\_0* Indicates that CUDA 1.0 capable device is machine's default device.

*NPP\_CUDA\_1\_1* Indicates that CUDA 1.1 capable device is machine's default device.

*NPP\_CUDA\_1\_2* Indicates that CUDA 1.2 capable device is machine's default device.

*NPP\_CUDA\_1\_3* Indicates that CUDA 1.3 capable device is machine's default device.

*NPP\_CUDA\_2\_0* Indicates that CUDA 2.0 capable device is machine's default device.

*NPP\_CUDA\_2\_1* Indicates that CUDA 2.1 capable device is machine's default device.

*NPP\_CUDA\_3\_0* Indicates that CUDA 3.0 capable device is machine's default device.

*NPP\_CUDA\_3\_2* Indicates that CUDA 3.2 capable device is machine's default device.

*NPP\_CUDA\_3\_5* Indicates that CUDA 3.5 capable device is machine's default device.

*NPP\_CUDA\_3\_7* Indicates that CUDA 3.7 capable device is machine's default device.

*NPP\_CUDA\_5\_0* Indicates that CUDA 5.0 capable device is machine's default device.

*NPP\_CUDA\_5\_2* Indicates that CUDA 5.2 capable device is machine's default device.

*NPP\_CUDA\_5\_3* Indicates that CUDA 5.3 capable device is machine's default device.

*NPP\_CUDA\_6\_0* Indicates that CUDA 6.0 capable device is machine's default device.

*NPP\_CUDA\_6\_1* Indicates that CUDA 6.1 capable device is machine's default device.

*NPP\_CUDA\_6\_2* Indicates that CUDA 6.2 capable device is machine's default device.

*NPP\_CUDA\_6\_3* Indicates that CUDA 6.3 capable device is machine's default device.

*NPP\_CUDA\_7\_0* Indicates that CUDA 7.0 or better is machine's default device.

### 7.2.2.3 enum NppHintAlgorithm

Enumerator:

*NPP\_ALG\_HINT\_NONE*  
*NPP\_ALG\_HINT\_FAST*  
*NPP\_ALG\_HINT\_ACCURATE*

### 7.2.2.4 enum NppiAlphaOp

Enumerator:

*NPPI\_OP\_ALPHA\_OVER*  
*NPPI\_OP\_ALPHA\_IN*  
*NPPI\_OP\_ALPHA\_OUT*  
*NPPI\_OP\_ALPHA\_ATOP*  
*NPPI\_OP\_ALPHA\_XOR*  
*NPPI\_OP\_ALPHA\_PLUS*  
*NPPI\_OP\_ALPHA\_OVER\_PREMUL*  
*NPPI\_OP\_ALPHA\_IN\_PREMUL*  
*NPPI\_OP\_ALPHA\_OUT\_PREMUL*  
*NPPI\_OP\_ALPHA\_ATOP\_PREMUL*  
*NPPI\_OP\_ALPHA\_XOR\_PREMUL*  
*NPPI\_OP\_ALPHA\_PLUS\_PREMUL*  
*NPPI\_OP\_ALPHA\_PREMUL*

### 7.2.2.5 enum NppiAxis

Enumerator:

*NPP\_HORIZONTAL\_AXIS*  
*NPP\_VERTICAL\_AXIS*  
*NPP\_BOTH\_AXIS*

### 7.2.2.6 enum NppiBayerGridPosition

Bayer Grid Position Registration.

Enumerator:

*NPPI\_BAYER\_BGGR* Default registration position.  
*NPPI\_BAYER\_RGGB*  
*NPPI\_BAYER\_GBRG*  
*NPPI\_BAYER\_GRBG*

### 7.2.2.7 enum NppiBorderType

Enumerator:

*NPP\_BORDER\_UNDEFINED*  
*NPP\_BORDER\_NONE*  
*NPP\_BORDER\_CONSTANT*  
*NPP\_BORDER\_REPLICATE*  
*NPP\_BORDER\_WRAP*  
*NPP\_BORDER\_MIRROR*

### 7.2.2.8 enum NppiDifferentialKernel

Differential Filter types.

Enumerator:

*NPP\_FILTER\_SOBEL*  
*NPP\_FILTER\_SCHARR*

### 7.2.2.9 enum NppiHuffmanTableType

Enumerator:

*nppiDCTable* DC Table.  
*nppiACTable* AC Table.

### 7.2.2.10 enum NppiInterpolationMode

Filtering methods.

Enumerator:

*NPPI\_INTER\_UNDEFINED*  
*NPPI\_INTER\_NN* Nearest neighbor filtering.  
*NPPI\_INTER\_LINEAR* Linear interpolation.  
*NPPI\_INTER\_CUBIC* Cubic interpolation.  
*NPPI\_INTER\_CUBIC2P\_BSPLINE* Two-parameter cubic filter (B=1, C=0).  
*NPPI\_INTER\_CUBIC2P\_CATMULLROM* Two-parameter cubic filter (B=0, C=1/2).  
*NPPI\_INTER\_CUBIC2P\_B05C03* Two-parameter cubic filter (B=1/2, C=3/10).  
*NPPI\_INTER\_SUPER* Super sampling.  
*NPPI\_INTER\_LANCZOS* Lanczos filtering.  
*NPPI\_INTER\_LANCZOS3\_ADVANCED* Generic Lanczos filtering with order 3.  
*NPPI\_SMOOTH\_EDGE* Smooth edge filtering.

### 7.2.2.11 enum NppiMaskSize

Fixed filter-kernel sizes.

**Enumerator:**

*NPP\_MASK\_SIZE\_1\_X\_3*  
*NPP\_MASK\_SIZE\_1\_X\_5*  
*NPP\_MASK\_SIZE\_3\_X\_1*  
*NPP\_MASK\_SIZE\_5\_X\_1*  
*NPP\_MASK\_SIZE\_3\_X\_3*  
*NPP\_MASK\_SIZE\_5\_X\_5*  
*NPP\_MASK\_SIZE\_7\_X\_7*  
*NPP\_MASK\_SIZE\_9\_X\_9*  
*NPP\_MASK\_SIZE\_11\_X\_11*  
*NPP\_MASK\_SIZE\_13\_X\_13*  
*NPP\_MASK\_SIZE\_15\_X\_15*

### 7.2.2.12 enum NppiNorm

**Enumerator:**

*nppiNormInf* maximum  
*nppiNormL1* sum  
*nppiNormL2* square root of sum of squares

### 7.2.2.13 enum NppRoundMode

Rounding Modes.

The enumerated rounding modes are used by a large number of NPP primitives to allow the user to specify the method by which fractional values are converted to integer values. Also see [Rounding Modes](#).

For NPP release 5.5 new names for the three rounding modes are introduced that are based on the naming conventions for rounding modes set forth in the IEEE-754 floating-point standard. Developers are encouraged to use the new, longer names to be future proof as the legacy names will be deprecated in subsequent NPP releases.

**Enumerator:**

*NPP\_RND\_NEAR* Round to the nearest even integer.  
All fractional numbers are rounded to their nearest integer. The ambiguous cases (i.e.  $\langle \text{integer} \rangle.5$ ) are rounded to the closest even integer. E.g.

- $\text{roundNear}(0.5) = 0$
- $\text{roundNear}(0.6) = 1$
- $\text{roundNear}(1.5) = 2$
- $\text{roundNear}(-1.5) = -2$

*NPP\_ROUND\_NEAREST\_TIES\_TO\_EVEN* Alias name for *NPP\_RND\_NEAR*.

***NPP\_RND\_FINANCIAL*** Round according to financial rule.

All fractional numbers are rounded to their nearest integer. The ambiguous cases (i.e.  $\langle \text{integer} \rangle .5$ ) are rounded away from zero. E.g.

- `roundFinancial(0.4) = 0`
- `roundFinancial(0.5) = 1`
- `roundFinancial(-1.5) = -2`

***NPP\_ROUND\_NEAREST\_TIES\_AWAY\_FROM\_ZERO*** Alias name for [NPP\\_RND\\_FINANCIAL](#).

***NPP\_RND\_ZERO*** Round towards zero (truncation).

All fractional numbers of the form  $\langle \text{integer} \rangle . \langle \text{decimals} \rangle$  are truncated to  $\langle \text{integer} \rangle$ .

- `roundZero(1.5) = 1`
- `roundZero(1.9) = 1`
- `roundZero(-2.5) = -2`

***NPP\_ROUND\_TOWARD\_ZERO*** Alias name for [NPP\\_RND\\_ZERO](#).

#### 7.2.2.14 enum NppStatus

Error Status Codes.

Almost all NPP function return error-status information using these return codes. Negative return codes indicate errors, positive return codes indicate warnings, a return code of 0 indicates success.

**Enumerator:**

***NPP\_NOT\_SUPPORTED\_MODE\_ERROR***

***NPP\_INVALID\_HOST\_POINTER\_ERROR***

***NPP\_INVALID\_DEVICE\_POINTER\_ERROR***

***NPP\_LUT\_PALETTE\_BITSIZE\_ERROR***

***NPP\_ZC\_MODE\_NOT\_SUPPORTED\_ERROR*** ZeroCrossing mode not supported.

***NPP\_NOT\_SUFFICIENT\_COMPUTE\_CAPABILITY***

***NPP\_TEXTURE\_BIND\_ERROR***

***NPP\_WRONG\_INTERSECTION\_ROI\_ERROR***

***NPP\_HAAR\_CLASSIFIER\_PIXEL\_MATCH\_ERROR***

***NPP\_MEMFREE\_ERROR***

***NPP\_MEMSET\_ERROR***

***NPP\_MEMCPY\_ERROR***

***NPP\_ALIGNMENT\_ERROR***

***NPP\_CUDA\_KERNEL\_EXECUTION\_ERROR***

***NPP\_ROUND\_MODE\_NOT\_SUPPORTED\_ERROR*** Unsupported round mode.

***NPP\_QUALITY\_INDEX\_ERROR*** Image pixels are constant for quality index.

***NPP\_RESIZE\_NO\_OPERATION\_ERROR*** One of the output image dimensions is less than 1 pixel.

***NPP\_OVERFLOW\_ERROR*** Number overflows the upper or lower limit of the data type.

***NPP\_NOT\_EVEN\_STEP\_ERROR*** Step value is not pixel multiple.



***NPP\_HISTOGRAM\_NUMBER\_OF\_LEVELS\_ERROR*** Number of levels for histogram is less than 2.

***NPP\_LUT\_NUMBER\_OF\_LEVELS\_ERROR*** Number of levels for LUT is less than 2.

***NPP\_CORRUPTED\_DATA\_ERROR*** Processed data is corrupted.

***NPP\_CHANNEL\_ORDER\_ERROR*** Wrong order of the destination channels.

***NPP\_ZERO\_MASK\_VALUE\_ERROR*** All values of the mask are zero.

***NPP\_QUADRANGLE\_ERROR*** The quadrangle is nonconvex or degenerates into triangle, line or point.

***NPP\_RECTANGLE\_ERROR*** Size of the rectangle region is less than or equal to 1.

***NPP\_COEFFICIENT\_ERROR*** Unallowable values of the transformation coefficients.

***NPP\_NUMBER\_OF\_CHANNELS\_ERROR*** Bad or unsupported number of channels.

***NPP\_COI\_ERROR*** Channel of interest is not 1, 2, or 3.

***NPP\_DIVISOR\_ERROR*** Divisor is equal to zero.

***NPP\_CHANNEL\_ERROR*** Illegal channel index.

***NPP\_STRIDE\_ERROR*** Stride is less than the row length.

***NPP\_ANCHOR\_ERROR*** Anchor point is outside mask.

***NPP\_MASK\_SIZE\_ERROR*** Lower bound is larger than upper bound.

***NPP\_RESIZE\_FACTOR\_ERROR***

***NPP\_INTERPOLATION\_ERROR***

***NPP\_MIRROR\_FLIP\_ERROR***

***NPP\_MOMENT\_00\_ZERO\_ERROR***

***NPP\_THRESHOLD\_NEGATIVE\_LEVEL\_ERROR***

***NPP\_THRESHOLD\_ERROR***

***NPP\_CONTEXT\_MATCH\_ERROR***

***NPP\_FFT\_FLAG\_ERROR***

***NPP\_FFT\_ORDER\_ERROR***

***NPP\_STEP\_ERROR*** Step is less or equal zero.

***NPP\_SCALE\_RANGE\_ERROR***

***NPP\_DATA\_TYPE\_ERROR***

***NPP\_OUT\_OFF\_RANGE\_ERROR***

***NPP\_DIVIDE\_BY\_ZERO\_ERROR***

***NPP\_MEMORY\_ALLOCATION\_ERR***

***NPP\_NULL\_POINTER\_ERROR***

***NPP\_RANGE\_ERROR***

***NPP\_SIZE\_ERROR***

***NPP\_BAD\_ARGUMENT\_ERROR***

***NPP\_NO\_MEMORY\_ERROR***

***NPP\_NOT\_IMPLEMENTED\_ERROR***

***NPP\_ERROR***

***NPP\_ERROR\_RESERVED***

***NPP\_NO\_ERROR*** Error free operation.

***NPP\_SUCCESS*** Successful operation (same as ***NPP\_NO\_ERROR***).

***NPP\_NO\_OPERATION\_WARNING*** Indicates that no operation was performed.

***NPP\_DIVIDE\_BY\_ZERO\_WARNING*** Divisor is zero however does not terminate the execution.

***NPP\_AFFINE\_QUAD\_INCORRECT\_WARNING*** Indicates that the quadrangle passed to one of affine warping functions doesn't have necessary properties.

First 3 vertices are used, the fourth vertex discarded.

***NPP\_WRONG\_INTERSECTION\_ROI\_WARNING*** The given ROI has no intersection with either the source or destination ROI.

Thus no operation was performed.

***NPP\_WRONG\_INTERSECTION\_QUAD\_WARNING*** The given quadrangle has no intersection with either the source or destination ROI.

Thus no operation was performed.

***NPP\_DOUBLE\_SIZE\_WARNING*** Image size isn't multiple of two.

Indicates that in case of 422/411/420 sampling the ROI width/height was modified for proper processing.

***NPP\_MISALIGNED\_DST\_ROI\_WARNING*** Speed reduction due to uncoalesced memory accesses warning.

#### 7.2.2.15 enum NppsZCType

##### Enumerator:

***nppZCR*** sign change

***nppZCXor*** sign change XOR

***nppZCC*** sign change count\_0

## 7.3 Basic NPP Data Types

### Data Structures

- struct [NPP\\_ALIGN\\_8](#)  
*Complex Number This struct represents an unsigned int complex number.*
- struct [NPP\\_ALIGN\\_16](#)  
*Complex Number This struct represents a long long complex number.*

### Typedefs

- typedef unsigned char [Npp8u](#)  
*8-bit unsigned chars*
- typedef signed char [Npp8s](#)  
*8-bit signed chars*
- typedef unsigned short [Npp16u](#)  
*16-bit unsigned integers*
- typedef short [Npp16s](#)  
*16-bit signed integers*
- typedef unsigned int [Npp32u](#)  
*32-bit unsigned integers*
- typedef int [Npp32s](#)  
*32-bit signed integers*
- typedef unsigned long long [Npp64u](#)  
*64-bit unsigned integers*
- typedef long long [Npp64s](#)  
*64-bit signed integers*
- typedef float [Npp32f](#)  
*32-bit (IEEE) floating-point numbers*
- typedef double [Npp64f](#)  
*64-bit floating-point numbers*
- typedef struct [NPP\\_ALIGN\\_8](#) [Npp32uc](#)  
*Complex Number This struct represents an unsigned int complex number.*
- typedef struct [NPP\\_ALIGN\\_8](#) [Npp32sc](#)  
*Complex Number This struct represents a signed int complex number.*

- typedef struct [NPP\\_ALIGN\\_8 Npp32fc](#)  
*Complex Number This struct represents a single floating-point complex number.*
- typedef struct [NPP\\_ALIGN\\_16 Npp64sc](#)  
*Complex Number This struct represents a long long complex number.*
- typedef struct [NPP\\_ALIGN\\_16 Npp64fc](#)  
*Complex Number This struct represents a double floating-point complex number.*

## Functions

- struct [\\_\\_align\\_\\_](#) (2)  
*Complex Number This struct represents an unsigned char complex number.*
- struct [\\_\\_align\\_\\_](#) (4)  
*Complex Number This struct represents an unsigned short complex number.*

## Variables

- [Npp8uc](#)
- [Npp16uc](#)
- [Npp16sc](#)

### 7.3.1 Typedef Documentation

#### 7.3.1.1 typedef short Npp16s

16-bit signed integers

#### 7.3.1.2 typedef unsigned short Npp16u

16-bit unsigned integers

#### 7.3.1.3 typedef float Npp32f

32-bit (IEEE) floating-point numbers

#### 7.3.1.4 typedef struct NPP\_ALIGN\_8 Npp32fc

Complex Number This struct represents a single floating-point complex number.

#### 7.3.1.5 typedef int Npp32s

32-bit signed integers

**7.3.1.6 typedef struct NPP\_ALIGN\_8 Npp32sc**

Complex Number This struct represents a signed int complex number.

**7.3.1.7 typedef unsigned int Npp32u**

32-bit unsigned integers

**7.3.1.8 typedef struct NPP\_ALIGN\_8 Npp32uc**

Complex Number This struct represents an unsigned int complex number.

**7.3.1.9 typedef double Npp64f**

64-bit floating-point numbers

**7.3.1.10 typedef struct NPP\_ALIGN\_16 Npp64fc**

Complex Number This struct represents a double floating-point complex number.

**7.3.1.11 typedef long long Npp64s**

64-bit signed integers

**7.3.1.12 typedef struct NPP\_ALIGN\_16 Npp64sc**

Complex Number This struct represents a long long complex number.

**7.3.1.13 typedef unsigned long long Npp64u**

64-bit unsigned integers

**7.3.1.14 typedef signed char Npp8s**

8-bit signed chars

**7.3.1.15 typedef unsigned char Npp8u**

8-bit unsigned chars

**7.3.2 Function Documentation****7.3.2.1 struct \_\_align\_\_ (4) [read]**

Complex Number This struct represents an unsigned short complex number.

Complex Number This struct represents a short complex number.

< Real part

< Imaginary part

< Real part

< Imaginary part

### **7.3.2.2 struct \_\_align\_\_ (2) [read]**

Complex Number This struct represents an unsigned char complex number.

< Real part

< Imaginary part

## **7.3.3 Variable Documentation**

### **7.3.3.1 Npp16sc**

### **7.3.3.2 Npp16uc**

### **7.3.3.3 Npp8uc**

## 7.4 Arithmetic and Logical Operations

These functions can be found in the nppial library.

### Modules

- [Arithmetic Operations](#)
- [Logical Operations](#)
- [Alpha Composition](#)

### 7.4.1 Detailed Description

These functions can be found in the nppial library.

Linking to only the sub-libraries that you use can significantly save link time, application load time, and CUDA runtime startup time when using dynamic libraries.

## 7.5 Arithmetic Operations

### Modules

- [AddC](#)

*Adds a constant value to each pixel of an image.*

- [MulC](#)

*Multiplies each pixel of an image by a constant value.*

- [MulCScale](#)

*Multiplies each pixel of an image by a constant value then scales the result by the maximum value for the data bit width.*

- [SubC](#)

*Subtracts a constant value from each pixel of an image.*

- [DivC](#)

*Divides each pixel of an image by a constant value.*

- [AbsDiffC](#)

*Determines absolute difference between each pixel of an image and a constant value.*

- [Add](#)

*Pixel by pixel addition of two images.*

- [AddSquare](#)

*Pixel by pixel addition of squared pixels from source image to floating point pixel values of destination image.*

- [AddProduct](#)

*Pixel by pixel addition of product of pixels from two source images to floating point pixel values of destination image.*

- [AddWeighted](#)

*Pixel by pixel addition of alpha weighted pixel values from a source image to floating point pixel values of destination image.*

- [Mul](#)

*Pixel by pixel multiply of two images.*

- [MulScale](#)

*Pixel by pixel multiplies each pixel of two images then scales the result by the maximum value for the data bit width.*

- [Sub](#)

*Pixel by pixel subtraction of two images.*

- [Div](#)

*Pixel by pixel division of two images.*



- **Div\_Round**  
*Pixel by pixel division of two images using result rounding modes.*
- **Abs**  
*Absolute value of each pixel value in an image.*
- **AbsDiff**  
*Pixel by pixel absolute difference between two images.*
- **Sqr**  
*Square each pixel in an image.*
- **Sqrt**  
*Pixel by pixel square root of each pixel in an image.*
- **Ln**  
*Pixel by pixel natural logarithm of each pixel in an image.*
- **Exp**  
*Exponential value of each pixel in an image.*

## 7.6 AddC

Adds a constant value to each pixel of an image.

### Functions

- `NppStatus nppiAddC_8u_C1RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` nConstant, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_C1IRSfs` (const `Npp8u` nConstant, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_C3RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_C3IRSfs` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel 8-bit unsigned char in place image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_AC4RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_AC4IRSfs` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_C4RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[4], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_8u_C4IRSfs` (const `Npp8u` aConstants[4], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_16u_C1RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` nConstant, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_16u_C1IRSfs` (const `Npp16u` nConstant, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.*
- `NppStatus nppiAddC_16u_C3RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16u_C3IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16u_AC4IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16u_C4IRSfs` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` nConstant, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C1IRSfs` (const `Npp16s` nConstant, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C3IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_AC4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_AC4IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[4], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16s_C4IRSfs` (const `Npp16s` aConstants[4], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_C1RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` nConstant, `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_C1IRSfs` (const `Npp16sc` nConstant, `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_C3RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` aConstants[3], `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_C3IRSfs` (const `Npp16sc` aConstants[3], `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_AC4RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` aConstants[3], `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_16sc_AC4IRSfs` (const `Npp16sc` aConstants[3], `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_32s_C1RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` nConstant, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_32s_C1IRSfs` (const `Npp32s` nConstant, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel in place image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel image add constant, scale, then clamp to saturated value.*

- `NppStatus nppiAddC_32s_C3IRSfs` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image add constant, scale, then clamp to saturated value.*

- **NppStatus nppiAddC\_32sc\_C1RSfs** (const **Npp32sc** \*pSrc1, int nSrc1Step, const **Npp32sc** nConstant, **Npp32sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32sc\_C1IRSfs** (const **Npp32sc** nConstant, **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32sc\_C3RSfs** (const **Npp32sc** \*pSrc1, int nSrc1Step, const **Npp32sc** aConstants[3], **Npp32sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32sc\_C3IRSfs** (const **Npp32sc** aConstants[3], **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32sc\_AC4RSfs** (const **Npp32sc** \*pSrc1, int nSrc1Step, const **Npp32sc** aConstants[3], **Npp32sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32sc\_AC4IRSfs** (const **Npp32sc** aConstants[3], **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.*
- **NppStatus nppiAddC\_32f\_C1R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** nConstant, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image add constant.*
- **NppStatus nppiAddC\_32f\_C1IR** (const **Npp32f** nConstant, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image add constant.*
- **NppStatus nppiAddC\_32f\_C3R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** aConstants[3], **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image add constant.*
- **NppStatus nppiAddC\_32f\_C3IR** (const **Npp32f** aConstants[3], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image add constant.*
- **NppStatus nppiAddC\_32f\_AC4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** aConstants[3], **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha image add constant.*
- **NppStatus nppiAddC\_32f\_AC4IR** (const **Npp32f** aConstants[3], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 32-bit floating point channel with unmodified alpha in place image add constant.*

- `NppStatus nppiAddC_32f_C4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[4]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

*Four 32-bit floating point channel image add constant.*

- `NppStatus nppiAddC_32f_C4IR` (const `Npp32f aConstants[4]`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

*Four 32-bit floating point channel in place image add constant.*

- `NppStatus nppiAddC_32fc_C1R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc nConstant`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.*

- `NppStatus nppiAddC_32fc_C1IR` (const `Npp32fc nConstant`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.*

- `NppStatus nppiAddC_32fc_C3R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc aConstants[3]`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.*

- `NppStatus nppiAddC_32fc_C3IR` (const `Npp32fc aConstants[3]`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.*

- `NppStatus nppiAddC_32fc_AC4R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc aConstants[3]`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image add constant.*

- `NppStatus nppiAddC_32fc_AC4IR` (const `Npp32fc aConstants[3]`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image add constant.*

- `NppStatus nppiAddC_32fc_C4R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc aConstants[4]`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.*

- `NppStatus nppiAddC_32fc_C4IR` (const `Npp32fc aConstants[4]`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.*

## 7.6.1 Detailed Description

Adds a constant value to each pixel of an image.

## 7.6.2 Function Documentation

### 7.6.2.1 `NppStatus nppiAddC_16s_AC4IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.2 `NppStatus nppiAddC_16s_AC4RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha image add constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.3 `NppStatus nppiAddC_16s_C1IRSfs (const Npp16s nConstant, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.6.2.4 `NppStatus nppiAddC_16s_C1RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s nConstant, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.6.2.5 `NppStatus nppiAddC_16s_C3IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



### 7.6.2.6 NppStatus nppiAddC\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Three 16-bit signed short channel image add constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.7 NppStatus nppiAddC\_16s\_C4IRSfs (const Npp16s aConstants[4], Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel in place image add constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.8 NppStatus nppiAddC\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[4], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel image add constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.9 NppStatus nppiAddC\_16sc\_AC4IRSfs (const Npp16sc aConstants[3], Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.10 NppStatus nppiAddC\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.6.2.11 `NppStatus nppiAddC_16sc_C1IRSfs (const Npp16sc nConstant, Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.12 `NppStatus nppiAddC_16sc_C1RSfs (const Npp16sc * pSrc1, int nSrc1Step, const Npp16sc nConstant, Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image add constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.13 `NppStatus nppiAddC_16sc_C3IRSfs (const Npp16sc aConstants[3], Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.14 NppStatus nppiAddC\_16sc\_C3RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.15 NppStatus nppiAddC\_16u\_AC4IRSfs (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.16 NppStatus nppiAddC\_16u\_AC4RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.17 NppStatus nppiAddC\_16u\_C1IRSfs (const Npp16u nConstant, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.18 NppStatus nppiAddC\_16u\_C1RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.19 NppStatus nppiAddC\_16u\_C3IRSfs (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.20 NppStatus nppiAddC\_16u\_C3RSfs (const Npp16u \* pSrcI, int nSrcIStep, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrcI* Source-Image Pointer.

*nSrcIStep* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.6.2.21 `NppStatus nppiAddC_16u_C4IRSfs (const Npp16u aConstants[4], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image add constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.22 `NppStatus nppiAddC_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image add constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.23 `NppStatus nppiAddC_32f_AC4IR (const Npp32f aConstants[3], Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image add constant.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.24 NppStatus nppiAddC\_32f\_AC4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel with unmodified alpha image add constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.25 NppStatus nppiAddC\_32f\_C1IR (const Npp32f nConstant, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image add constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.26 NppStatus nppiAddC\_32f\_C1R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f nConstant, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image add constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.6.2.27 NppStatus nppiAddC\_32f\_C3IR (const Npp32f aConstants[3], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image add constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.28 NppStatus nppiAddC\_32f\_C3R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image add constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.29 NppStatus nppiAddC\_32f\_C4IR (const Npp32f aConstants[4], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image add constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.30 `NppStatus nppiAddC_32f_C4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f aConstants[4], Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel image add constant.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.31 `NppStatus nppiAddC_32fc_AC4IR (const Npp32fc aConstants[3], Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image add constant.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.32 `NppStatus nppiAddC_32fc_AC4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image add constant.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.33 `NppStatus nppiAddC_32fc_C1IR (const Npp32fc nConstant, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.34 `NppStatus nppiAddC_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc nConstant, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.35 `NppStatus nppiAddC_32fc_C3IR (const Npp32fc aConstants[3], Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.36 `NppStatus nppiAddC_32fc_C3R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.37 `NppStatus nppiAddC_32fc_C4IR (const Npp32fc aConstants[4], Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image add constant.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.6.2.38 `NppStatus nppiAddC_32fc_C4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc aConstants[4], Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image add constant.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.39** `NppStatus nppiAddC_32s_C1IRSfs (const Npp32s nConstant, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.40** `NppStatus nppiAddC_32s_C1RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.41** `NppStatus nppiAddC_32s_C3IRSfs (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.42 **NppStatus nppiAddC\_32s\_C3RSfs** (const Npp32s \* *pSrc1*, int *nSrc1Step*, const Npp32s *aConstants*[3], Npp32s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 32-bit signed integer channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.43 **NppStatus nppiAddC\_32sc\_AC4IRSfs** (const Npp32sc *aConstants*[3], Npp32sc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.44** `NppStatus nppiAddC_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.45** `NppStatus nppiAddC_32sc_C1IRSfs (const Npp32sc nConstant, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.6.2.46** `NppStatus nppiAddC_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc nConstant, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.47 `NppStatus nppiAddC_32sc_C3IRSfs (const Npp32sc aConstants[3], Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.48 `NppStatus nppiAddC_32sc_C3RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



#### 7.6.2.49 **NppStatus nppiAddC\_8u\_AC4IRSfs** (const Npp8u *aConstants*[3], Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 8-bit unsigned char channel with unmodified alpha in place image add constant, scale, then clamp to saturated value.

##### Parameters:

*aConstants* fixed size array of constant values, one per channel..  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.6.2.50 **NppStatus nppiAddC\_8u\_AC4RSfs** (const Npp8u \* *pSrcI*, int *nSrcIStep*, const Npp8u *aConstants*[3], Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 8-bit unsigned char channel with unmodified alpha image add constant, scale, then clamp to saturated value.

##### Parameters:

*pSrcI* Source-Image Pointer.  
*nSrcIStep* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel..  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.6.2.51 **NppStatus nppiAddC\_8u\_C1IRSfs** (const Npp8u *nConstant*, Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 8-bit unsigned char channel in place image add constant, scale, then clamp to saturated value.

##### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.52** `NppStatus nppiAddC_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.53** `NppStatus nppiAddC_8u_C3IRSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel 8-bit unsigned char in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel..  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.6.2.54** `NppStatus nppiAddC_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel..  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.55 `NppStatus nppiAddC_8u_C4IRSfs (const Npp8u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image add constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.6.2.56 `NppStatus nppiAddC_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image add constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel..  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.7 MulC

Multiplies each pixel of an image by a constant value.

### Functions

- **NppStatus nppiMulC\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** nConstant, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_C1IRSfs** (const **Npp8u** nConstant, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_C3IRSfs** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel 8-bit unsigned char in place image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_AC4IRSfs** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[4], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_8u\_C4IRSfs** (const **Npp8u** aConstants[4], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** nConstant, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_16u\_C1IRSfs** (const **Npp16u** nConstant, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.*
- **NppStatus nppiMulC\_16u\_C3RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16u_C3IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16u_AC4IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16u_C4IRSfs` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` nConstant, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_C1IRSfs` (const `Npp16s` nConstant, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_C3IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_AC4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_AC4IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_16s_C4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s aConstants[4]`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16s_C4IRSfs` (const `Npp16s aConstants[4]`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_C1RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc nConstant`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_C1IRSfs` (const `Npp16sc nConstant`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_C3RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc aConstants[3]`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_C3IRSfs` (const `Npp16sc aConstants[3]`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_AC4RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc aConstants[3]`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_16sc_AC4IRSfs` (const `Npp16sc aConstants[3]`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32s_C1RSfs` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s nConstant`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed integer channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32s_C1IRSfs` (const `Npp32s nConstant`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed integer channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32s_C3RSfs` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s aConstants[3]`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed integer channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32s_C3IRSfs` (const `Npp32s aConstants[3]`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 32-bit signed integer channel in place image multiply by constant, scale, then clamp to saturated value.*

- `NppStatus nppiMulC_32sc_C1RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc nConstant`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32sc_C1IRSfs` (const `Npp32sc nConstant`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32sc_C3RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32sc_C3IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32sc_AC4RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32sc_AC4IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.*
- `NppStatus nppiMulC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f nConstant`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel image multiply by constant.*
- `NppStatus nppiMulC_32f_C1IR` (const `Npp32f nConstant`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel in place image multiply by constant.*
- `NppStatus nppiMulC_32f_C3R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel image multiply by constant.*
- `NppStatus nppiMulC_32f_C3IR` (const `Npp32f aConstants[3]`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel in place image multiply by constant.*
- `NppStatus nppiMulC_32f_AC4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha image multiply by constant.*

- **NppStatus nppiMulC\_32f\_AC4IR** (const **Npp32f** aConstants[3], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha in place image multiply by constant.*
- **NppStatus nppiMulC\_32f\_C4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** aConstants[4], **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image multiply by constant.*
- **NppStatus nppiMulC\_32f\_C4IR** (const **Npp32f** aConstants[4], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C1R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** nConstant, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C1IR** (const **Npp32fc** nConstant, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C3R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C3IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_AC4IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[4], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.*
- **NppStatus nppiMulC\_32fc\_C4IR** (const **Npp32fc** aConstants[4], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.*



## 7.7.1 Detailed Description

Multiplies each pixel of an image by a constant value.

## 7.7.2 Function Documentation

### 7.7.2.1 `NppStatus nppiMulC_16s_AC4IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.7.2.2 `NppStatus nppiMulC_16s_AC4RSfs (const Npp16s * pSrcI, int nSrcIStep, const Npp16s aConstants[3], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrcI* Source-Image Pointer.

*nSrcIStep* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.7.2.3 `NppStatus nppiMulC_16s_C1IRSfs (const Npp16s nConstant, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.4 `NppStatus nppiMulC_16s_C1RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s nConstant, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.5 `NppStatus nppiMulC_16s_C3IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.6 NppStatus nppiMulC\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Three 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.7 NppStatus nppiMulC\_16s\_C4IRSfs (const Npp16s aConstants[4], Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel in place image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.8 NppStatus nppiMulC\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[4], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.9** `NppStatus nppiMulC_16sc_AC4IRSfs (const Npp16sc aConstants[3], Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.10** `NppStatus nppiMulC_16sc_AC4RSfs (const Npp16sc * pSrcI, int nSrcIStep, const Npp16sc aConstants[3], Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrcI* Source-Image Pointer.

*nSrcIStep* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.11 NppStatus nppiMulC\_16sc\_C1IRSfs (const Npp16sc nConstant, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.12 NppStatus nppiMulC\_16sc\_C1RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc nConstant, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.13 NppStatus nppiMulC\_16sc\_C3IRSfs (const Npp16sc aConstants[3], Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.14 NppStatus nppiMulC\_16sc\_C3RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.15 NppStatus nppiMulC\_16u\_AC4IRSfs (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.16 NppStatus nppiMulC\_16u\_AC4RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.17 NppStatus nppiMulC\_16u\_C1IRSfs (const Npp16u nConstant, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.18 NppStatus nppiMulC\_16u\_C1RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.19** `NppStatus nppiMulC_16u_C3IRSfs (const Npp16u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.20** `NppStatus nppiMulC_16u_C3RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



### 7.7.2.21 `NppStatus nppiMulC_16u_C4IRSfs (const Npp16u aConstants[4], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.22 `NppStatus nppiMulC_16u_C4RSfs (const Npp16u * pSrcI, int nSrcIStep, const Npp16u aConstants[4], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image multiply by constant, scale, then clamp to saturated value.

#### Parameters:

- pSrcI* Source-Image Pointer.
- nSrcIStep* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.7.2.23 `NppStatus nppiMulC_32f_AC4IR (const Npp32f aConstants[3], Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image multiply by constant.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.7.2.24 **NppStatus nppiMulC\_32f\_AC4R** (const Npp32f \* *pSrc1*, int *nSrc1Step*, const Npp32f *aConstants*[3], Npp32f \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

Four 32-bit floating point channel with unmodified alpha image multiply by constant.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.7.2.25 **NppStatus nppiMulC\_32f\_C1IR** (const Npp32f *nConstant*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 32-bit floating point channel in place image multiply by constant.

##### Parameters:

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.7.2.26 **NppStatus nppiMulC\_32f\_C1R** (const Npp32f \* *pSrc1*, int *nSrc1Step*, const Npp32f *nConstant*, Npp32f \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

One 32-bit floating point channel image multiply by constant.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.27 NppStatus nppiMulC\_32f\_C3IR (const Npp32f aConstants[3], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image multiply by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.28 NppStatus nppiMulC\_32f\_C3R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.29 NppStatus nppiMulC\_32f\_C4IR (const Npp32f aConstants[4], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image multiply by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.30 NppStatus nppiMulC\_32f\_C4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[4], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.31 NppStatus nppiMulC\_32fc\_AC4IR (const Npp32fc aConstants[3], Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image multiply by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.32 NppStatus nppiMulC\_32fc\_AC4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.33 NppStatus nppiMulC\_32fc\_C1IR (const Npp32fc *nConstant*, Npp32fc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.34 NppStatus nppiMulC\_32fc\_C1R (const Npp32fc \* *pSrc1*, int *nSrc1Step*, const Npp32fc *nConstant*, Npp32fc \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)**

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.35 NppStatus nppiMulC\_32fc\_C3IR (const Npp32fc *aConstants*[3], Npp32fc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.36 NppStatus nppiMulC\_32fc\_C3R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.37 NppStatus nppiMulC\_32fc\_C4IR (const Npp32fc aConstants[4], Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image multiply by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.38 NppStatus nppiMulC\_32fc\_C4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[4], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image multiply by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.39 NppStatus nppiMulC\_32s\_C1RSfs (const Npp32s nConstant, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 32-bit signed integer channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.40 NppStatus nppiMulC\_32s\_C1RSfs (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 32-bit signed integer channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.41 NppStatus nppiMulC\_32s\_C3IRSfs (const Npp32s aConstants[3], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.7.2.42 **NppStatus nppiMulC\_32s\_C3RSfs** (const Npp32s \* *pSrc1*, int *nSrc1Step*, const Npp32s *aConstants*[3], Npp32s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 32-bit signed integer channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.7.2.43 **NppStatus nppiMulC\_32sc\_AC4IRSfs** (const Npp32sc *aConstants*[3], Npp32sc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.7.2.44** `NppStatus nppiMulC_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.45** `NppStatus nppiMulC_32sc_C1IRSfs (const Npp32sc nConstant, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.46** `NppStatus nppiMulC_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc nConstant, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.7.2.47 **NppStatus nppiMulC\_32sc\_C3IRSfs** (const Npp32sc *aConstants*[3], Npp32sc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.7.2.48 **NppStatus nppiMulC\_32sc\_C3RSfs** (const Npp32sc \* *pSrc1*, int *nSrc1Step*, const Npp32sc *aConstants*[3], Npp32sc \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.49 NppStatus nppiMulC\_8u\_AC4IRSfs (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 8-bit unsigned char channel with unmodified alpha in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.50 NppStatus nppiMulC\_8u\_AC4RSfs (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 8-bit unsigned char channel with unmodified alpha image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.7.2.51 NppStatus nppiMulC\_8u\_C1IRSfs (const Npp8u nConstant, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 8-bit unsigned char channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.52** `NppStatus nppiMulC_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.53** `NppStatus nppiMulC_8u_C3RSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel 8-bit unsigned char in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.7.2.54** `NppStatus nppiMulC_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.7.2.55 `NppStatus nppiMulC_8u_C4IRSfs (const Npp8u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.7.2.56 `NppStatus nppiMulC_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image multiply by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.8 MulCScale

Multiplies each pixel of an image by a constant value then scales the result by the maximum value for the data bit width.

### Functions

- **NppStatus nppiMulCScale\_8u\_C1R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** nConstant, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_C1IR** (const **Npp8u** nConstant, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_C3R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_C3IR** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel 8-bit unsigned char in place image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_AC4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel with unmodified alpha image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_AC4IR** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel with unmodified alpha in place image multiply by constant, scale and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_C4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[4], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_8u\_C4IR** (const **Npp8u** aConstants[4], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_16u\_C1R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** nConstant, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image multiply by constant and scale by max bit width value.*
- **NppStatus nppiMulCScale\_16u\_C1IR** (const **Npp16u** nConstant, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.*

- `NppStatus nppiMulCScale_16u_C3R` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u aConstants[3]`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 16-bit unsigned short channel image multiply by constant and scale by max bit width value.*
- `NppStatus nppiMulCScale_16u_C3IR` (const `Npp16u aConstants[3]`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.*
- `NppStatus nppiMulCScale_16u_AC4R` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u aConstants[3]`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel with unmodified alpha image multiply by constant and scale by max bit width value.*
- `NppStatus nppiMulCScale_16u_AC4IR` (const `Npp16u aConstants[3]`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel with unmodified alpha in place image multiply by constant and scale by max bit width value.*
- `NppStatus nppiMulCScale_16u_C4R` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u aConstants[4]`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel image multiply by constant and scale by max bit width value.*
- `NppStatus nppiMulCScale_16u_C4IR` (const `Npp16u aConstants[4]`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.*

### 7.8.1 Detailed Description

Multiplies each pixel of an image by a constant value then scales the result by the maximum value for the data bit width.

### 7.8.2 Function Documentation

#### 7.8.2.1 `NppStatus nppiMulCScale_16u_AC4IR` (const `Npp16u aConstants[3]`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

Four 16-bit unsigned short channel with unmodified alpha in place image multiply by constant and scale by max bit width value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.8.2.2 `NppStatus nppiMulCScale_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel with unmodified alpha image multiply by constant and scale by max bit width value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.8.2.3 `NppStatus nppiMulCScale_16u_C1IR (const Npp16u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.8.2.4 `NppStatus nppiMulCScale_16u_C1R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel image multiply by constant and scale by max bit width value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.8.2.5 NppStatus nppiMulCScale\_16u\_C3IR (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.8.2.6 NppStatus nppiMulCScale\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image multiply by constant and scale by max bit width value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.8.2.7 NppStatus nppiMulCScale\_16u\_C4IR (const Npp16u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image multiply by constant and scale by max bit width value.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.8.2.8 `NppStatus nppiMulCScale_16u_C4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image multiply by constant and scale by max bit width value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.8.2.9 `NppStatus nppiMulCScale_8u_AC4IR (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel with unmodified alpha in place image multiply by constant, scale and scale by max bit width value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.8.2.10 `NppStatus nppiMulCScale_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel with unmodified alpha image multiply by constant and scale by max bit width value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.8.2.11 NppStatus nppiMulCScale\_8u\_C1IR (const Npp8u *nConstant*, Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

One 8-bit unsigned char channel in place image multiply by constant and scale by max bit width value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.8.2.12 NppStatus nppiMulCScale\_8u\_C1R (const Npp8u \* *pSrcI*, int *nSrcIStep*, const Npp8u *nConstant*, Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)**

One 8-bit unsigned char channel image multiply by constant and scale by max bit width value.

**Parameters:**

*pSrcI* Source-Image Pointer.  
*nSrcIStep* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.8.2.13 NppStatus nppiMulCScale\_8u\_C3IR (const Npp8u *aConstants*[3], Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

Three 8-bit unsigned char channel 8-bit unsigned char in place image multiply by constant and scale by max bit width value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.8.2.14 `NppStatus nppiMulCScale_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image multiply by constant and scale by max bit width value.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.8.2.15 `NppStatus nppiMulCScale_8u_C4IR (const Npp8u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image multiply by constant and scale by max bit width value.

##### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.8.2.16 `NppStatus nppiMulCScale_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image multiply by constant and scale by max bit width value.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.9 SubC

Subtracts a constant value from each pixel of an image.

### Functions

- `NppStatus nppiSubC_8u_C1RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` nConstant, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_C1IRSfs` (const `Npp8u` nConstant, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_C3RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_C3IRSfs` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel 8-bit unsigned char in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_AC4RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_AC4IRSfs` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_C4RSfs` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[4], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_8u_C4IRSfs` (const `Npp8u` aConstants[4], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_16u_C1RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` nConstant, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_16u_C1IRSfs` (const `Npp16u` nConstant, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_16u_C3RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16u_C3IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16u_AC4IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16u_C4IRSfs` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` nConstant, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C1IRSfs` (const `Npp16s` nConstant, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C3IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_AC4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_AC4IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[4], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16s_C4IRSfs` (const `Npp16s` aConstants[4], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_C1RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` nConstant, `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_C1IRSfs` (const `Npp16sc` nConstant, `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_C3RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` aConstants[3], `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_C3IRSfs` (const `Npp16sc` aConstants[3], `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_AC4RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` aConstants[3], `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_16sc_AC4IRSfs` (const `Npp16sc` aConstants[3], `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_32s_C1RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` nConstant, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_32s_C1IRSfs` (const `Npp32s` nConstant, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_32s_C3IRSfs` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image subtract constant, scale, then clamp to saturated value.*

- `NppStatus nppiSubC_32sc_C1RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc nConstant`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32sc_C1IRSfs` (const `Npp32sc nConstant`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32sc_C3RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32sc_C3IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32sc_AC4RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32sc_AC4IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.*
- `NppStatus nppiSubC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f nConstant`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel image subtract constant.*
- `NppStatus nppiSubC_32f_C1IR` (const `Npp32f nConstant`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel in place image subtract constant.*
- `NppStatus nppiSubC_32f_C3R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel image subtract constant.*
- `NppStatus nppiSubC_32f_C3IR` (const `Npp32f aConstants[3]`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel in place image subtract constant.*
- `NppStatus nppiSubC_32f_AC4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha image subtract constant.*
- `NppStatus nppiSubC_32f_AC4IR` (const `Npp32f aConstants[3]`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)



*Four 32-bit floating point channel with unmodified alpha in place image subtract constant.*

- **NppStatus nppiSubC\_32f\_C4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** aConstants[4], **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Four 32-bit floating point channel image subtract constant.*

- **NppStatus nppiSubC\_32f\_C4IR** (const **Npp32f** aConstants[4], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 32-bit floating point channel in place image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C1R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** nConstant, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C1IR** (const **Npp32fc** nConstant, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C3R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C3IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.*

- **NppStatus nppiSubC\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image subtract constant.*

- **NppStatus nppiSubC\_32fc\_AC4IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[4], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.*

- **NppStatus nppiSubC\_32fc\_C4IR** (const **Npp32fc** aConstants[4], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.*

## 7.9.1 Detailed Description

Subtracts a constant value from each pixel of an image.

## 7.9.2 Function Documentation

### 7.9.2.1 `NppStatus nppiSubC_16s_AC4IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.2 `NppStatus nppiSubC_16s_AC4RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.3 `NppStatus nppiSubC_16s_C1IRSfs (const Npp16s nConstant, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.4 `NppStatus nppiSubC_16s_C1RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s nConstant, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.5 `NppStatus nppiSubC_16s_C3IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.6 `NppStatus nppiSubC_16s_C3RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.7 `NppStatus nppiSubC_16s_C4IRSfs (const Npp16s aConstants[4], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.8 `NppStatus nppiSubC_16s_C4RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s aConstants[4], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.9 NppStatus nppiSubC\_16sc\_AC4IRSfs (const Npp16sc aConstants[3], Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.10 NppStatus nppiSubC\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.11 `NppStatus nppiSubC_16sc_C1IRSfs (const Npp16sc nConstant, Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.12 `NppStatus nppiSubC_16sc_C1RSfs (const Npp16sc * pSrc1, int nSrc1Step, const Npp16sc nConstant, Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.13 `NppStatus nppiSubC_16sc_C3IRSfs (const Npp16sc aConstants[3], Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.14 NppStatus nppiSubC\_16sc\_C3RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.15 NppStatus nppiSubC\_16u\_AC4IRSfs (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.16 `NppStatus nppiSubC_16u_AC4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.17 `NppStatus nppiSubC_16u_C1IRSfs (const Npp16u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.18 `NppStatus nppiSubC_16u_C1RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.



*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.19 NppStatus nppiSubC\_16u\_C3IRSfs (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.20 NppStatus nppiSubC\_16u\_C3RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.21 `NppStatus nppiSubC_16u_C4IRSfs (const Npp16u aConstants[4], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.22 `NppStatus nppiSubC_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.23 `NppStatus nppiSubC_32f_AC4IR (const Npp32f aConstants[3], Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image subtract constant.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.24 NppStatus nppiSubC\_32f\_AC4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel with unmodified alpha image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.25 NppStatus nppiSubC\_32f\_C1IR (const Npp32f nConstant, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image subtract constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.26 NppStatus nppiSubC\_32f\_C1R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f nConstant, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.27 NppStatus nppiSubC\_32f\_C3IR (const Npp32f aConstants[3], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image subtract constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.28 NppStatus nppiSubC\_32f\_C3R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.29 NppStatus nppiSubC\_32f\_C4IR (const Npp32f aConstants[4], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image subtract constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.30 NppStatus nppiSubC\_32f\_C4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[4], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.31 NppStatus nppiSubC\_32fc\_AC4IR (const Npp32fc aConstants[3], Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image subtract constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.32 NppStatus nppiSubC\_32fc\_AC4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.33 NppStatus nppiSubC\_32fc\_C1IR (const Npp32fc *nConstant*, Npp32fc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.34 NppStatus nppiSubC\_32fc\_C1R (const Npp32fc \* *pSrc1*, int *nSrc1Step*, const Npp32fc *nConstant*, Npp32fc \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)**

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.35 NppStatus nppiSubC\_32fc\_C3IR (const Npp32fc *aConstants*[3], Npp32fc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.36 NppStatus nppiSubC\_32fc\_C3R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.37 NppStatus nppiSubC\_32fc\_C4IR (const Npp32fc aConstants[4], Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image subtract constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.38 NppStatus nppiSubC\_32fc\_C4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[4], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image subtract constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.39** `NppStatus nppiSubC_32s_C1IRSfs (const Npp32s nConstant, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.40** `NppStatus nppiSubC_32s_C1RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.41** `NppStatus nppiSubC_32s_C3IRSfs (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.



*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.42 NppStatus nppiSubC\_32s\_C3RSfs (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.43 NppStatus nppiSubC\_32sc\_AC4IRSfs (const Npp32sc aConstants[3], Npp32sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.44** `NppStatus nppiSubC_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.45** `NppStatus nppiSubC_32sc_C1RSfs (const Npp32sc nConstant, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.9.2.46** `NppStatus nppiSubC_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc nConstant, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.47 **NppStatus nppiSubC\_32sc\_C3IRSfs (const Npp32sc aConstants[3], Npp32sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.48 **NppStatus nppiSubC\_32sc\_C3RSfs (const Npp32sc \* pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.9.2.49 `NppStatus nppiSubC_8u_AC4IRSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.50 `NppStatus nppiSubC_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.9.2.51 `NppStatus nppiSubC_8u_C1IRSfs (const Npp8u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image subtract constant, scale, then clamp to saturated value.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.52** `NppStatus nppiSubC_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.53** `NppStatus nppiSubC_8u_C3IRSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel 8-bit unsigned char in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.9.2.54** `NppStatus nppiSubC_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.55 `NppStatus nppiSubC_8u_C4IRSfs (const Npp8u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.9.2.56 `NppStatus nppiSubC_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image subtract constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.10 DivC

Divides each pixel of an image by a constant value.

### Functions

- **NppStatus nppiDivC\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** nConstant, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_C1IRSfs** (const **Npp8u** nConstant, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_C3IRSfs** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel 8-bit unsigned char in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_AC4IRSfs** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[4], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_8u\_C4IRSfs** (const **Npp8u** aConstants[4], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** nConstant, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16u\_C1IRSfs** (const **Npp16u** nConstant, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16u\_C3RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16u_C3IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16u_AC4IRSfs` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16u_C4IRSfs` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` nConstant, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_C1IRSfs` (const `Npp16s` nConstant, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_C3IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_AC4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` aConstants[3], `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_16s_AC4IRSfs` (const `Npp16s` aConstants[3], `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.*



- **NppStatus nppiDivC\_16s\_C4RSfs** (const **Npp16s** \*pSrc1, int nSrc1Step, const **Npp16s** aConstants[4], **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16s\_C4IRSfs** (const **Npp16s** aConstants[4], **Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_C1RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** nConstant, **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_C1IRSfs** (const **Npp16sc** nConstant, **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_C3RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** aConstants[3], **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_C3IRSfs** (const **Npp16sc** aConstants[3], **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_AC4RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** aConstants[3], **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_16sc\_AC4IRSfs** (const **Npp16sc** aConstants[3], **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_32s\_C1RSfs** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** nConstant, **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 32-bit signed integer channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_32s\_C1IRSfs** (const **Npp32s** nConstant, **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 32-bit signed integer channel in place image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_32s\_C3RSfs** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** aConstants[3], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 32-bit signed integer channel image divided by constant, scale, then clamp to saturated value.*
- **NppStatus nppiDivC\_32s\_C3IRSfs** (const **Npp32s** aConstants[3], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image divided by constant, scale, then clamp to saturated value.*

- `NppStatus nppiDivC_32sc_C1RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc nConstant`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32sc_C1IRSfs` (const `Npp32sc nConstant`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32sc_C3RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32sc_C3IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32sc_AC4RSfs` (const `Npp32sc *pSrc1`, int `nSrc1Step`, const `Npp32sc aConstants[3]`, `Npp32sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32sc_AC4IRSfs` (const `Npp32sc aConstants[3]`, `Npp32sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)  
*Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.*
- `NppStatus nppiDivC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f nConstant`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel image divided by constant.*
- `NppStatus nppiDivC_32f_C1IR` (const `Npp32f nConstant`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel in place image divided by constant.*
- `NppStatus nppiDivC_32f_C3R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel image divided by constant.*
- `NppStatus nppiDivC_32f_C3IR` (const `Npp32f aConstants[3]`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel in place image divided by constant.*
- `NppStatus nppiDivC_32f_AC4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f aConstants[3]`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha image divided by constant.*

- **NppStatus nppiDivC\_32f\_AC4R** (const **Npp32f** aConstants[3], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha in place image divided by constant.*
- **NppStatus nppiDivC\_32f\_C4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** aConstants[4], **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image divided by constant.*
- **NppStatus nppiDivC\_32f\_C4IR** (const **Npp32f** aConstants[4], **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C1R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** nConstant, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C1IR** (const **Npp32fc** nConstant, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C3R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C3IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.*
- **NppStatus nppiDivC\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[3], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image divided by constant.*
- **NppStatus nppiDivC\_32fc\_AC4IR** (const **Npp32fc** aConstants[3], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** aConstants[4], **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.*
- **NppStatus nppiDivC\_32fc\_C4IR** (const **Npp32fc** aConstants[4], **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.*

### 7.10.1 Detailed Description

Divides each pixel of an image by a constant value.

### 7.10.2 Function Documentation

#### 7.10.2.1 `NppStatus nppiDivC_16s_AC4IRSfs (const Npp16s aConstants[3], Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.10.2.2 `NppStatus nppiDivC_16s_AC4RSfs (const Npp16s * pSrcI, int nSrcIStep, const Npp16s aConstants[3], Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrcI* Source-Image Pointer.

*nSrcIStep* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.10.2.3 NppStatus nppiDivC\_16s\_C1RSfs (const Npp16s *nConstant*, Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.4 NppStatus nppiDivC\_16s\_C1RSfs (const Npp16s \* *pSrc1*, int *nSrc1Step*, const Npp16s *nConstant*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.5 NppStatus nppiDivC\_16s\_C3IRSfs (const Npp16s *aConstants*[3], Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.6 NppStatus nppiDivC\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[3], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Three 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.7 NppStatus nppiDivC\_16s\_C4IRSfs (const Npp16s aConstants[4], Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.8 NppStatus nppiDivC\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s aConstants[4], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel image divided by constant, scale, then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.9 NppStatus nppiDivC\_16sc\_AC4IRSfs (const Npp16sc aConstants[3], Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.10 NppStatus nppiDivC\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.10.2.11 `NppStatus nppiDivC_16sc_C1IRSfs` (`const Npp16sc nConstant`, `Npp16sc * pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.12 `NppStatus nppiDivC_16sc_C1RSfs` (`const Npp16sc * pSrc1`, `int nSrc1Step`, `const Npp16sc nConstant`, `Npp16sc * pDst`, `int nDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.10.2.13 `NppStatus nppiDivC_16sc_C3IRSfs` (`const Npp16sc aConstants[3]`, `Npp16sc * pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.



*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.14** `NppStatus nppiDivC_16sc_C3RSfs (const Npp16sc * pSrc1, int nSrc1Step, const Npp16sc aConstants[3], Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.15** `NppStatus nppiDivC_16u_AC4IRSfs (const Npp16u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.16** `NppStatus nppiDivC_16u_AC4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.17** `NppStatus nppiDivC_16u_C1IRSfs (const Npp16u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.18** `NppStatus nppiDivC_16u_C1RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.19** `NppStatus nppiDivC_16u_C3IRSfs (const Npp16u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.20** `NppStatus nppiDivC_16u_C3RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.21** `NppStatus nppiDivC_16u_C4IRSfs (const Npp16u aConstants[4], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.22** `NppStatus nppiDivC_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.23** `NppStatus nppiDivC_32f_AC4IR (const Npp32f aConstants[3], Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.10.2.24 `NppStatus nppiDivC_32f_AC4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha image divided by constant.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.10.2.25 `NppStatus nppiDivC_32f_C1IR (const Npp32f nConstant, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel in place image divided by constant.

##### Parameters:

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.10.2.26 `NppStatus nppiDivC_32f_C1R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f nConstant, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image divided by constant.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.27 NppStatus nppiDivC\_32f\_C3IR (const Npp32f aConstants[3], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.28 NppStatus nppiDivC\_32f\_C3R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[3], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.29 NppStatus nppiDivC\_32f\_C4IR (const Npp32f aConstants[4], Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.30 NppStatus nppiDivC\_32f\_C4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f aConstants[4], Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.31 NppStatus nppiDivC\_32fc\_AC4IR (const Npp32fc aConstants[3], Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.32 NppStatus nppiDivC\_32fc\_AC4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel with unmodified alpha image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.33** `NppStatus nppiDivC_32fc_C1IR (const Npp32fc nConstant, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.34** `NppStatus nppiDivC_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc nConstant, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.35** `NppStatus nppiDivC_32fc_C3IR (const Npp32fc aConstants[3], Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.10.2.36** `NppStatus nppiDivC_32fc_C3R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc aConstants[3], Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.37** `NppStatus nppiDivC_32fc_C4IR (const Npp32fc aConstants[4], Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel in place image divided by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.38** `NppStatus nppiDivC_32fc_C4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc aConstants[4], Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit complex floating point (32-bit floating point real, 32-bit floating point imaginary) channel image divided by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.39** `NppStatus nppiDivC_32s_C1IRSfs (const Npp32s nConstant, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.40** `NppStatus nppiDivC_32s_C1RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.41** `NppStatus nppiDivC_32s_C3IRSfs (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.10.2.42 `NppStatus nppiDivC_32s_C3RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.10.2.43 `NppStatus nppiDivC_32sc_AC4IRSfs (const Npp32sc aConstants[3], Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.44** `NppStatus nppiDivC_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.45** `NppStatus nppiDivC_32sc_C1IRSfs (const Npp32sc nConstant, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.46** `NppStatus nppiDivC_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc nConstant, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.47** `NppStatus nppiDivC_32sc_C3IRSfs (const Npp32sc aConstants[3], Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.48** `NppStatus nppiDivC_32sc_C3RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc aConstants[3], Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed complex integer (32-bit real, 32-bit imaginary) channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.49** `NppStatus nppiDivC_8u_AC4IRSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.50** `NppStatus nppiDivC_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.10.2.51** `NppStatus nppiDivC_8u_C1IRSfs (const Npp8u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.52** `NppStatus nppiDivC_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.53** `NppStatus nppiDivC_8u_C3RSfs (const Npp8u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel 8-bit unsigned char in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.10.2.54** `NppStatus nppiDivC_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.10.2.55 `NppStatus nppiDivC_8u_C4IRSfs (const Npp8u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.10.2.56 `NppStatus nppiDivC_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image divided by constant, scale, then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



## 7.11 AbsDiffC

Determines absolute difference between each pixel of an image and a constant value.

### Functions

- `NppStatus nppiAbsDiffC_8u_C1R` (const `Npp8u *pSrc1`, int `nSrc1Step`, `Npp8u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `Npp8u nConstant`)  
*One 8-bit unsigned char channel image absolute difference with constant.*
- `NppStatus nppiAbsDiffC_16u_C1R` (const `Npp16u *pSrc1`, int `nSrc1Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `Npp16u nConstant`)  
*One 16-bit unsigned short channel image absolute difference with constant.*
- `NppStatus nppiAbsDiffC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `Npp32f nConstant`)  
*One 32-bit floating point channel image absolute difference with constant.*

### 7.11.1 Detailed Description

Determines absolute difference between each pixel of an image and a constant value.

### 7.11.2 Function Documentation

#### 7.11.2.1 `NppStatus nppiAbsDiffC_16u_C1R` (const `Npp16u *pSrc1`, int `nSrc1Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `Npp16u nConstant`)

One 16-bit unsigned short channel image absolute difference with constant.

#### Parameters:

- `pSrc1` Source-Image Pointer.
- `nSrc1Step` Source-Image Line Step.
- `nConstant` Constant.
- `pDst` Destination-Image Pointer.
- `nDstStep` Destination-Image Line Step.
- `oSizeROI` Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.11.2.2 `NppStatus nppiAbsDiffC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `Npp32f nConstant`)

One 32-bit floating point channel image absolute difference with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.11.2.3 NppStatus nppiAbsDiffC\_8u\_C1R (const Npp8u \* pSrc1, int nSrc1Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI, Npp8u nConstant)**

One 8-bit unsigned char channel image absolute difference with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.12 Add

Pixel by pixel addition of two images.

### Functions

- **NppStatus** `nppiAdd_8u_C1RSfs` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_C1IRSfs` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_C3RSfs` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_C3IRSfs` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_AC4RSfs` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_AC4IRSfs` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_C4RSfs` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_8u_C4IRSfs` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus** `nppiAdd_16u_C1RSfs` (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16u_C1IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit unsigned short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_C3RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_C3IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_AC4IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16u_C4IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16s_C1IRSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_16s_C3IRSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16s_AC4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16s_AC4RSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16s_C4RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16s_C4IRSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_C1RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` \*pSrc2, int nSrc2Step, `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_C1IRSfs` (const `Npp16sc` \*pSrc, int nSrcStep, `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_C3RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` \*pSrc2, int nSrc2Step, `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_C3IRSfs` (const `Npp16sc` \*pSrc, int nSrcStep, `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_AC4RSfs` (const `Npp16sc` \*pSrc1, int nSrc1Step, const `Npp16sc` \*pSrc2, int nSrc2Step, `Npp16sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_16sc_AC4IRSfs` (const `Npp16sc` \*pSrc, int nSrcStep, `Npp16sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_32s_C1RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.*
- `NppStatus nppiAdd_32s_C1IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32s_C3IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_C1RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_C1IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_C3RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_C3IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_AC4RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiAdd_32sc_AC4IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image addition, scale by  $2^{-nScaleFactor}$ , then clamp to saturated value.*

- `NppStatus nppiAdd_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel image addition.*
- `NppStatus nppiAdd_32f_C1IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel in place image addition.*
- `NppStatus nppiAdd_32f_C3R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel image addition.*
- `NppStatus nppiAdd_32f_C3IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel in place image addition.*
- `NppStatus nppiAdd_32f_AC4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha image addition.*
- `NppStatus nppiAdd_32f_AC4IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha in place image addition.*
- `NppStatus nppiAdd_32f_C4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel image addition.*
- `NppStatus nppiAdd_32f_C4IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel in place image addition.*
- `NppStatus nppiAdd_32fc_C1R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.*
- `NppStatus nppiAdd_32fc_C1IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.*
- `NppStatus nppiAdd_32fc_C3R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.*
- `NppStatus nppiAdd_32fc_C3IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.*

- **NppStatus nppiAdd\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image addition.*
- **NppStatus nppiAdd\_32fc\_AC4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image addition.*
- **NppStatus nppiAdd\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.*
- **NppStatus nppiAdd\_32fc\_C4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.*

### 7.12.1 Detailed Description

Pixel by pixel addition of two images.

### 7.12.2 Function Documentation

#### 7.12.2.1 **NppStatus nppiAdd\_16s\_AC4IRSfs** (const **Npp16s** \* pSrc, int nSrcStep, **Npp16s** \* pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

Four 16-bit signed short channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.12.2.2 **NppStatus nppiAdd\_16s\_AC4RSfs** (const **Npp16s** \* pSrc1, int nSrc1Step, const **Npp16s** \* pSrc2, int nSrc2Step, **Npp16s** \* pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

Four 16-bit signed short channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.



**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.12.2.3 `NppStatus nppiAdd_16s_C1IRSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.12.2.4 `NppStatus nppiAdd_16s_C1RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s * pSrc2, int nSrc2Step, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.5 NppStatus nppiAdd\_16s\_C3IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.6 NppStatus nppiAdd\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.7 NppStatus nppiAdd\_16s\_C4IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.8 NppStatus nppiAdd\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.9 NppStatus nppiAdd\_16sc\_AC4IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.10 NppStatus nppiAdd\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.11 NppStatus nppiAdd\_16sc\_C1IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.12 NppStatus nppiAdd\_16sc\_C1RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.13 NppStatus nppiAdd\_16sc\_C3RSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.14 NppStatus nppiAdd\_16sc\_C3RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.15 `NppStatus nppiAdd_16u_AC4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.16 `NppStatus nppiAdd_16u_AC4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.17 NppStatus nppiAdd\_16u\_C1RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.18 NppStatus nppiAdd\_16u\_C1RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.19** `NppStatus nppiAdd_16u_C3IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.20** `NppStatus nppiAdd_16u_C3RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.21** `NppStatus nppiAdd_16u_C4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.



*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.22** `NppStatus nppiAdd_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.23** `NppStatus nppiAdd_32f_AC4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.24** `NppStatus nppiAdd_32f_AC4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.25** `NppStatus nppiAdd_32f_C1IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.26** `NppStatus nppiAdd_32f_C1R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.27** `NppStatus nppiAdd_32f_C3IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.28** `NppStatus nppiAdd_32f_C3R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.12.2.29 `NppStatus nppiAdd_32f_C4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel in place image addition.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.12.2.30 `NppStatus nppiAdd_32f_C4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel image addition.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.12.2.31 `NppStatus nppiAdd_32fc_AC4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image addition.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.32** `NppStatus nppiAdd_32fc_AC4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.33** `NppStatus nppiAdd_32fc_C1IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.34** `NppStatus nppiAdd_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.35** `NppStatus nppiAdd_32fc_C3IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.36** `NppStatus nppiAdd_32fc_C3R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.37 NppStatus nppiAdd\_32fc\_C4IR (const Npp32fc \* pSrc, int nSrcStep, Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image addition.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.38 NppStatus nppiAdd\_32fc\_C4R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc \* pSrc2, int nSrc2Step, Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image addition.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.39 NppStatus nppiAdd\_32s\_C1IRSfs (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 32-bit signed integer channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.40 NppStatus nppiAdd\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)

Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.

32-bit image add. Add the pixel values of corresponding pixels in the ROI and write them to the output image.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.41 NppStatus nppiAdd\_32s\_C1RSfs (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

One 32-bit signed integer channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.12.2.42** `NppStatus nppiAdd_32s_C3IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.43** `NppStatus nppiAdd_32s_C3RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.44** `NppStatus nppiAdd_32sc_AC4IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.45 **NppStatus nppiAdd\_32sc\_AC4RSfs** (const Npp32sc \* *pSrc1*, int *nSrc1Step*, const Npp32sc \* *pSrc2*, int *nSrc2Step*, Npp32sc \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.46 **NppStatus nppiAdd\_32sc\_C1IRSfs** (const Npp32sc \* *pSrc*, int *nSrcStep*, Npp32sc \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.47 NppStatus nppiAdd\_32sc\_C1RSfs (const Npp32sc \* pSrc1, int nSrc1Step, const Npp32sc \* pSrc2, int nSrc2Step, Npp32sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.48 NppStatus nppiAdd\_32sc\_C3RSfs (const Npp32sc \* pSrc, int nSrcStep, Npp32sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.49 NppStatus nppiAdd\_32sc\_C3RSfs (const Npp32sc \* pSrc1, int nSrc1Step, const Npp32sc \* pSrc2, int nSrc2Step, Npp32sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image addition, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.50 `NppStatus nppiAdd_8u_AC4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.12.2.51 `NppStatus nppiAdd_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.52** `NppStatus nppiAdd_8u_C1IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.53** `NppStatus nppiAdd_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.54** `NppStatus nppiAdd_8u_C3IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.55** `NppStatus nppiAdd_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.12.2.56** `NppStatus nppiAdd_8u_C4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.12.2.57** `NppStatus nppiAdd_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image addition, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.13 AddSquare

Pixel by pixel addition of squared pixels from source image to floating point pixel values of destination image.

### Functions

- **NppStatus nppiAddSquare\_8u32f\_C1IMR** (const **Npp8u** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddSquare\_8u32f\_C1IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image squared then added to in place floating point destination image.*
- **NppStatus nppiAddSquare\_16u32f\_C1IMR** (const **Npp16u** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddSquare\_16u32f\_C1IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image squared then added to in place floating point destination image.*
- **NppStatus nppiAddSquare\_32f\_C1IMR** (const **Npp32f** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddSquare\_32f\_C1IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image squared then added to in place floating point destination image.*

### 7.13.1 Detailed Description

Pixel by pixel addition of squared pixels from source image to floating point pixel values of destination image.

### 7.13.2 Function Documentation

#### 7.13.2.1 **NppStatus nppiAddSquare\_16u32f\_C1IMR** (const **Npp16u** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

One 16-bit unsigned short channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

#### Parameters:

*pSrc* Source-Image Pointer.



*nSrcStep* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.13.2.2 NppStatus nppiAddSquare\_16u32f\_C1IR (const Npp16u \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 16-bit unsigned short channel image squared then added to in place floating point destination image.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.13.2.3 NppStatus nppiAddSquare\_32f\_C1IMR (const Npp32f \* pSrc, int nSrcStep, const Npp8u \* pMask, int nMaskStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 32-bit floating point channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.13.2.4 `NppStatus nppiAddSquare_32f_C1IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image squared then added to in place floating point destination image.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.13.2.5 `NppStatus nppiAddSquare_8u32f_C1IMR (const Npp8u * pSrc, int nSrcStep, const Npp8u * pMask, int nMaskStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image squared then added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.13.2.6 `NppStatus nppiAddSquare_8u32f_C1IR (const Npp8u * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image squared then added to in place floating point destination image.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.14 AddProduct

Pixel by pixel addition of product of pixels from two source images to floating point pixel values of destination image.

### Functions

- `NppStatus nppiAddProduct_8u32f_C1IMR` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, const `Npp8u` \*pMask, int nMaskStep, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- `NppStatus nppiAddProduct_8u32f_C1IR` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image product added to in place floating point destination image.*
- `NppStatus nppiAddProduct_16u32f_C1IMR` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, const `Npp8u` \*pMask, int nMaskStep, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- `NppStatus nppiAddProduct_16u32f_C1IR` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel image product added to in place floating point destination image.*
- `NppStatus nppiAddProduct_32f_C1IMR` (const `Npp32f` \*pSrc1, int nSrc1Step, const `Npp32f` \*pSrc2, int nSrc2Step, const `Npp8u` \*pMask, int nMaskStep, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit floating point channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- `NppStatus nppiAddProduct_32f_C1IR` (const `Npp32f` \*pSrc1, int nSrc1Step, const `Npp32f` \*pSrc2, int nSrc2Step, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit floating point channel image product added to in place floating point destination image.*

### 7.14.1 Detailed Description

Pixel by pixel addition of product of pixels from two source images to floating point pixel values of destination image.

### 7.14.2 Function Documentation

**7.14.2.1 `NppStatus nppiAddProduct_16u32f_C1IMR`** (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, const `Npp8u` \*pMask, int nMaskStep, `Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)

One 16-bit unsigned short channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.14.2.2 **NppStatus nppiAddProduct\_16u32f\_C11R** (const Npp16u \* *pSrc1*, int *nSrc1Step*, const Npp16u \* *pSrc2*, int *nSrc2Step*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 16-bit unsigned short channel image product added to in place floating point destination image.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.14.2.3 **NppStatus nppiAddProduct\_32f\_C11MR** (const Npp32f \* *pSrc1*, int *nSrc1Step*, const Npp32f \* *pSrc2*, int *nSrc2Step*, const Npp8u \* *pMask*, int *nMaskStep*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 32-bit floating point channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.14.2.4 NppStatus nppiAddProduct\_32f\_C1IR (const Npp32f \* *pSrc1*, int *nSrc1Step*, const Npp32f \* *pSrc2*, int *nSrc2Step*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 32-bit floating point channel image product added to in place floating point destination image.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.14.2.5 NppStatus nppiAddProduct\_8u32f\_C1IMR (const Npp8u \* *pSrc1*, int *nSrc1Step*, const Npp8u \* *pSrc2*, int *nSrc2Step*, const Npp8u \* *pMask*, int *nMaskStep*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 8-bit unsigned char channel image product added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.14.2.6 NppStatus nppiAddProduct\_8u32f\_C1IR (const Npp8u \* *pSrc1*, int *nSrc1Step*, const Npp8u \* *pSrc2*, int *nSrc2Step*, Npp32f \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 8-bit unsigned char channel image product added to in place floating point destination image.

##### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.15 AddWeighted

Pixel by pixel addition of alpha weighted pixel values from a source image to floating point pixel values of destination image.

### Functions

- **NppStatus nppiAddWeighted\_8u32f\_C1IMR** (const **Npp8u** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 8-bit unsigned char channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddWeighted\_8u32f\_C1IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 8-bit unsigned char channel alpha weighted image added to in place floating point destination image.*
- **NppStatus nppiAddWeighted\_16u32f\_C1IMR** (const **Npp16u** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 16-bit unsigned short channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddWeighted\_16u32f\_C1IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 16-bit unsigned short channel alpha weighted image added to in place floating point destination image.*
- **NppStatus nppiAddWeighted\_32f\_C1IMR** (const **Npp32f** \*pSrc, int nSrcStep, const **Npp8u** \*pMask, int nMaskStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 32-bit floating point channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).*
- **NppStatus nppiAddWeighted\_32f\_C1IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **Npp32f** nAlpha)  
*One 32-bit floating point channel alpha weighted image added to in place floating point destination image.*

### 7.15.1 Detailed Description

Pixel by pixel addition of alpha weighted pixel values from a source image to floating point pixel values of destination image.

### 7.15.2 Function Documentation

#### 7.15.2.1 NppStatus nppiAddWeighted\_16u32f\_C1IMR (const Npp16u \*pSrc, int nSrcStep, const Npp8u \*pMask, int nMaskStep, Npp32f \*pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)

One 16-bit unsigned short channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.15.2.2 `NppStatus nppiAddWeighted_16u32f_C1IR (const Npp16u * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)`

One 16-bit unsigned short channel alpha weighted image added to in place floating point destination image.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.15.2.3 `NppStatus nppiAddWeighted_32f_C1IMR (const Npp32f * pSrc, int nSrcStep, const Npp8u * pMask, int nMaskStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)`

One 32-bit floating point channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pMask* Mask-Image Pointer.  
*nMaskStep* Mask-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.



*oSizeROI* Region-of-Interest (ROI).

*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.15.2.4 NppStatus nppiAddWeighted\_32f\_C1IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)**

One 32-bit floating point channel alpha weighted image added to in place floating point destination image.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.15.2.5 NppStatus nppiAddWeighted\_8u32f\_C1IMR (const Npp8u \* pSrc, int nSrcStep, const Npp8u \* pMask, int nMaskStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)**

One 8-bit unsigned char channel alpha weighted image added to in place floating point destination image using filter mask (updates destination when mask is non-zero).

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pMask* Mask-Image Pointer.

*nMaskStep* Mask-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.15.2.6 `NppStatus nppiAddWeighted_8u32f_C1IR (const Npp8u * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, Npp32f nAlpha)`

One 8-bit unsigned char channel alpha weighted image added to in place floating point destination image.

#### Parameters:

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nAlpha* Alpha weight to be applied to source image pixels (0.0F to 1.0F)

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.16 Mul

Pixel by pixel multiply of two images.

### Functions

- **NppStatus nppiMul\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_C1IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_C3IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_AC4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_8u\_C4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16u_C1RSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_C3RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_C3RSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_AC4RSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16u_C4RSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16s_C1RSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_16s_C3RSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16s_AC4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16s_AC4RSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16s_C4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16s_C4RSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_C1RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_C1RSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_C3RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_C3RSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_AC4RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_16sc_AC4RSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiMul_32s_C1RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.*
- `NppStatus nppiMul_32s_C1IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32s_C3IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32sc_C1RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32sc_C1IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32sc_C3RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32sc_C3IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiMul_32sc_AC4RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiMul\_32sc\_AC4IRSfs** (const **Npp32sc** \*pSrc, int nSrcStep, **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiMul\_32f\_C1R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image multiplication.*
- **NppStatus nppiMul\_32f\_C1IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image multiplication.*
- **NppStatus nppiMul\_32f\_C3R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image multiplication.*
- **NppStatus nppiMul\_32f\_C3IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image multiplication.*
- **NppStatus nppiMul\_32f\_AC4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha image multiplication.*
- **NppStatus nppiMul\_32f\_AC4IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha in place image multiplication.*
- **NppStatus nppiMul\_32f\_C4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image multiplication.*
- **NppStatus nppiMul\_32f\_C4IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image multiplication.*
- **NppStatus nppiMul\_32fc\_C1R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.*
- **NppStatus nppiMul\_32fc\_C1IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.*
- **NppStatus nppiMul\_32fc\_C3R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.*

- **NppStatus nppiMul\_32fc\_C3IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.*
- **NppStatus nppiMul\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiplication.*
- **NppStatus nppiMul\_32fc\_AC4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiplication.*
- **NppStatus nppiMul\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.*
- **NppStatus nppiMul\_32fc\_C4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.*

### 7.16.1 Detailed Description

Pixel by pixel multiply of two images.

### 7.16.2 Function Documentation

#### 7.16.2.1 **NppStatus nppiMul\_16s\_AC4IRSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

Four 16-bit signed short channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes



### 7.16.2.2 NppStatus nppiMul\_16s\_AC4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.16.2.3 NppStatus nppiMul\_16s\_C1IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit signed short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.16.2.4 NppStatus nppiMul\_16s\_C1RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit signed short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.16.2.5 **NppStatus nppiMul\_16s\_C3IRSfs** (const Npp16s \* *pSrc*, int *nSrcStep*, Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 16-bit signed short channel in place image multiplication, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.16.2.6 **NppStatus nppiMul\_16s\_C3RSfs** (const Npp16s \* *pSrc1*, int *nSrc1Step*, const Npp16s \* *pSrc2*, int *nSrc2Step*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 16-bit signed short channel image multiplication, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.7 NppStatus nppiMul\_16s\_C4IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.8 NppStatus nppiMul\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.9 NppStatus nppiMul\_16sc\_AC4IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.10 **NppStatus nppiMul\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.11 **NppStatus nppiMul\_16sc\_C1IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.12 NppStatus nppiMul\_16sc\_C1RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.13 NppStatus nppiMul\_16sc\_C3RSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.14 NppStatus nppiMul\_16sc\_C3RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.15 `NppStatus nppiMul_16u_AC4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.16 `NppStatus nppiMul_16u_AC4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.17 NppStatus nppiMul\_16u\_C1IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.18 NppStatus nppiMul\_16u\_C1RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.19** `NppStatus nppiMul_16u_C3IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.20** `NppStatus nppiMul_16u_C3RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.21** `NppStatus nppiMul_16u_C4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.



*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.22** `NppStatus nppiMul_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.23** `NppStatus nppiMul_32f_AC4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.24** `NppStatus nppiMul_32f_AC4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.25** `NppStatus nppiMul_32f_C1IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.26** `NppStatus nppiMul_32f_C1R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.27** `NppStatus nppiMul_32f_C3IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.28** `NppStatus nppiMul_32f_C3R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.29 NppStatus nppiMul\_32f\_C4IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.30 NppStatus nppiMul\_32f\_C4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.31 NppStatus nppiMul\_32fc\_AC4IR (const Npp32fc \* pSrc, int nSrcStep, Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.32** `NppStatus nppiMul_32fc_AC4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.33** `NppStatus nppiMul_32fc_C1IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.34** `NppStatus nppiMul_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.35 NppStatus nppiMul\_32fc\_C3IR (const Npp32fc \* pSrc, int nSrcStep, Npp32fc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.36 NppStatus nppiMul\_32fc\_C3R (const Npp32fc \* pSrc1, int nSrc1Step, const Npp32fc \* pSrc2, int nSrc2Step, Npp32fc \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.237** `NppStatus nppiMul_32fc_C4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image multiplication.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.238** `NppStatus nppiMul_32fc_C4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image multiplication.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.239** `NppStatus nppiMul_32s_C1IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.40 NppStatus nppiMul\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)

Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.

1 channel 32-bit image multiplication. Multiply corresponding pixels in ROI.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.41 NppStatus nppiMul\_32s\_C1RSfs (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

One 32-bit signed integer channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.16.2.42** `NppStatus nppiMul_32s_C3IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.43** `NppStatus nppiMul_32s_C3RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.44** `NppStatus nppiMul_32sc_AC4IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.16.2.45 `NppStatus nppiMul_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.16.2.46 `NppStatus nppiMul_32sc_C1IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.47** `NppStatus nppiMul_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image multiplication, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.48** `NppStatus nppiMul_32sc_C3IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image multiplication, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.49** `NppStatus nppiMul_32sc_C3RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image multiplication, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.50 `NppStatus nppiMul_8u_AC4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.16.2.51 `NppStatus nppiMul_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.52** `NppStatus nppiMul_8u_C1RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.53** `NppStatus nppiMul_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.54** `NppStatus nppiMul_8u_C3IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.55** `NppStatus nppiMul_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.16.2.56** `NppStatus nppiMul_8u_C4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.16.2.57** `NppStatus nppiMul_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image multiplication, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.17 MulScale

Pixel by pixel multiplies each pixel of two images then scales the result by the maximum value for the data bit width.

### Functions

- `NppStatus nppiMulScale_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_C1IR` (const `Npp8u` \*pSrc, int nSrcStep, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_C3IR` (const `Npp8u` \*pSrc, int nSrcStep, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel with unmodified alpha image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_AC4IR` (const `Npp8u` \*pSrc, int nSrcStep, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel with unmodified alpha in place image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_8u_C4IR` (const `Npp8u` \*pSrc, int nSrcStep, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.*
- `NppStatus nppiMulScale_16u_C1IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)



*One 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_C3R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Three 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_C3IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Three 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Four 16-bit unsigned short channel with unmodified alpha image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_AC4IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 16-bit unsigned short channel with unmodified alpha in place image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_C4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)

*Four 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.*

- **NppStatus nppiMulScale\_16u\_C4IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

*Four 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.*

### 7.17.1 Detailed Description

Pixel by pixel multiplies each pixel of two images then scales the result by the maximum value for the data bit width.

### 7.17.2 Function Documentation

#### 7.17.2.1 **NppStatus nppiMulScale\_16u\_AC4IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

Four 16-bit unsigned short channel with unmodified alpha in place image multiplication then scale by maximum value for pixel bit width.

#### Parameters:

**pSrc** Source-Image Pointer.

**nSrcStep** Source-Image Line Step.

**pSrcDst** In-Place Image Pointer.

**nSrcDstStep** In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.2 NppStatus nppiMulScale\_16u\_AC4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel with unmodified alpha image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.3 NppStatus nppiMulScale\_16u\_C11R (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.4 NppStatus nppiMulScale\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.17.2.5 NppStatus nppiMulScale\_16u\_C3IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.17.2.6 NppStatus nppiMulScale\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.7 NppStatus nppiMulScale\_16u\_C4IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.8 NppStatus nppiMulScale\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.17.2.9 NppStatus nppiMulScale\_8u\_AC4IR (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel with unmodified alpha in place image multiplication then scale by maximum value for pixel bit width.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.17.2.10 NppStatus nppiMulScale\_8u\_AC4R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel with unmodified alpha image multiplication then scale by maximum value for pixel bit width.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.17.2.11 NppStatus nppiMulScale\_8u\_C1IR (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.12** `NppStatus nppiMulScale_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.13** `NppStatus nppiMulScale_8u_C3IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.17.2.14** `NppStatus nppiMulScale_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.17.2.15** `NppStatus nppiMulScale_8u_C4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.17.2.16** `NppStatus nppiMulScale_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image multiplication then scale by maximum value for pixel bit width.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



## 7.18 Sub

Pixel by pixel subtraction of two images.

### Functions

- **NppStatus nppiSub\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_C1IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_C3IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_AC4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_8u\_C4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSub_16u_C1IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_C3RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_C3IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_AC4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_AC4IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_C4RSfs` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16u_C4IRSfs` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16s_C1RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16s_C1IRSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 16-bit signed short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16s_C3RSfs` (const `Npp16s` \*pSrc1, int nSrc1Step, const `Npp16s` \*pSrc2, int nSrc2Step, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 16-bit signed short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_16s_C3IRSfs` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Three 16-bit signed short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16s_AC4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16s_AC4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16s_C4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16s_C4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_C1RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_C1IRSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_C3RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_C3IRSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_AC4RSfs` (const `Npp16sc *pSrc1`, int `nSrc1Step`, const `Npp16sc *pSrc2`, int `nSrc2Step`, `Npp16sc *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_16sc_AC4IRSfs` (const `Npp16sc *pSrc`, int `nSrcStep`, `Npp16sc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiSub_32s_C1RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.*
- `NppStatus nppiSub_32s_C1IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32s_C3IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32s_C4RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 32-bit signed integer channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32s_C4IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Four 32-bit signed integer channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32sc_C1RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32sc_C1IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSub_32sc_C3RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiSub\_32sc\_C3IRSfs** (const **Npp32sc** \*pSrc, int nSrcStep, **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_32sc\_AC4RSfs** (const **Npp32sc** \*pSrc1, int nSrc1Step, const **Npp32sc** \*pSrc2, int nSrc2Step, **Npp32sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_32sc\_AC4IRSfs** (const **Npp32sc** \*pSrc, int nSrcStep, **Npp32sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSub\_32f\_C1R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image subtraction.*
- **NppStatus nppiSub\_32f\_C1IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image subtraction.*
- **NppStatus nppiSub\_32f\_C3R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image subtraction.*
- **NppStatus nppiSub\_32f\_C3IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image subtraction.*
- **NppStatus nppiSub\_32f\_AC4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha image subtraction.*
- **NppStatus nppiSub\_32f\_AC4IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel with unmodified alpha in place image subtraction.*
- **NppStatus nppiSub\_32f\_C4R** (const **Npp32f** \*pSrc1, int nSrc1Step, const **Npp32f** \*pSrc2, int nSrc2Step, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image subtraction.*
- **NppStatus nppiSub\_32f\_C4IR** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image subtraction.*
- **NppStatus nppiSub\_32fc\_C1R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.*

- **NppStatus nppiSub\_32fc\_C1IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.*
- **NppStatus nppiSub\_32fc\_C3R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.*
- **NppStatus nppiSub\_32fc\_C3IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.*
- **NppStatus nppiSub\_32fc\_AC4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtraction.*
- **NppStatus nppiSub\_32fc\_AC4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtraction.*
- **NppStatus nppiSub\_32fc\_C4R** (const **Npp32fc** \*pSrc1, int nSrc1Step, const **Npp32fc** \*pSrc2, int nSrc2Step, **Npp32fc** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.*
- **NppStatus nppiSub\_32fc\_C4IR** (const **Npp32fc** \*pSrc, int nSrcStep, **Npp32fc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.*

### 7.18.1 Detailed Description

Pixel by pixel subtraction of two images.

### 7.18.2 Function Documentation

#### 7.18.2.1 **NppStatus nppiSub\_16s\_AC4IRSfs** (const **Npp16s** \* pSrc, int nSrcStep, **Npp16s** \* pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

Four 16-bit signed short channel with unmodified alpha in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.2** `NppStatus nppiSub_16s_AC4RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s * pSrc2, int nSrc2Step, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.3** `NppStatus nppiSub_16s_C1IRSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.4 NppStatus nppiSub\_16s\_C1RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.5 NppStatus nppiSub\_16s\_C3RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.6 NppStatus nppiSub\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.



*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.18.2.7 `NppStatus nppiSub_16s_C4IRSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.18.2.8 `NppStatus nppiSub_16s_C4RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s * pSrc2, int nSrc2Step, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.9 NppStatus nppiSub\_16sc\_AC4IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.10 NppStatus nppiSub\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.11 NppStatus nppiSub\_16sc\_C1IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.12 NppStatus nppiSub\_16sc\_C1RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.13 NppStatus nppiSub\_16sc\_C3IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.14** `NppStatus nppiSub_16sc_C3RSfs (const Npp16sc * pSrc1, int nSrc1Step, const Npp16sc * pSrc2, int nSrc2Step, Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.15** `NppStatus nppiSub_16u_AC4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.16** `NppStatus nppiSub_16u_AC4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.17** `NppStatus nppiSub_16u_C1RSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.18** `NppStatus nppiSub_16u_C1RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.19 NppStatus nppiSub\_16u\_C3IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.20 NppStatus nppiSub\_16u\_C3RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.21** `NppStatus nppiSub_16u_C4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.22** `NppStatus nppiSub_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.23** `NppStatus nppiSub_32f_AC4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.24 NppStatus nppiSub\_32f\_AC4R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel with unmodified alpha image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.25 NppStatus nppiSub\_32f\_C1IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.18.2.26** `NppStatus nppiSub_32f_C1R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.27** `NppStatus nppiSub_32f_C3IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.28** `NppStatus nppiSub_32f_C3R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.29** `NppStatus nppiSub_32f_C4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.30** `NppStatus nppiSub_32f_C4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.31** `NppStatus nppiSub_32fc_AC4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.32** `NppStatus nppiSub_32fc_AC4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.33** `NppStatus nppiSub_32fc_C1IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.34** `NppStatus nppiSub_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.35** `NppStatus nppiSub_32fc_C3IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.36** `NppStatus nppiSub_32fc_C3R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.37** `NppStatus nppiSub_32fc_C4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image subtraction.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.38** `NppStatus nppiSub_32fc_C4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image subtraction.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.39 `NppStatus nppiSub_32s_C1IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.40 `NppStatus nppiSub_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.

32-bit image subtraction. Subtract pSrc1's pixels from corresponding pixels in pSrc2.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.41** `NppStatus nppiSub_32s_C1RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.42** `NppStatus nppiSub_32s_C3IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.43** `NppStatus nppiSub_32s_C3RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.44 **NppStatus nppiSub\_32s\_C4IRSfs (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 32-bit signed integer channel in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.45 **NppStatus nppiSub\_32s\_C4RSfs (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 32-bit signed integer channel image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.



*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.46 NppStatus nppiSub\_32sc\_AC4IRSfs (const Npp32sc \* pSrc, int nSrcStep, Npp32sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.47 NppStatus nppiSub\_32sc\_AC4RSfs (const Npp32sc \* pSrc1, int nSrc1Step, const Npp32sc \* pSrc2, int nSrc2Step, Npp32sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.48** `NppStatus nppiSub_32sc_C1IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.49** `NppStatus nppiSub_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.50** `NppStatus nppiSub_32sc_C3IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.18.2.51 `NppStatus nppiSub_32sc_C3RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.18.2.52 `NppStatus nppiSub_8u_AC4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.53** `NppStatus nppiSub_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.54** `NppStatus nppiSub_8u_C1IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.55** `NppStatus nppiSub_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.56 NppStatus nppiSub\_8u\_C3IRSfs (const Npp8u \* *pSrc*, int *nSrcStep*, Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 8-bit unsigned char channel in place image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.18.2.57 NppStatus nppiSub\_8u\_C3RSfs (const Npp8u \* *pSrc1*, int *nSrc1Step*, const Npp8u \* *pSrc2*, int *nSrc2Step*, Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 8-bit unsigned char channel image subtraction, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.18.2.58** `NppStatus nppiSub_8u_C4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.18.2.59** `NppStatus nppiSub_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image subtraction, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.19 Div

Pixel by pixel division of two images.

### Functions

- **NppStatus nppiDiv\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_C1IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_C3IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_AC4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_8u\_C4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16u\_C1IRSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*One 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_C3RSfs` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u *pSrc2`, int `nSrc2Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_C3IRSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_AC4RSfs` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u *pSrc2`, int `nSrc2Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_AC4IRSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_C4RSfs` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u *pSrc2`, int `nSrc2Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16u_C4IRSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16s_C1RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16s_C1IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16s_C3RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_16s_C3IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*



- **NppStatus nppiDiv\_16s\_AC4RSfs** (const **Npp16s** \*pSrc1, int nSrc1Step, const **Npp16s** \*pSrc2, int nSrc2Step, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16s\_AC4IRSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16s\_C4RSfs** (const **Npp16s** \*pSrc1, int nSrc1Step, const **Npp16s** \*pSrc2, int nSrc2Step, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16s\_C4IRSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_C1RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** \*pSrc2, int nSrc2Step, **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_C1IRSfs** (const **Npp16sc** \*pSrc, int nSrcStep, **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_C3RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** \*pSrc2, int nSrc2Step, **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_C3IRSfs** (const **Npp16sc** \*pSrc, int nSrcStep, **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_AC4RSfs** (const **Npp16sc** \*pSrc1, int nSrc1Step, const **Npp16sc** \*pSrc2, int nSrc2Step, **Npp16sc** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_16sc\_AC4IRSfs** (const **Npp16sc** \*pSrc, int nSrcStep, **Npp16sc** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

*Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiDiv\_32s\_C1RSfs** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** \*pSrc2, int nSrc2Step, **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)

One 32-bit signed integer channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.*

- `NppStatus nppiDiv_32s_C1IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

One 32-bit signed integer channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32s_C3RSfs` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Three 32-bit signed integer channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32s_C3IRSfs` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Three 32-bit signed integer channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_C1RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_C1IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_C3RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_C3IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_AC4RSfs` (const `Npp32sc` \*pSrc1, int nSrc1Step, const `Npp32sc` \*pSrc2, int nSrc2Step, `Npp32sc` \*pDst, int nDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32sc_AC4IRSfs` (const `Npp32sc` \*pSrc, int nSrcStep, `Npp32sc` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI, int nScaleFactor)

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

- `NppStatus nppiDiv_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel image division.*
- `NppStatus nppiDiv_32f_C1IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point channel in place image division.*
- `NppStatus nppiDiv_32f_C3R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel image division.*
- `NppStatus nppiDiv_32f_C3IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point channel in place image division.*
- `NppStatus nppiDiv_32f_AC4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha image division.*
- `NppStatus nppiDiv_32f_AC4IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel with unmodified alpha in place image division.*
- `NppStatus nppiDiv_32f_C4R` (const `Npp32f *pSrc1`, int `nSrc1Step`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel image division.*
- `NppStatus nppiDiv_32f_C4IR` (const `Npp32f *pSrc`, int `nSrcStep`, `Npp32f *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit floating point channel in place image division.*
- `NppStatus nppiDiv_32fc_C1R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.*
- `NppStatus nppiDiv_32fc_C1IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.*
- `NppStatus nppiDiv_32fc_C3R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.*
- `NppStatus nppiDiv_32fc_C3IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.*
- `NppStatus nppiDiv_32fc_AC4R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image division.

- `NppStatus nppiDiv_32fc_AC4IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image division.

- `NppStatus nppiDiv_32fc_C4R` (const `Npp32fc *pSrc1`, int `nSrc1Step`, const `Npp32fc *pSrc2`, int `nSrc2Step`, `Npp32fc *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.

- `NppStatus nppiDiv_32fc_C4IR` (const `Npp32fc *pSrc`, int `nSrcStep`, `Npp32fc *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.

### 7.19.1 Detailed Description

Pixel by pixel division of two images.

### 7.19.2 Function Documentation

#### 7.19.2.1 `NppStatus nppiDiv_16s_AC4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- `pSrc` Source-Image Pointer.
- `nSrcStep` Source-Image Line Step.
- `pSrcDst` In-Place Image Pointer.
- `nSrcDstStep` In-Place-Image Line Step.
- `oSizeROI` Region-of-Interest (ROI).
- `nScaleFactor` Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.19.2.2 `NppStatus nppiDiv_16s_AC4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

Four 16-bit signed short channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- `pSrc1` Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.3 NppStatus nppiDiv\_16s\_C1IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.4 NppStatus nppiDiv\_16s\_C1RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.5 `NppStatus nppiDiv_16s_C3IRSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.6 `NppStatus nppiDiv_16s_C3RSfs (const Npp16s * pSrc1, int nSrc1Step, const Npp16s * pSrc2, int nSrc2Step, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.7 `NppStatus nppiDiv_16s_C4IRSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.8 NppStatus nppiDiv\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.9 NppStatus nppiDiv\_16sc\_AC4IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.10 NppStatus nppiDiv\_16sc\_AC4RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.11 NppStatus nppiDiv\_16sc\_C1IRSfs (const Npp16sc \* pSrc, int nSrcStep, Npp16sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.12 NppStatus nppiDiv\_16sc\_C1RSfs (const Npp16sc \* pSrc1, int nSrc1Step, const Npp16sc \* pSrc2, int nSrc2Step, Npp16sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.



**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.13 `NppStatus nppiDiv_16sc_C3IRSfs (const Npp16sc * pSrc, int nSrcStep, Npp16sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel in place image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.14 `NppStatus nppiDiv_16sc_C3RSfs (const Npp16sc * pSrc1, int nSrc1Step, const Npp16sc * pSrc2, int nSrc2Step, Npp16sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit signed short complex number (16-bit real, 16-bit imaginary) channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.15 NppStatus nppiDiv\_16u\_AC4IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.16 NppStatus nppiDiv\_16u\_AC4RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.17** `NppStatus nppiDiv_16u_C1IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.18** `NppStatus nppiDiv_16u_C1RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.19** `NppStatus nppiDiv_16u_C3IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.20** `NppStatus nppiDiv_16u_C3RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.21** `NppStatus nppiDiv_16u_C4IRSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.22** `NppStatus nppiDiv_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.23** `NppStatus nppiDiv_32f_AC4IR (const Npp32f * pSrc, int nSrcStep, Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.24** `NppStatus nppiDiv_32f_AC4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel with unmodified alpha image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.25 NppStatus nppiDiv\_32f\_C1IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.26 NppStatus nppiDiv\_32f\_C1R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.27 NppStatus nppiDiv\_32f\_C3IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.28 NppStatus nppiDiv\_32f\_C3R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.29 NppStatus nppiDiv\_32f\_C4IR (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.30** `NppStatus nppiDiv_32f_C4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.31** `NppStatus nppiDiv_32fc_AC4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.32** `NppStatus nppiDiv_32fc_AC4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.



*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.33** `NppStatus nppiDiv_32fc_C1IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.34** `NppStatus nppiDiv_32fc_C1R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.35** `NppStatus nppiDiv_32fc_C3IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.36** `NppStatus nppiDiv_32fc_C3R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.37** `NppStatus nppiDiv_32fc_C4IR (const Npp32fc * pSrc, int nSrcStep, Npp32fc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel in place image division.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.38** `NppStatus nppiDiv_32fc_C4R (const Npp32fc * pSrc1, int nSrc1Step, const Npp32fc * pSrc2, int nSrc2Step, Npp32fc * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point complex number (32-bit real, 32-bit imaginary) channel image division.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.39** `NppStatus nppiDiv_32s_C1IRSfs (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.40** `NppStatus nppiDiv_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Note: This function is to be deprecated in future NPP releases, use the function above with a scale factor of 0 instead.

32-bit image division. Divide pixels in pSrc2 by pSrc1's pixels.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.19.2.41 NppStatus nppiDiv\_32s\_C1RSfs (const Npp32s \* *pSrc1*, int *nSrc1Step*, const Npp32s \* *pSrc2*, int *nSrc2Step*, Npp32s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 32-bit signed integer channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.19.2.42 NppStatus nppiDiv\_32s\_C3IRSfs (const Npp32s \* *pSrc*, int *nSrcStep*, Npp32s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 32-bit signed integer channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.43** `NppStatus nppiDiv_32s_C3RSfs (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 32-bit signed integer channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.44** `NppStatus nppiDiv_32sc_AC4IRSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha in place image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.45** `NppStatus nppiDiv_32sc_AC4RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel with unmodified alpha image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.19.2.46 `NppStatus nppiDiv_32sc_C1RSfs (const Npp32sc * pSrc, int nSrcStep, Npp32sc * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.19.2.47 `NppStatus nppiDiv_32sc_C1RSfs (const Npp32sc * pSrc1, int nSrc1Step, const Npp32sc * pSrc2, int nSrc2Step, Npp32sc * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.48 NppStatus nppiDiv\_32sc\_C3IRSfs (const Npp32sc \* pSrc, int nSrcStep, Npp32sc \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel in place image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.49 NppStatus nppiDiv\_32sc\_C3RSfs (const Npp32sc \* pSrc1, int nSrc1Step, const Npp32sc \* pSrc2, int nSrc2Step, Npp32sc \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 32-bit signed integer complex number (32-bit real, 32-bit imaginary) channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.50** `NppStatus nppiDiv_8u_AC4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.51** `NppStatus nppiDiv_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel with unmodified alpha image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.52** `NppStatus nppiDiv_8u_C1IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.



*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.53 `NppStatus nppiDiv_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.19.2.54 `NppStatus nppiDiv_8u_C3IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.19.2.55** `NppStatus nppiDiv_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.56** `NppStatus nppiDiv_8u_C4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.19.2.57** `NppStatus nppiDiv_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.20 Div\_Round

Pixel by pixel division of two images using result rounding modes.

### Functions

- NppStatus nppiDiv\_Round\_8u\_C1RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_C1IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_C3RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Three 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_C3IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Three 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_AC4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 8-bit unsigned char channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_AC4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 8-bit unsigned char channel in place image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_C4RSfs** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_8u\_C4IRSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- NppStatus nppiDiv\_Round\_16u\_C1RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_C1RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_C3RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Three 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_C3RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Three 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_AC4RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 16-bit unsigned short channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_AC4RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 16-bit unsigned short channel in place image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_C4RSfs** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16u\_C4RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*Four 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16s\_C1RSfs** (const **Npp16s** \*pSrc1, int nSrc1Step, const **Npp16s** \*pSrc2, int nSrc2Step, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiDiv\_Round\_16s\_C1RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, **NppRoundMode** rndMode, int nScaleFactor)

*One 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiDiv_Round_16s_C3RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Three 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiDiv_Round_16s_C3IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Three 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiDiv_Round_16s_AC4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Four 16-bit signed short channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiDiv_Round_16s_AC4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Four 16-bit signed short channel in place image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiDiv_Round_16s_C4RSfs` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Four 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiDiv_Round_16s_C4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)  
*Four 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

## 7.20.1 Detailed Description

Pixel by pixel division of two images using result rounding modes.

## 7.20.2 Function Documentation

### 7.20.2.1 `NppStatus nppiDiv_Round_16s_AC4IRSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, `NppRoundMode rndMode`, int `nScaleFactor`)

Four 16-bit signed short channel in place image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- `pSrc` Source-Image Pointer.
- `nSrcStep` Source-Image Line Step.
- `pSrcDst` In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.2 NppStatus nppiDiv\_Round\_16s\_AC4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit signed short channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.3 NppStatus nppiDiv\_Round\_16s\_C1IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

One 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.4 NppStatus nppiDiv\_Round\_16s\_C1RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

One 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.5 NppStatus nppiDiv\_Round\_16s\_C3IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Three 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.20.2.6 NppStatus nppiDiv\_Round\_16s\_C3RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Three 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.7 NppStatus nppiDiv\_Round\_16s\_C4IRSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit signed short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.8 NppStatus nppiDiv\_Round\_16s\_C4RSfs (const Npp16s \* pSrc1, int nSrc1Step, const Npp16s \* pSrc2, int nSrc2Step, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit signed short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.9 NppStatus nppiDiv\_Round\_16u\_AC4IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit unsigned short channel in place image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.10 NppStatus nppiDiv\_Round\_16u\_AC4RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit unsigned short channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.11 NppStatus nppiDiv\_Round\_16u\_C1IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

One 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.12 NppStatus nppiDiv\_Round\_16u\_C1RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

One 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.13 NppStatus nppiDiv\_Round\_16u\_C3IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Three 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.14 NppStatus nppiDiv\_Round\_16u\_C3RSfs (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Three 16-bit unsigned short channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.15 NppStatus nppiDiv\_Round\_16u\_C4IRSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)**

Four 16-bit unsigned short channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.16** `NppStatus nppiDiv_Round_16u_C4RSfs (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Four 16-bit unsigned short channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.17** `NppStatus nppiDiv_Round_8u_AC4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Four 8-bit unsigned char channel in place image division with unmodified alpha, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.18** `NppStatus nppiDiv_Round_8u_AC4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Four 8-bit unsigned char channel image division with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.19** `NppStatus nppiDiv_Round_8u_C1IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

One 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.20** `NppStatus nppiDiv_Round_8u_C1RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

One 8-bit unsigned char channel image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.20.2.21** `NppStatus nppiDiv_Round_8u_C3IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Three 8-bit unsigned char channel in place image division, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.20.2.22** `NppStatus nppiDiv_Round_8u_C3RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Three 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.23** `NppStatus nppiDiv_Round_8u_C4IRSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Four 8-bit unsigned char channel in place image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.20.2.24** `NppStatus nppiDiv_Round_8u_C4RSfs (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppRoundMode rndMode, int nScaleFactor)`

Four 8-bit unsigned char channel image division, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*rndMode* Result Rounding mode to be used (NPP\_RND\_ZERO, NPP\_RND\_NEAR, or NP\_RND\_FINANCIAL)

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.21 Abs

Absolute value of each pixel value in an image.

### Functions

- `NppStatus nppiAbs_16s_C1R` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 16-bit signed short channel image absolute value.*
- `NppStatus nppiAbs_16s_C1IR` (`Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 16-bit signed short channel in place image absolute value.*
- `NppStatus nppiAbs_16s_C3R` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 16-bit signed short channel image absolute value.*
- `NppStatus nppiAbs_16s_C3IR` (`Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 16-bit signed short channel in place image absolute value.*
- `NppStatus nppiAbs_16s_AC4R` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit signed short channel image absolute value with unmodified alpha.*
- `NppStatus nppiAbs_16s_AC4IR` (`Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit signed short channel in place image absolute value with unmodified alpha.*
- `NppStatus nppiAbs_16s_C4R` (const `Npp16s` \*pSrc, int nSrcStep, `Npp16s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit signed short channel image absolute value.*
- `NppStatus nppiAbs_16s_C4IR` (`Npp16s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit signed short channel in place image absolute value.*
- `NppStatus nppiAbs_32f_C1R` (const `Npp32f` \*pSrc, int nSrcStep, `Npp32f` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit floating point channel image absolute value.*
- `NppStatus nppiAbs_32f_C1IR` (`Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit floating point channel in place image absolute value.*
- `NppStatus nppiAbs_32f_C3R` (const `Npp32f` \*pSrc, int nSrcStep, `Npp32f` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 32-bit floating point channel image absolute value.*
- `NppStatus nppiAbs_32f_C3IR` (`Npp32f` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 32-bit floating point channel in place image absolute value.*
- `NppStatus nppiAbs_32f_AC4R` (const `Npp32f` \*pSrc, int nSrcStep, `Npp32f` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Four 32-bit floating point channel image absolute value with unmodified alpha.*

- **NppStatus nppiAbs\_32f\_AC4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image absolute value with unmodified alpha.*
- **NppStatus nppiAbs\_32f\_C4R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image absolute value.*
- **NppStatus nppiAbs\_32f\_C4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image absolute value.*

### 7.21.1 Detailed Description

Absolute value of each pixel value in an image.

### 7.21.2 Function Documentation

#### 7.21.2.1 NppStatus nppiAbs\_16s\_AC4IR (Npp16s \*pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 16-bit signed short channel in place image absolute value with unmodified alpha.

##### Parameters:

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.21.2.2 NppStatus nppiAbs\_16s\_AC4R (const Npp16s \*pSrc, int nSrcStep, Npp16s \*pDst, int nDstStep, NppiSize oSizeROI)

Four 16-bit signed short channel image absolute value with unmodified alpha.

##### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.3 NppStatus nppiAbs\_16s\_C1IR (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 16-bit signed short channel in place image absolute value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.4 NppStatus nppiAbs\_16s\_C1R (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit signed short channel image absolute value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.5 NppStatus nppiAbs\_16s\_C3IR (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit signed short channel in place image absolute value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.6 NppStatus nppiAbs\_16s\_C3R (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit signed short channel image absolute value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.7 NppStatus nppiAbs\_16s\_C4IR (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit signed short channel in place image absolute value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.8 NppStatus nppiAbs\_16s\_C4R (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit signed short channel image absolute value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.9 NppStatus nppiAbs\_32f\_AC4IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image absolute value with unmodified alpha.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.10 NppStatus nppiAbs\_32f\_AC4R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image absolute value with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.11 NppStatus nppiAbs\_32f\_C1IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image absolute value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.12 NppStatus nppiAbs\_32f\_C1R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image absolute value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.13 NppStatus nppiAbs\_32f\_C3IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image absolute value.

**Parameters:**

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.14 NppStatus nppiAbs\_32f\_C3R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image absolute value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.21.2.15 NppStatus nppiAbs\_32f\_C4IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image absolute value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.21.2.16 NppStatus nppiAbs\_32f\_C4R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image absolute value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.22 AbsDiff

Pixel by pixel absolute difference between two images.

### Functions

- `NppStatus nppiAbsDiff_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel absolute difference of image1 minus image2.*
- `NppStatus nppiAbsDiff_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channels absolute difference of image1 minus image2.*
- `NppStatus nppiAbsDiff_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channels absolute difference of image1 minus image2.*
- `NppStatus nppiAbsDiff_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel absolute difference of image1 minus image2.*
- `NppStatus nppiAbsDiff_32f_C1R` (const `Npp32f` \*pSrc1, int nSrc1Step, const `Npp32f` \*pSrc2, int nSrc2Step, `Npp32f` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit floating point channel absolute difference of image1 minus image2.*

### 7.22.1 Detailed Description

Pixel by pixel absolute difference between two images.

### 7.22.2 Function Documentation

#### 7.22.2.1 `NppStatus nppiAbsDiff_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)

One 16-bit unsigned short channel absolute difference of image1 minus image2.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.22.2.2 NppStatus nppiAbsDiff\_32f\_C1R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel absolute difference of image1 minus image2.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.22.2.3 NppStatus nppiAbsDiff\_8u\_C1R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel absolute difference of image1 minus image2.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.22.2.4 NppStatus nppiAbsDiff\_8u\_C3R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channels absolute difference of image1 minus image2.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.22.2.5 NppStatus nppiAbsDiff\_8u\_C4R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channels absolute difference of image1 minus image2.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.23 Sqr

Square each pixel in an image.

### Functions

- **NppStatus nppiSqr\_8u\_C1RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_C1IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_C3RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_C3IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_AC4RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Four 8-bit unsigned char channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_AC4IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Four 8-bit unsigned char channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_C4RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Four 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_8u\_C4IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Four 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_16u\_C1RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 16-bit unsigned short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_16u\_C1IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

*One 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_C3RSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit unsigned short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_C3IRSfs` (`Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_AC4RSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_AC4IRSfs` (`Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_C4RSfs` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16u_C4IRSfs` (`Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Four 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16s_C1RSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16s_C1IRSfs` (`Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*One 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16s_C3RSfs` (const `Npp16s *pSrc`, int `nSrcStep`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqr_16s_C3IRSfs` (`Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`, int `nScaleFactor`)

*Three 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiSqr\_16s\_AC4RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_16s\_AC4IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_16s\_C4RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_16s\_C4IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqr\_32f\_C1R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image squared.*
- **NppStatus nppiSqr\_32f\_C1IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image squared.*
- **NppStatus nppiSqr\_32f\_C3R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image squared.*
- **NppStatus nppiSqr\_32f\_C3IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image squared.*
- **NppStatus nppiSqr\_32f\_AC4R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image squared with unmodified alpha.*
- **NppStatus nppiSqr\_32f\_AC4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image squared with unmodified alpha.*
- **NppStatus nppiSqr\_32f\_C4R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image squared.*
- **NppStatus nppiSqr\_32f\_C4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image squared.*

### 7.23.1 Detailed Description

Square each pixel in an image.

## 7.23.2 Function Documentation

### 7.23.2.1 `NppStatus nppiSqr_16s_AC4IRSfs (Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.23.2.2 `NppStatus nppiSqr_16s_AC4RSfs (const Npp16s * pSrc, int nSrcStep, Npp16s * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit signed short channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.23.2.3 `NppStatus nppiSqr_16s_C1IRSfs (Npp16s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



#### 7.23.2.4 NppStatus nppiSqr\_16s\_C1RSfs (const Npp16s \* *pSrc*, int *nSrcStep*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.23.2.5 NppStatus nppiSqr\_16s\_C3IRSfs (Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.23.2.6 NppStatus nppiSqr\_16s\_C3RSfs (const Npp16s \* *pSrc*, int *nSrcStep*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Three 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.23.2.7 NppStatus nppiSqr\_16s\_C4IRSfs (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.23.2.8 NppStatus nppiSqr\_16s\_C4RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit signed short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.23.2.9 NppStatus nppiSqr\_16u\_AC4IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 16-bit unsigned short channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.23.2.10 NppStatus nppiSqr\_16u\_AC4RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.11 NppStatus nppiSqr\_16u\_C1IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.12 NppStatus nppiSqr\_16u\_C1RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.13** `NppStatus nppiSqr_16u_C3IRSfs (Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.14** `NppStatus nppiSqr_16u_C3RSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.15** `NppStatus nppiSqr_16u_C4IRSfs (Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.16** `NppStatus nppiSqr_16u_C4RSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 16-bit unsigned short channel image squared, scale by  $2^{-(nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.17** `NppStatus nppiSqr_32f_AC4IR (Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel in place image squared with unmodified alpha.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.18** `NppStatus nppiSqr_32f_AC4R (const Npp32f * pSrc, int nSrcStep, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit floating point channel image squared with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.19 NppStatus nppiSqr\_32f\_C1IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image squared.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.20 NppStatus nppiSqr\_32f\_C1R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image squared.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.21 NppStatus nppiSqr\_32f\_C3IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image squared.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.22 NppStatus nppiSqr\_32f\_C3R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image squared.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.23 NppStatus nppiSqr\_32f\_C4IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image squared.

**Parameters:**

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.24 NppStatus nppiSqr\_32f\_C4R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image squared.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.25** `NppStatus nppiSqr_8u_AC4IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel in place image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.23.2.26** `NppStatus nppiSqr_8u_AC4RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image squared with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.23.2.27** `NppStatus nppiSqr_8u_C1IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.23.2.28** `NppStatus nppiSqr_8u_C1RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.29** `NppStatus nppiSqr_8u_C3IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.30** `NppStatus nppiSqr_8u_C3RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.23.2.31 NppStatus nppiSqr\_8u\_C4IRSfs (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 8-bit unsigned char channel in place image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.23.2.32 NppStatus nppiSqr\_8u\_C4RSfs (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 8-bit unsigned char channel image squared, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.24 Sqrt

Pixel by pixel square root of each pixel in an image.

### Functions

- **NppStatus nppiSqrt\_8u\_C1RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_8u\_C1IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_8u\_C3RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_8u\_C3IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_8u\_AC4RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_8u\_AC4IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Four 8-bit unsigned char channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_16u\_C1RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_16u\_C1IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiSqrt\_16u\_C3RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit unsigned short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- `NppStatus nppiSqrt_16u_C3IRSfs` (`Npp16u *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Three 16-bit unsigned short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16u_AC4RSfs` (`const Npp16u *pSrc`, `int nSrcStep`, `Npp16u *pDst`, `int nDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Four 16-bit unsigned short channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16u_AC4IRSfs` (`Npp16u *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Four 16-bit unsigned short channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_C1RSfs` (`const Npp16s *pSrc`, `int nSrcStep`, `Npp16s *pDst`, `int nDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*One 16-bit signed short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_C1IRSfs` (`Npp16s *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*One 16-bit signed short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_C3RSfs` (`const Npp16s *pSrc`, `int nSrcStep`, `Npp16s *pDst`, `int nDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Three 16-bit signed short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_C3IRSfs` (`Npp16s *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Three 16-bit signed short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_AC4RSfs` (`const Npp16s *pSrc`, `int nSrcStep`, `Npp16s *pDst`, `int nDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Four 16-bit signed short channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_16s_AC4IRSfs` (`Npp16s *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`, `int nScaleFactor`)

*Four 16-bit signed short channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- `NppStatus nppiSqrt_32f_C1R` (`const Npp32f *pSrc`, `int nSrcStep`, `Npp32f *pDst`, `int nDstStep`, `NppiSize oSizeROI`)

*One 32-bit floating point channel image square root.*
- `NppStatus nppiSqrt_32f_C1IR` (`Npp32f *pSrcDst`, `int nSrcDstStep`, `NppiSize oSizeROI`)

*One 32-bit floating point channel in place image square root.*

- **NppStatus nppiSqrt\_32f\_C3R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image square root.*
- **NppStatus nppiSqrt\_32f\_C3IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image square root.*
- **NppStatus nppiSqrt\_32f\_AC4R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image square root with unmodified alpha.*
- **NppStatus nppiSqrt\_32f\_AC4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image square root with unmodified alpha.*
- **NppStatus nppiSqrt\_32f\_C4R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel image square root.*
- **NppStatus nppiSqrt\_32f\_C4IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit floating point channel in place image square root.*

### 7.24.1 Detailed Description

Pixel by pixel square root of each pixel in an image.

### 7.24.2 Function Documentation

#### 7.24.2.1 **NppStatus nppiSqrt\_16s\_AC4IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

Four 16-bit signed short channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* **In-Place Image Pointer.**

*nSrcDstStep* **In-Place-Image Line Step.**

*oSizeROI* **Region-of-Interest (ROI).**

*nScaleFactor* **Integer Result Scaling.**

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.24.2.2 **NppStatus nppiSqrt\_16s\_AC4RSfs** (const Npp16s \* *pSrc*, int *nSrcStep*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

Four 16-bit signed short channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.3 **NppStatus nppiSqrt\_16s\_C1IRSfs** (Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 16-bit signed short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.4 **NppStatus nppiSqrt\_16s\_C1RSfs** (const Npp16s \* *pSrc*, int *nSrcStep*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*, int *nScaleFactor*)

One 16-bit signed short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.5 NppStatus nppiSqrt\_16s\_C3IRSfs (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.6 NppStatus nppiSqrt\_16s\_C3RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.7 NppStatus nppiSqrt\_16u\_AC4IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.8 NppStatus nppiSqrt\_16u\_AC4RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Four 16-bit unsigned short channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.9 NppStatus nppiSqrt\_16u\_C1IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.24.2.10 NppStatus nppiSqrt\_16u\_C1RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit unsigned short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.24.2.11 NppStatus nppiSqrt\_16u\_C3IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.24.2.12 NppStatus nppiSqrt\_16u\_C3RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.24.2.13 NppStatus nppiSqrt\_32f\_AC4IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel in place image square root with unmodified alpha.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.14 NppStatus nppiSqrt\_32f\_AC4R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit floating point channel image square root with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.15 NppStatus nppiSqrt\_32f\_C1IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image square root.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.16 NppStatus nppiSqrt\_32f\_C1R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image square root.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.17 NppStatus nppiSqrt\_32f\_C3IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image square root.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.18 NppStatus nppiSqrt\_32f\_C3R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image square root.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.19 NppStatus nppiSqrt\_32f\_C4IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 32-bit floating point channel in place image square root.

##### Parameters:

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.20 NppStatus nppiSqrt\_32f\_C4R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)

Four 32-bit floating point channel image square root.

##### Parameters:

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.21 NppStatus nppiSqrt\_8u\_AC4IRSfs (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Four 8-bit unsigned char channel in place image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.22 `NppStatus nppiSqrt_8u_AC4RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Four 8-bit unsigned char channel image square root with unmodified alpha, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.23 `NppStatus nppiSqrt_8u_C1IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.24.2.24 `NppStatus nppiSqrt_8u_C1RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.25 NppStatus nppiSqrt\_8u\_C3IRSfs (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 8-bit unsigned char channel in place image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.24.2.26 NppStatus nppiSqrt\_8u\_C3RSfs (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 8-bit unsigned char channel image square root, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.25 Ln

Pixel by pixel natural logarithm of each pixel in an image.

### Functions

- **NppStatus nppiLn\_8u\_C1RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 8-bit unsigned char channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_8u\_C1IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 8-bit unsigned char channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_8u\_C3RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 8-bit unsigned char channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_8u\_C3IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 8-bit unsigned char channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16u\_C1RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 16-bit unsigned short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16u\_C1IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 16-bit unsigned short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16u\_C3RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 16-bit unsigned short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16u\_C3IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*Three 16-bit unsigned short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16s\_C1RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)
 

*One 16-bit signed short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiLn\_16s\_C1IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit signed short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16s\_C3RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_16s\_C3IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiLn\_32f\_C1R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image natural logarithm.*
- **NppStatus nppiLn\_32f\_C1IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image natural logarithm.*
- **NppStatus nppiLn\_32f\_C3R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image natural logarithm.*
- **NppStatus nppiLn\_32f\_C3IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image natural logarithm.*

## 7.25.1 Detailed Description

Pixel by pixel natural logarithm of each pixel in an image.

## 7.25.2 Function Documentation

### 7.25.2.1 **NppStatus nppiLn\_16s\_C1IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

One 16-bit signed short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrcDst** In-Place Image Pointer.
- nSrcDstStep** In-Place-Image Line Step.
- oSizeROI** Region-of-Interest (ROI).
- nScaleFactor** Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes



**7.25.2.2 NppStatus nppiLn\_16s\_C1RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.3 NppStatus nppiLn\_16s\_C3IRSfs (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.4 NppStatus nppiLn\_16s\_C3RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.25.2.5 `NppStatus nppiLn_16u_C1IRSfs (Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.25.2.6 `NppStatus nppiLn_16u_C1RSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 16-bit unsigned short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.25.2.7 `NppStatus nppiLn_16u_C3IRSfs (Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.25.2.8 NppStatus nppiLn\_16u\_C3RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit unsigned short channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.9 NppStatus nppiLn\_32f\_C1IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel in place image natural logarithm.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.10 NppStatus nppiLn\_32f\_C1R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit floating point channel image natural logarithm.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.25.2.11 NppStatus nppiLn\_32f\_C3IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Three 32-bit floating point channel in place image natural logarithm.

#### Parameters:

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.25.2.12 NppStatus nppiLn\_32f\_C3R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)

Three 32-bit floating point channel image natural logarithm.

#### Parameters:

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.25.2.13 NppStatus nppiLn\_8u\_C1IRSfs (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

One 8-bit unsigned char channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.25.2.14** `NppStatus nppiLn_8u_C1RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.15** `NppStatus nppiLn_8u_C3IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.25.2.16** `NppStatus nppiLn_8u_C3RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image natural logarithm, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.26 Exp

Exponential value of each pixel in an image.

### Functions

- **NppStatus nppiExp\_8u\_C1RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_8u\_C1IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 8-bit unsigned char channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_8u\_C3RSfs** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_8u\_C3IRSfs** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 8-bit unsigned char channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16u\_C1RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16u\_C1IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit unsigned short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16u\_C3RSfs** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit unsigned short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16u\_C3IRSfs** (**Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit unsigned short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16s\_C1RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit signed short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*

- **NppStatus nppiExp\_16s\_C1IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*One 16-bit signed short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16s\_C3RSfs** (const **Npp16s** \*pSrc, int nSrcStep, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_16s\_C3IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)  
*Three 16-bit signed short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.*
- **NppStatus nppiExp\_32f\_C1R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel image exponential.*
- **NppStatus nppiExp\_32f\_C1IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit floating point channel in place image exponential.*
- **NppStatus nppiExp\_32f\_C3R** (const **Npp32f** \*pSrc, int nSrcStep, **Npp32f** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel image exponential.*
- **NppStatus nppiExp\_32f\_C3IR** (**Npp32f** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit floating point channel in place image exponential.*

## 7.26.1 Detailed Description

Exponential value of each pixel in an image.

## 7.26.2 Function Documentation

### 7.26.2.1 **NppStatus nppiExp\_16s\_C1IRSfs** (**Npp16s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI, int nScaleFactor)

One 16-bit signed short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrcDst** In-Place Image Pointer.
- nSrcDstStep** In-Place-Image Line Step.
- oSizeROI** Region-of-Interest (ROI).
- nScaleFactor** Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.26.2.2 **NppStatus nppiExp\_16s\_C1RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 16-bit signed short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.26.2.3 **NppStatus nppiExp\_16s\_C3IRSfs (Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.26.2.4 **NppStatus nppiExp\_16s\_C3RSfs (const Npp16s \* pSrc, int nSrcStep, Npp16s \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)**

Three 16-bit signed short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



### 7.26.2.5 NppStatus nppiExp\_16u\_C1IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit unsigned short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.26.2.6 NppStatus nppiExp\_16u\_C1RSfs (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)

One 16-bit unsigned short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.26.2.7 NppStatus nppiExp\_16u\_C3IRSfs (Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)

Three 16-bit unsigned short channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.26.2.8 `NppStatus nppiExp_16u_C3RSfs (const Npp16u * pSrc, int nSrcStep, Npp16u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 16-bit unsigned short channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- nScaleFactor* Integer Result Scaling.

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.26.2.9 `NppStatus nppiExp_32f_C1IR (Npp32f * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel in place image exponential.

#### Parameters:

- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.26.2.10 `NppStatus nppiExp_32f_C1R (const Npp32f * pSrc, int nSrcStep, Npp32f * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit floating point channel image exponential.

#### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.26.2.11 NppStatus nppiExp\_32f\_C3IR (Npp32f \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel in place image exponential.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.26.2.12 NppStatus nppiExp\_32f\_C3R (const Npp32f \* pSrc, int nSrcStep, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit floating point channel image exponential.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.26.2.13 NppStatus nppiExp\_8u\_C1IRSfs (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)**

One 8-bit unsigned char channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

*nScaleFactor* Integer Result Scaling.

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.26.2.14** `NppStatus nppiExp_8u_C1RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

One 8-bit unsigned char channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.26.2.15** `NppStatus nppiExp_8u_C3IRSfs (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel in place image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.26.2.16** `NppStatus nppiExp_8u_C3RSfs (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, int nScaleFactor)`

Three 8-bit unsigned char channel image exponential, scale by  $2^{(-nScaleFactor)}$ , then clamp to saturated value.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*nScaleFactor* Integer Result Scaling.

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.27 Logical Operations

### Modules

- [AndC](#)  
*Pixel by pixel logical and of an image with a constant.*
- [OrC](#)  
*Pixel by pixel logical or of an image with a constant.*
- [XorC](#)  
*Pixel by pixel logical exclusive or of an image with a constant.*
- [RShiftC](#)  
*Pixel by pixel right shift of an image by a constant value.*
- [LShiftC](#)  
*Pixel by pixel left shift of an image by a constant value.*
- [And](#)  
*Pixel by pixel logical and of images.*
- [Or](#)  
*Pixel by pixel logical or of images.*
- [Xor](#)  
*Pixel by pixel logical exclusive or of images.*
- [Not](#)  
*Pixel by pixel logical not of image.*

## 7.28 AndC

Pixel by pixel logical and of an image with a constant.

### Functions

- `NppStatus nppiAndC_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` nConstant, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image logical and with constant.*
- `NppStatus nppiAndC_8u_C1IR` (const `Npp8u` nConstant, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel in place image logical and with constant.*
- `NppStatus nppiAndC_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel image logical and with constant.*
- `NppStatus nppiAndC_8u_C3IR` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel in place image logical and with constant.*
- `NppStatus nppiAndC_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_8u_AC4IR` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[4], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image logical and with constant.*
- `NppStatus nppiAndC_8u_C4IR` (const `Npp8u` aConstants[4], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image logical and with constant.*
- `NppStatus nppiAndC_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` nConstant, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel image logical and with constant.*
- `NppStatus nppiAndC_16u_C1IR` (const `Npp16u` nConstant, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel in place image logical and with constant.*
- `NppStatus nppiAndC_16u_C3R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel image logical and with constant.*

- `NppStatus nppiAndC_16u_C3IR` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel in place image logical and with constant.*
- `NppStatus nppiAndC_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_16u_AC4IR` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_16u_C4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical and with constant.*
- `NppStatus nppiAndC_16u_C4IR` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical and with constant.*
- `NppStatus nppiAndC_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` nConstant, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel image logical and with constant.*
- `NppStatus nppiAndC_32s_C1IR` (const `Npp32s` nConstant, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel in place image logical and with constant.*
- `NppStatus nppiAndC_32s_C3R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel image logical and with constant.*
- `NppStatus nppiAndC_32s_C3IR` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel in place image logical and with constant.*
- `NppStatus nppiAndC_32s_AC4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_32s_AC4IR` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical and with constant with unmodified alpha.*
- `NppStatus nppiAndC_32s_C4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[4], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical and with constant.*
- `NppStatus nppiAndC_32s_C4IR` (const `Npp32s` aConstants[4], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical and with constant.*

## 7.28.1 Detailed Description

Pixel by pixel logical and of an image with a constant.

## 7.28.2 Function Documentation

### 7.28.2.1 `NppStatus nppiAndC_16u_AC4IR (const Npp16u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel in place image logical and with constant with unmodified alpha.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.28.2.2 `NppStatus nppiAndC_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image logical and with constant with unmodified alpha.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.28.2.3 `NppStatus nppiAndC_16u_C1IR (const Npp16u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image logical and with constant.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.



*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.4 NppStatus nppiAndC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.5 NppStatus nppiAndC\_16u\_C3IR (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image logical and with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.6 NppStatus nppiAndC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.7 NppStatus nppiAndC\_16u\_C4IR (const Npp16u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical and with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.8 NppStatus nppiAndC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.28.2.9 NppStatus nppiAndC\_32s\_AC4IR (const Npp32s aConstants[3], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 32-bit signed integer channel in place image logical and with constant with unmodified alpha.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.28.2.10 NppStatus nppiAndC\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)

Four 32-bit signed integer channel image logical and with constant with unmodified alpha.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

### 7.28.2.11 NppStatus nppiAndC\_32s\_C1IR (const Npp32s nConstant, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 32-bit signed integer channel in place image logical and with constant.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.12** `NppStatus nppiAndC_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.13** `NppStatus nppiAndC_32s_C3IR (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel in place image logical and with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.14** `NppStatus nppiAndC_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.15 NppStatus nppiAndC\_32s\_C4IR (const Npp32s aConstants[4], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical and with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.16 NppStatus nppiAndC\_32s\_C4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[4], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.17 NppStatus nppiAndC\_8u\_AC4IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical and with constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.28.2.18** `NppStatus nppiAndC_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical and with constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.28.2.19** `NppStatus nppiAndC_8u_C1IR (const Npp8u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image logical and with constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.28.2.20** `NppStatus nppiAndC_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image logical and with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.28.2.21 NppStatus nppiAndC\_8u\_C3IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image logical and with constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.28.2.22 NppStatus nppiAndC\_8u\_C3R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel image logical and with constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.28.2.23 NppStatus nppiAndC\_8u\_C4IR (const Npp8u aConstants[4], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical and with constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.28.2.24 NppStatus nppiAndC\_8u\_C4R (const Npp8u \* *pSrc1*, int *nSrc1Step*, const Npp8u *aConstants*[4], Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

Four 8-bit unsigned char channel image logical and with constant.

##### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

##### Returns:

Image Data Related Error Codes, ROI Related Error Codes



## 7.29 OrC

Pixel by pixel logical or of an image with a constant.

### Functions

- **NppStatus nppiOrC\_8u\_C1R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** nConstant, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image logical or with constant.*
- **NppStatus nppiOrC\_8u\_C1IR** (const **Npp8u** nConstant, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image logical or with constant.*
- **NppStatus nppiOrC\_8u\_C3R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image logical or with constant.*
- **NppStatus nppiOrC\_8u\_C3IR** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image logical or with constant.*
- **NppStatus nppiOrC\_8u\_AC4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical or with constant with unmodified alpha.*
- **NppStatus nppiOrC\_8u\_AC4IR** (const **Npp8u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical or with constant with unmodified alpha.*
- **NppStatus nppiOrC\_8u\_C4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** aConstants[4], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical or with constant.*
- **NppStatus nppiOrC\_8u\_C4IR** (const **Npp8u** aConstants[4], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical or with constant.*
- **NppStatus nppiOrC\_16u\_C1R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** nConstant, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image logical or with constant.*
- **NppStatus nppiOrC\_16u\_C1IR** (const **Npp16u** nConstant, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image logical or with constant.*
- **NppStatus nppiOrC\_16u\_C3R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel image logical or with constant.*

- `NppStatus nppiOrC_16u_C3IR` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel in place image logical or with constant.*
- `NppStatus nppiOrC_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical or with constant with unmodified alpha.*
- `NppStatus nppiOrC_16u_AC4IR` (const `Npp16u` aConstants[3], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical or with constant with unmodified alpha.*
- `NppStatus nppiOrC_16u_C4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[4], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical or with constant.*
- `NppStatus nppiOrC_16u_C4IR` (const `Npp16u` aConstants[4], `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical or with constant.*
- `NppStatus nppiOrC_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` nConstant, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel image logical or with constant.*
- `NppStatus nppiOrC_32s_C1IR` (const `Npp32s` nConstant, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel in place image logical or with constant.*
- `NppStatus nppiOrC_32s_C3R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel image logical or with constant.*
- `NppStatus nppiOrC_32s_C3IR` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel in place image logical or with constant.*
- `NppStatus nppiOrC_32s_AC4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[3], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical or with constant with unmodified alpha.*
- `NppStatus nppiOrC_32s_AC4IR` (const `Npp32s` aConstants[3], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical or with constant with unmodified alpha.*
- `NppStatus nppiOrC_32s_C4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` aConstants[4], `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical or with constant.*
- `NppStatus nppiOrC_32s_C4IR` (const `Npp32s` aConstants[4], `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical or with constant.*

## 7.29.1 Detailed Description

Pixel by pixel logical or of an image with a constant.

## 7.29.2 Function Documentation

### 7.29.2.1 `NppStatus nppiOrC_16u_AC4IR (const Npp16u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel in place image logical or with constant with unmodified alpha.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.29.2.2 `NppStatus nppiOrC_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image logical or with constant with unmodified alpha.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.29.2.3 `NppStatus nppiOrC_16u_C1IR (const Npp16u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image logical or with constant.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.4 NppStatus nppiOrC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.5 NppStatus nppiOrC\_16u\_C3IR (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.6 NppStatus nppiOrC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.7 NppStatus nppiOrC\_16u\_C4IR (const Npp16u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.8 NppStatus nppiOrC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.29.2.9 NppStatus nppiOrC\_32s\_AC4IR (const Npp32s aConstants[3], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 32-bit signed integer channel in place image logical or with constant with unmodified alpha.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.29.2.10 NppStatus nppiOrC\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)

Four 32-bit signed integer channel image logical or with constant with unmodified alpha.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.29.2.11 NppStatus nppiOrC\_32s\_C1IR (const Npp32s nConstant, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 32-bit signed integer channel in place image logical or with constant.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.12** `NppStatus nppiOrC_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.13** `NppStatus nppiOrC_32s_C3IR (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.14** `NppStatus nppiOrC_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.15 NppStatus nppiOrC\_32s\_C4IR (const Npp32s aConstants[4], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.16 NppStatus nppiOrC\_32s\_C4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[4], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.17 NppStatus nppiOrC\_8u\_AC4IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical or with constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.29.2.18 NppStatus nppiOrC\_8u\_AC4R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel image logical or with constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.19 NppStatus nppiOrC\_8u\_C1IR (const Npp8u nConstant, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel in place image logical or with constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.20 NppStatus nppiOrC\_8u\_C1R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.29.2.21 NppStatus nppiOrC\_8u\_C3IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.22 NppStatus nppiOrC\_8u\_C3R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.23 NppStatus nppiOrC\_8u\_C4IR (const Npp8u aConstants[4], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.29.2.24** `NppStatus nppiOrC_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.30 XorC

Pixel by pixel logical exclusive or of an image with a constant.

### Functions

- `NppStatus nppiXorC_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` nConstant, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image logical exclusive or with constant.*
- `NppStatus nppiXorC_8u_C1IR` (const `Npp8u` nConstant, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel in place image logical exclusive or with constant.*
- `NppStatus nppiXorC_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel image logical exclusive or with constant.*
- `NppStatus nppiXorC_8u_C3IR` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel in place image logical exclusive or with constant.*
- `NppStatus nppiXorC_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image logical exclusive or with constant with unmodified alpha.*
- `NppStatus nppiXorC_8u_AC4IR` (const `Npp8u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image logical exclusive or with constant with unmodified alpha.*
- `NppStatus nppiXorC_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp8u` aConstants[4], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image logical exclusive or with constant.*
- `NppStatus nppiXorC_8u_C4IR` (const `Npp8u` aConstants[4], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image logical exclusive or with constant.*
- `NppStatus nppiXorC_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` nConstant, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel image logical exclusive or with constant.*
- `NppStatus nppiXorC_16u_C1IR` (const `Npp16u` nConstant, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 16-bit unsigned short channel in place image logical exclusive or with constant.*
- `NppStatus nppiXorC_16u_C3R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` aConstants[3], `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel image logical exclusive or with constant.*

- **NppStatus nppiXorC\_16u\_C3IR** (const **Npp16u** aConstants[3], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel in place image logical exclusive or with constant.*
- **NppStatus nppiXorC\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image logical exclusive or with constant with unmodified alpha.*
- **NppStatus nppiXorC\_16u\_AC4IR** (const **Npp16u** aConstants[3], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image logical exclusive or with constant with unmodified alpha.*
- **NppStatus nppiXorC\_16u\_C4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** aConstants[4], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image logical exclusive or with constant.*
- **NppStatus nppiXorC\_16u\_C4IR** (const **Npp16u** aConstants[4], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_C1R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** nConstant, **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit signed integer channel image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_C1IR** (const **Npp32s** nConstant, **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit signed integer channel in place image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_C3R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** aConstants[3], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit signed integer channel image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_C3IR** (const **Npp32s** aConstants[3], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit signed integer channel in place image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_AC4R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** aConstants[3], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel image logical exclusive or with constant with unmodified alpha.*
- **NppStatus nppiXorC\_32s\_AC4IR** (const **Npp32s** aConstants[3], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel in place image logical exclusive or with constant with unmodified alpha.*
- **NppStatus nppiXorC\_32s\_C4R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** aConstants[4], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel image logical exclusive or with constant.*
- **NppStatus nppiXorC\_32s\_C4IR** (const **Npp32s** aConstants[4], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel in place image logical exclusive or with constant.*

### 7.30.1 Detailed Description

Pixel by pixel logical exclusive or of an image with a constant.

### 7.30.2 Function Documentation

#### 7.30.2.1 `NppStatus nppiXorC_16u_AC4IR` (const `Npp16u aConstants[3]`, `Npp16u * pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

Four 16-bit unsigned short channel in place image logical exclusive or with constant with unmodified alpha.

#### Parameters:

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.30.2.2 `NppStatus nppiXorC_16u_AC4R` (const `Npp16u * pSrc1`, int `nSrc1Step`, const `Npp16u aConstants[3]`, `Npp16u * pDst`, int `nDstStep`, `NppiSize oSizeROI`)

Four 16-bit unsigned short channel image logical exclusive or with constant with unmodified alpha.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.30.2.3 `NppStatus nppiXorC_16u_C1IR` (const `Npp16u nConstant`, `Npp16u * pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)

One 16-bit unsigned short channel in place image logical exclusive or with constant.

#### Parameters:

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.4 NppStatus nppiXorC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.5 NppStatus nppiXorC\_16u\_C3IR (const Npp16u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image logical exclusive or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.6 NppStatus nppiXorC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.7 NppStatus nppiXorC\_16u\_C4IR (const Npp16u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical exclusive or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.8 NppStatus nppiXorC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u aConstants[4], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



### 7.30.2.9 NppStatus nppiXorC\_32s\_AC4IR (const Npp32s *aConstants*[3], Npp32s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

Four 32-bit signed integer channel in place image logical exclusive or with constant with unmodified alpha.

#### Parameters:

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.30.2.10 NppStatus nppiXorC\_32s\_AC4R (const Npp32s \* *pSrc1*, int *nSrc1Step*, const Npp32s *aConstants*[3], Npp32s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

Four 32-bit signed integer channel image logical exclusive or with constant with unmodified alpha.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.30.2.11 NppStatus nppiXorC\_32s\_C1IR (const Npp32s *nConstant*, Npp32s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

One 32-bit signed integer channel in place image logical exclusive or with constant.

#### Parameters:

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.12** `NppStatus nppiXorC_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.13** `NppStatus nppiXorC_32s_C3IR (const Npp32s aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel in place image logical exclusive or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.14** `NppStatus nppiXorC_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.15 NppStatus nppiXorC\_32s\_C4IR (const Npp32s aConstants[4], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical exclusive or with constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.16 NppStatus nppiXorC\_32s\_C4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s aConstants[4], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.17 NppStatus nppiXorC\_8u\_AC4IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical exclusive or with constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.30.2.18** `NppStatus nppiXorC_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical exclusive or with constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.19** `NppStatus nppiXorC_8u_C1IR (const Npp8u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image logical exclusive or with constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.20** `NppStatus nppiXorC_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image logical exclusive or with constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.21 NppStatus nppiXorC\_8u\_C3IR (const Npp8u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image logical exclusive or with constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* [In-Place Image Pointer](#).
- nSrcDstStep* [In-Place-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.22 NppStatus nppiXorC\_8u\_C3R (const Npp8u \* pSrcI, int nSrcIStep, const Npp8u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel image logical exclusive or with constant.

**Parameters:**

- pSrcI* [Source-Image Pointer](#).
- nSrcIStep* [Source-Image Line Step](#).
- aConstants* fixed size array of constant values, one per channel.
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.30.2.23 NppStatus nppiXorC\_8u\_C4IR (const Npp8u aConstants[4], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical exclusive or with constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* [In-Place Image Pointer](#).
- nSrcDstStep* [In-Place-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.30.2.24 NppStatus nppiXorC\_8u\_C4R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u aConstants[4], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel image logical exclusive or with constant.

#### Parameters:

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

## 7.31 RShiftC

Pixel by pixel right shift of an image by a constant value.

### Functions

- `NppStatus nppiRShiftC_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp32u` nConstant, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel image right shift by constant.*
- `NppStatus nppiRShiftC_8u_C1IR` (const `Npp32u` nConstant, `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit unsigned char channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp32u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel image right shift by constant.*
- `NppStatus nppiRShiftC_8u_C3IR` (const `Npp32u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 8-bit unsigned char channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp32u` aConstants[3], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image right shift by constant with unmodified alpha.*
- `NppStatus nppiRShiftC_8u_AC4IR` (const `Npp32u` aConstants[3], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image right shift by constant with unmodified alpha.*
- `NppStatus nppiRShiftC_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, const `Npp32u` aConstants[4], `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel image right shift by constant.*
- `NppStatus nppiRShiftC_8u_C4IR` (const `Npp32u` aConstants[4], `Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 8-bit unsigned char channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_8s_C1R` (const `Npp8s` \*pSrc1, int nSrc1Step, const `Npp32u` nConstant, `Npp8s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 8-bit signed char channel image right shift by constant.*
- `NppStatus nppiRShiftC_8s_C1IR` (const `Npp32u` nConstant, `Npp8s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 8-bit signed char channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_8s_C3R` (const `Npp8s` \*pSrc1, int nSrc1Step, const `Npp32u` aConstants[3], `Npp8s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 8-bit signed char channel image right shift by constant.*

- [NppStatus nppiRShiftC\\_8s\\_C3IR](#) (const [Npp32u](#) aConstants[3], [Npp8s](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Three 8-bit signed char channel in place image right shift by constant.*
- [NppStatus nppiRShiftC\\_8s\\_AC4R](#) (const [Npp8s](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) aConstants[3], [Npp8s](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit signed char channel image right shift by constant with unmodified alpha.*
- [NppStatus nppiRShiftC\\_8s\\_AC4IR](#) (const [Npp32u](#) aConstants[3], [Npp8s](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit signed char channel in place image right shift by constant with unmodified alpha.*
- [NppStatus nppiRShiftC\\_8s\\_C4R](#) (const [Npp8s](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) aConstants[4], [Npp8s](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit signed char channel image right shift by constant.*
- [NppStatus nppiRShiftC\\_8s\\_C4IR](#) (const [Npp32u](#) aConstants[4], [Npp8s](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit signed char channel in place image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_C1R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) nConstant, [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*One 16-bit unsigned short channel image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_C1IR](#) (const [Npp32u](#) nConstant, [Npp16u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*One 16-bit unsigned short channel in place image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_C3R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) aConstants[3], [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Three 16-bit unsigned short channel image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_C3IR](#) (const [Npp32u](#) aConstants[3], [Npp16u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Three 16-bit unsigned short channel in place image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_AC4R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) aConstants[3], [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 16-bit unsigned short channel image right shift by constant with unmodified alpha.*
- [NppStatus nppiRShiftC\\_16u\\_AC4IR](#) (const [Npp32u](#) aConstants[3], [Npp16u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 16-bit unsigned short channel in place image right shift by constant with unmodified alpha.*
- [NppStatus nppiRShiftC\\_16u\\_C4R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, const [Npp32u](#) aConstants[4], [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 16-bit unsigned short channel image right shift by constant.*
- [NppStatus nppiRShiftC\\_16u\\_C4IR](#) (const [Npp32u](#) aConstants[4], [Npp16u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 16-bit unsigned short channel in place image right shift by constant.*



- `NppStatus nppiRShiftC_16s_C1R` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp32u nConstant`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 16-bit signed short channel image right shift by constant.*
- `NppStatus nppiRShiftC_16s_C1IR` (const `Npp32u nConstant`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 16-bit signed short channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_16s_C3R` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp32u aConstants[3]`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 16-bit signed short channel image right shift by constant.*
- `NppStatus nppiRShiftC_16s_C3IR` (const `Npp32u aConstants[3]`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 16-bit signed short channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_16s_AC4R` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp32u aConstants[3]`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit signed short channel image right shift by constant with unmodified alpha.*
- `NppStatus nppiRShiftC_16s_AC4IR` (const `Npp32u aConstants[3]`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit signed short channel in place image right shift by constant with unmodified alpha.*
- `NppStatus nppiRShiftC_16s_C4R` (const `Npp16s *pSrc1`, int `nSrc1Step`, const `Npp32u aConstants[4]`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit signed short channel image right shift by constant.*
- `NppStatus nppiRShiftC_16s_C4IR` (const `Npp32u aConstants[4]`, `Npp16s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit signed short channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_32s_C1R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32u nConstant`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit signed integer channel image right shift by constant.*
- `NppStatus nppiRShiftC_32s_C1IR` (const `Npp32u nConstant`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit signed integer channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_32s_C3R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32u aConstants[3]`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit signed integer channel image right shift by constant.*
- `NppStatus nppiRShiftC_32s_C3IR` (const `Npp32u aConstants[3]`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit signed integer channel in place image right shift by constant.*
- `NppStatus nppiRShiftC_32s_AC4R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32u aConstants[3]`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)

Four 32-bit signed integer channel image right shift by constant with unmodified alpha.

- `NppStatus nppiRShiftC_32s_AC4IR` (const `Npp32u` `aConstants[3]`, `Npp32s` `*pSrcDst`, int `nSrcDstStep`, `NppiSize` `oSizeROI`)

Four 32-bit signed integer channel in place image right shift by constant with unmodified alpha.

- `NppStatus nppiRShiftC_32s_C4R` (const `Npp32s` `*pSrc1`, int `nSrc1Step`, const `Npp32u` `aConstants[4]`, `Npp32s` `*pDst`, int `nDstStep`, `NppiSize` `oSizeROI`)

Four 32-bit signed integer channel image right shift by constant.

- `NppStatus nppiRShiftC_32s_C4IR` (const `Npp32u` `aConstants[4]`, `Npp32s` `*pSrcDst`, int `nSrcDstStep`, `NppiSize` `oSizeROI`)

Four 32-bit signed integer channel in place image right shift by constant.

### 7.31.1 Detailed Description

Pixel by pixel right shift of an image by a constant value.

### 7.31.2 Function Documentation

#### 7.31.2.1 `NppStatus nppiRShiftC_16s_AC4IR` (const `Npp32u` `aConstants[3]`, `Npp16s` `*pSrcDst`, int `nSrcDstStep`, `NppiSize` `oSizeROI`)

Four 16-bit signed short channel in place image right shift by constant with unmodified alpha.

#### Parameters:

`aConstants` fixed size array of constant values, one per channel.

`pSrcDst` In-Place Image Pointer.

`nSrcDstStep` In-Place-Image Line Step.

`oSizeROI` Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.31.2.2 `NppStatus nppiRShiftC_16s_AC4R` (const `Npp16s` `*pSrc1`, int `nSrc1Step`, const `Npp32u` `aConstants[3]`, `Npp16s` `*pDst`, int `nDstStep`, `NppiSize` `oSizeROI`)

Four 16-bit signed short channel image right shift by constant with unmodified alpha.

#### Parameters:

`pSrc1` Source-Image Pointer.

`nSrc1Step` Source-Image Line Step.

`aConstants` fixed size array of constant values, one per channel.

`pDst` Destination-Image Pointer.

`nDstStep` Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.3 NppStatus nppiRShiftC\_16s\_C1IR (const Npp32u *nConstant*, Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

One 16-bit signed short channel in place image right shift by constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.4 NppStatus nppiRShiftC\_16s\_C1R (const Npp16s \* *pSrc1*, int *nSrc1Step*, const Npp32u *nConstant*, Npp16s \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)**

One 16-bit signed short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.5 NppStatus nppiRShiftC\_16s\_C3IR (const Npp32u *aConstants*[3], Npp16s \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)**

Three 16-bit signed short channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.6 NppStatus nppiRShiftC\_16s\_C3R (const Npp16s \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit signed short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.7 NppStatus nppiRShiftC\_16s\_C4IR (const Npp32u aConstants[4], Npp16s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit signed short channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.8 NppStatus nppiRShiftC\_16s\_C4R (const Npp16s \* pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp16s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit signed short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.9 NppStatus nppiRShiftC\_16u\_AC4IR (const Npp32u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image right shift by constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.10 NppStatus nppiRShiftC\_16u\_AC4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image right shift by constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.11** `NppStatus nppiRShiftC_16u_C1IR (const Npp32u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image right shift by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.12** `NppStatus nppiRShiftC_16u_C1R (const Npp16u * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.13** `NppStatus nppiRShiftC_16u_C3IR (const Npp32u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 16-bit unsigned short channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.14 NppStatus nppiRShiftC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.15 NppStatus nppiRShiftC\_16u\_C4IR (const Npp32u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.16 NppStatus nppiRShiftC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.17** `NppStatus nppiRShiftC_32s_AC4IR (const Npp32u aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel in place image right shift by constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.18** `NppStatus nppiRShiftC_32s_AC4R (const Npp32s * pSrcI, int nSrcIStep, const Npp32u aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel image right shift by constant with unmodified alpha.

**Parameters:**

*pSrcI* Source-Image Pointer.  
*nSrcIStep* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.19** `NppStatus nppiRShiftC_32s_C1IR (const Npp32u nConstant, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel in place image right shift by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.31.2.20** `NppStatus nppiRShiftC_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.21** `NppStatus nppiRShiftC_32s_C3IR (const Npp32u aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.22** `NppStatus nppiRShiftC_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.23** `NppStatus nppiRShiftC_32s_C4IR (const Npp32u aConstants[4], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.24** `NppStatus nppiRShiftC_32s_C4R (const Npp32s * pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.25** `NppStatus nppiRShiftC_8s_AC4IR (const Npp32u aConstants[3], Npp8s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit signed char channel in place image right shift by constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.26** `NppStatus nppiRShiftC_8s_AC4R (const Npp8s * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp8s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit signed char channel image right shift by constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.27** `NppStatus nppiRShiftC_8s_C1IR (const Npp32u nConstant, Npp8s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit signed char channel in place image right shift by constant.

**Parameters:**

*nConstant* Constant.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.28** `NppStatus nppiRShiftC_8s_C1R (const Npp8s * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp8s * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit signed char channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.31.2.29** `NppStatus nppiRShiftC_8s_C3IR (const Npp32u aConstants[3], Npp8s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 8-bit signed char channel in place image right shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.30** `NppStatus nppiRShiftC_8s_C3R (const Npp8s * pSrcI, int nSrcIStep, const Npp32u aConstants[3], Npp8s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit signed char channel image right shift by constant.

**Parameters:**

- pSrcI* Source-Image Pointer.
- nSrcIStep* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.31** `NppStatus nppiRShiftC_8s_C4IR (const Npp32u aConstants[4], Npp8s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit signed char channel in place image right shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.32** `NppStatus nppiRShiftC_8s_C4R (const Npp8s * pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp8s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit signed char channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.33** `NppStatus nppiRShiftC_8u_AC4IR (const Npp32u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image right shift by constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.34** `NppStatus nppiRShiftC_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image right shift by constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.35** `NppStatus nppiRShiftC_8u_C1IR (const Npp32u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image right shift by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.36** `NppStatus nppiRShiftC_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nConstant* Constant.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.37** `NppStatus nppiRShiftC_8u_C3IR (const Npp32u aConstants[3], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.38** `NppStatus nppiRShiftC_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.39** `NppStatus nppiRShiftC_8u_C4IR (const Npp32u aConstants[4], Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image right shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.31.2.40** `NppStatus nppiRShiftC_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image right shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.32 LShiftC

Pixel by pixel left shift of an image by a constant value.

### Functions

- **NppStatus nppiLShiftC\_8u\_C1R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp32u** nConstant, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image left shift by constant.*
- **NppStatus nppiLShiftC\_8u\_C1IR** (const **Npp32u** nConstant, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image left shift by constant.*
- **NppStatus nppiLShiftC\_8u\_C3R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image left shift by constant.*
- **NppStatus nppiLShiftC\_8u\_C3IR** (const **Npp32u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image left shift by constant.*
- **NppStatus nppiLShiftC\_8u\_AC4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image left shift by constant with unmodified alpha.*
- **NppStatus nppiLShiftC\_8u\_AC4IR** (const **Npp32u** aConstants[3], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image left shift by constant with unmodified alpha.*
- **NppStatus nppiLShiftC\_8u\_C4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[4], **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image left shift by constant.*
- **NppStatus nppiLShiftC\_8u\_C4IR** (const **Npp32u** aConstants[4], **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image left shift by constant.*
- **NppStatus nppiLShiftC\_16u\_C1R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp32u** nConstant, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image left shift by constant.*
- **NppStatus nppiLShiftC\_16u\_C1IR** (const **Npp32u** nConstant, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image left shift by constant.*
- **NppStatus nppiLShiftC\_16u\_C3R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel image left shift by constant.*



- **NppStatus** **nppiLShiftC\_16u\_C3IR** (const **Npp32u** aConstants[3], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel in place image left shift by constant.*
- **NppStatus** **nppiLShiftC\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image left shift by constant with unmodified alpha.*
- **NppStatus** **nppiLShiftC\_16u\_AC4IR** (const **Npp32u** aConstants[3], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image left shift by constant with unmodified alpha.*
- **NppStatus** **nppiLShiftC\_16u\_C4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[4], **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image left shift by constant.*
- **NppStatus** **nppiLShiftC\_16u\_C4IR** (const **Npp32u** aConstants[4], **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_C1R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32u** nConstant, **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 32-bit signed integer channel image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_C1IR** (const **Npp32u** nConstant, **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 32-bit signed integer channel in place image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_C3R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 32-bit signed integer channel image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_C3IR** (const **Npp32u** aConstants[3], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 32-bit signed integer channel in place image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_AC4R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[3], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel image left shift by constant with unmodified alpha.*
- **NppStatus** **nppiLShiftC\_32s\_AC4IR** (const **Npp32u** aConstants[3], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel in place image left shift by constant with unmodified alpha.*
- **NppStatus** **nppiLShiftC\_32s\_C4R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32u** aConstants[4], **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel image left shift by constant.*
- **NppStatus** **nppiLShiftC\_32s\_C4IR** (const **Npp32u** aConstants[4], **Npp32s** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 32-bit signed integer channel in place image left shift by constant.*

### 7.32.1 Detailed Description

Pixel by pixel left shift of an image by a constant value.

### 7.32.2 Function Documentation

#### 7.32.2.1 `NppStatus nppiLShiftC_16u_AC4IR (const Npp32u aConstants[3], Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel in place image left shift by constant with unmodified alpha.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.32.2.2 `NppStatus nppiLShiftC_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image left shift by constant with unmodified alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.32.2.3 `NppStatus nppiLShiftC_16u_C1IR (const Npp32u nConstant, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image left shift by constant.

**Parameters:**

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.4 NppStatus nppiLShiftC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u nConstant, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image left shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nConstant* Constant

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.5 NppStatus nppiLShiftC\_16u\_C3IR (const Npp32u aConstants[3], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image left shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.6 NppStatus nppiLShiftC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image left shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.7 NppStatus nppiLShiftC\_16u\_C4IR (const Npp32u aConstants[4], Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image left shift by constant.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.8 NppStatus nppiLShiftC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image left shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.9 NppStatus nppiLShiftC\_32s\_AC4IR (const Npp32u aConstants[3], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image left shift by constant with unmodified alpha.

**Parameters:**

*aConstants* fixed size array of constant values, one per channel.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.10 NppStatus nppiLShiftC\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image left shift by constant with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*aConstants* fixed size array of constant values, one per channel.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.11 NppStatus nppiLShiftC\_32s\_C1IR (const Npp32u nConstant, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel in place image left shift by constant.

**Parameters:**

*nConstant* Constant.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.12** `NppStatus nppiLShiftC_32s_C1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

One 32-bit signed integer channel image left shift by constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.13** `NppStatus nppiLShiftC_32s_C3IR (const Npp32u aConstants[3], Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel in place image left shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.14** `NppStatus nppiLShiftC_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image left shift by constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.15 NppStatus nppiLShiftC\_32s\_C4IR (const Npp32u aConstants[4], Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image left shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.16 NppStatus nppiLShiftC\_32s\_C4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image left shift by constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.17 NppStatus nppiLShiftC\_8u\_AC4IR (const Npp32u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image left shift by constant with unmodified alpha.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.18** `NppStatus nppiLShiftC_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image left shift by constant with unmodified alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.19** `NppStatus nppiLShiftC_8u_C1IR (const Npp32u nConstant, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image left shift by constant.

**Parameters:**

- nConstant* Constant.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.32.2.20** `NppStatus nppiLShiftC_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u nConstant, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image left shift by constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nConstant* Constant.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.32.2.21 NppStatus nppiLShiftC\_8u\_C3IR (const Npp32u aConstants[3], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image left shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.22 NppStatus nppiLShiftC\_8u\_C3R (const Npp8u \* pSrc1, int nSrc1Step, const Npp32u aConstants[3], Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel image left shift by constant.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- aConstants* fixed size array of constant values, one per channel.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.23 NppStatus nppiLShiftC\_8u\_C4IR (const Npp32u aConstants[4], Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image left shift by constant.

**Parameters:**

- aConstants* fixed size array of constant values, one per channel.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.32.2.24** `NppStatus nppiLShiftC_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp32u aConstants[4], Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image left shift by constant.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*aConstants* fixed size array of constant values, one per channel.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.33 And

Pixel by pixel logical and of images.

### Functions

- **NppStatus** `nppiAnd_8u_C1R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image logical and.*
- **NppStatus** `nppiAnd_8u_C1IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image logical and.*
- **NppStatus** `nppiAnd_8u_C3R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image logical and.*
- **NppStatus** `nppiAnd_8u_C3IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image logical and.*
- **NppStatus** `nppiAnd_8u_AC4R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical and with unmodified alpha.*
- **NppStatus** `nppiAnd_8u_AC4IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical and with unmodified alpha.*
- **NppStatus** `nppiAnd_8u_C4R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical and.*
- **NppStatus** `nppiAnd_8u_C4IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical and.*
- **NppStatus** `nppiAnd_16u_C1R` (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image logical and.*
- **NppStatus** `nppiAnd_16u_C1IR` (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image logical and.*
- **NppStatus** `nppiAnd_16u_C3R` (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel image logical and.*

- `NppStatus nppiAnd_16u_C3IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel in place image logical and.*
- `NppStatus nppiAnd_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical and with unmodified alpha.*
- `NppStatus nppiAnd_16u_AC4IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical and with unmodified alpha.*
- `NppStatus nppiAnd_16u_C4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical and.*
- `NppStatus nppiAnd_16u_C4IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical and.*
- `NppStatus nppiAnd_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel image logical and.*
- `NppStatus nppiAnd_32s_C1IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel in place image logical and.*
- `NppStatus nppiAnd_32s_C3R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel image logical and.*
- `NppStatus nppiAnd_32s_C3IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel in place image logical and.*
- `NppStatus nppiAnd_32s_AC4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical and with unmodified alpha.*
- `NppStatus nppiAnd_32s_AC4IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical and with unmodified alpha.*
- `NppStatus nppiAnd_32s_C4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical and.*
- `NppStatus nppiAnd_32s_C4IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical and.*

### 7.33.1 Detailed Description

Pixel by pixel logical and of images.

### 7.33.2 Function Documentation

#### 7.33.2.1 `NppStatus nppiAnd_16u_AC4IR (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel in place image logical and with unmodified alpha.

##### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.33.2.2 `NppStatus nppiAnd_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image logical and with unmodified alpha.

##### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.33.2.3 `NppStatus nppiAnd_16u_C1IR (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image logical and.

##### Parameters:

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.33.2.4 NppStatus nppiAnd\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)

One 16-bit unsigned short channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.33.2.5 NppStatus nppiAnd\_16u\_C3IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Three 16-bit unsigned short channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.6 NppStatus nppiAnd\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.7 NppStatus nppiAnd\_16u\_C4IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.8 NppStatus nppiAnd\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.9 NppStatus nppiAnd\_32s\_AC4IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical and with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.10 NppStatus nppiAnd\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical and with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.33.2.11 NppStatus nppiAnd\_32s\_C1IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.12 NppStatus nppiAnd\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.13 NppStatus nppiAnd\_32s\_C3IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit signed integer channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.14** `NppStatus nppiAnd_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.15** `NppStatus nppiAnd_32s_C4IR (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.16** `NppStatus nppiAnd_32s_C4R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.17** `NppStatus nppiAnd_8u_AC4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical and with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.33.2.18** `NppStatus nppiAnd_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical and with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.33.2.19 `NppStatus nppiAnd_8u_C1IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image logical and.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.33.2.20 `NppStatus nppiAnd_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image logical and.

#### Parameters:

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.33.2.21 `NppStatus nppiAnd_8u_C3IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel in place image logical and.

#### Parameters:

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.22** `NppStatus nppiAnd_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.23** `NppStatus nppiAnd_8u_C4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical and.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.33.2.24** `NppStatus nppiAnd_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical and.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.34 Or

Pixel by pixel logical or of images.

### Functions

- **NppStatus nppiOr\_8u\_C1R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image logical or.*
- **NppStatus nppiOr\_8u\_C1IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image logical or.*
- **NppStatus nppiOr\_8u\_C3R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image logical or.*
- **NppStatus nppiOr\_8u\_C3IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image logical or.*
- **NppStatus nppiOr\_8u\_AC4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical or with unmodified alpha.*
- **NppStatus nppiOr\_8u\_AC4IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical or with unmodified alpha.*
- **NppStatus nppiOr\_8u\_C4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical or.*
- **NppStatus nppiOr\_8u\_C4IR** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical or.*
- **NppStatus nppiOr\_16u\_C1R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image logical or.*
- **NppStatus nppiOr\_16u\_C1IR** (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image logical or.*
- **NppStatus nppiOr\_16u\_C3R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel image logical or.*

- `NppStatus nppiOr_16u_C3IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 16-bit unsigned short channel in place image logical or.*
- `NppStatus nppiOr_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical or with unmodified alpha.*
- `NppStatus nppiOr_16u_AC4IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical or with unmodified alpha.*
- `NppStatus nppiOr_16u_C4R` (const `Npp16u` \*pSrc1, int nSrc1Step, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel image logical or.*
- `NppStatus nppiOr_16u_C4IR` (const `Npp16u` \*pSrc, int nSrcStep, `Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 16-bit unsigned short channel in place image logical or.*
- `NppStatus nppiOr_32s_C1R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel image logical or.*
- `NppStatus nppiOr_32s_C1IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*One 32-bit signed integer channel in place image logical or.*
- `NppStatus nppiOr_32s_C3R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel image logical or.*
- `NppStatus nppiOr_32s_C3IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Three 32-bit signed integer channel in place image logical or.*
- `NppStatus nppiOr_32s_AC4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical or with unmodified alpha.*
- `NppStatus nppiOr_32s_AC4IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical or with unmodified alpha.*
- `NppStatus nppiOr_32s_C4R` (const `Npp32s` \*pSrc1, int nSrc1Step, const `Npp32s` \*pSrc2, int nSrc2Step, `Npp32s` \*pDst, int nDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel image logical or.*
- `NppStatus nppiOr_32s_C4IR` (const `Npp32s` \*pSrc, int nSrcStep, `Npp32s` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)  
*Four 32-bit signed integer channel in place image logical or.*



### 7.34.1 Detailed Description

Pixel by pixel logical or of images.

### 7.34.2 Function Documentation

#### 7.34.2.1 NppStatus nppiOr\_16u\_AC4IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 16-bit unsigned short channel in place image logical or with unmodified alpha.

##### Parameters:

- pSrc* Source-Image Pointer.
- nSrcStep* Source-Image Line Step.
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.34.2.2 NppStatus nppiOr\_16u\_AC4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)

Four 16-bit unsigned short channel image logical or with unmodified alpha.

##### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

##### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.34.2.3 NppStatus nppiOr\_16u\_C1IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

One 16-bit unsigned short channel in place image logical or.

##### Parameters:

- pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.34.2.4 NppStatus nppiOr\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)

One 16-bit unsigned short channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.34.2.5 NppStatus nppiOr\_16u\_C3IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Three 16-bit unsigned short channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.6 NppStatus nppiOr\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.7 NppStatus nppiOr\_16u\_C4IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.8 NppStatus nppiOr\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.9 NppStatus nppiOr\_32s\_AC4IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical or with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.10 NppStatus nppiOr\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical or with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.11 NppStatus nppiOr\_32s\_C1IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.12 NppStatus nppiOr\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.13 NppStatus nppiOr\_32s\_C3IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit signed integer channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.14 NppStatus nppiOr\_32s\_C3R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 32-bit signed integer channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.15 NppStatus nppiOr\_32s\_C4IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.16 NppStatus nppiOr\_32s\_C4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.17** `NppStatus nppiOr_8u_AC4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical or with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.18** `NppStatus nppiOr_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical or with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.34.2.19** `NppStatus nppiOr_8u_C1IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.20** `NppStatus nppiOr_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.21** `NppStatus nppiOr_8u_C3IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.34.2.22** `NppStatus nppiOr_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.23** `NppStatus nppiOr_8u_C4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.34.2.24** `NppStatus nppiOr_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.35 Xor

Pixel by pixel logical exclusive or of images.

### Functions

- **NppStatus** `nppiXor_8u_C1R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image logical exclusive or.*
- **NppStatus** `nppiXor_8u_C1IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image logical exclusive or.*
- **NppStatus** `nppiXor_8u_C3R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image logical exclusive or.*
- **NppStatus** `nppiXor_8u_C3IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image logical exclusive or.*
- **NppStatus** `nppiXor_8u_AC4R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical exclusive or with unmodified alpha.*
- **NppStatus** `nppiXor_8u_AC4IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical exclusive or with unmodified alpha.*
- **NppStatus** `nppiXor_8u_C4R` (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical exclusive or.*
- **NppStatus** `nppiXor_8u_C4IR` (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical exclusive or.*
- **NppStatus** `nppiXor_16u_C1R` (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel image logical exclusive or.*
- **NppStatus** `nppiXor_16u_C1IR` (const **Npp16u** \*pSrc, int nSrcStep, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 16-bit unsigned short channel in place image logical exclusive or.*
- **NppStatus** `nppiXor_16u_C3R` (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel image logical exclusive or.*

- `NppStatus nppiXor_16u_C3IR` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 16-bit unsigned short channel in place image logical exclusive or.*
- `NppStatus nppiXor_16u_AC4R` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u *pSrc2`, int `nSrc2Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel image logical exclusive or with unmodified alpha.*
- `NppStatus nppiXor_16u_AC4IR` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel in place image logical exclusive or with unmodified alpha.*
- `NppStatus nppiXor_16u_C4R` (const `Npp16u *pSrc1`, int `nSrc1Step`, const `Npp16u *pSrc2`, int `nSrc2Step`, `Npp16u *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel image logical exclusive or.*
- `NppStatus nppiXor_16u_C4IR` (const `Npp16u *pSrc`, int `nSrcStep`, `Npp16u *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 16-bit unsigned short channel in place image logical exclusive or.*
- `NppStatus nppiXor_32s_C1R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s *pSrc2`, int `nSrc2Step`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*One 32-bit signed integer channel image logical exclusive or.*
- `NppStatus nppiXor_32s_C1IR` (const `Npp32s *pSrc`, int `nSrcStep`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*One 32-bit signed integer channel in place image logical exclusive or.*
- `NppStatus nppiXor_32s_C3R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s *pSrc2`, int `nSrc2Step`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit signed integer channel image logical exclusive or.*
- `NppStatus nppiXor_32s_C3IR` (const `Npp32s *pSrc`, int `nSrcStep`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Three 32-bit signed integer channel in place image logical exclusive or.*
- `NppStatus nppiXor_32s_AC4R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s *pSrc2`, int `nSrc2Step`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit signed integer channel image logical exclusive or with unmodified alpha.*
- `NppStatus nppiXor_32s_AC4IR` (const `Npp32s *pSrc`, int `nSrcStep`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit signed integer channel in place image logical exclusive or with unmodified alpha.*
- `NppStatus nppiXor_32s_C4R` (const `Npp32s *pSrc1`, int `nSrc1Step`, const `Npp32s *pSrc2`, int `nSrc2Step`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit signed integer channel image logical exclusive or.*
- `NppStatus nppiXor_32s_C4IR` (const `Npp32s *pSrc`, int `nSrcStep`, `Npp32s *pSrcDst`, int `nSrcDstStep`, `NppiSize oSizeROI`)  
*Four 32-bit signed integer channel in place image logical exclusive or.*

### 7.35.1 Detailed Description

Pixel by pixel logical exclusive or of images.

### 7.35.2 Function Documentation

#### 7.35.2.1 `NppStatus nppiXor_16u_AC4IR (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel in place image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.35.2.2 `NppStatus nppiXor_16u_AC4R (const Npp16u * pSrc1, int nSrc1Step, const Npp16u * pSrc2, int nSrc2Step, Npp16u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 16-bit unsigned short channel image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.35.2.3 `NppStatus nppiXor_16u_C1IR (const Npp16u * pSrc, int nSrcStep, Npp16u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 16-bit unsigned short channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.35.2.4 NppStatus nppiXor\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)

One 16-bit unsigned short channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

#### 7.35.2.5 NppStatus nppiXor\_16u\_C3IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Three 16-bit unsigned short channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.6 NppStatus nppiXor\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.7 NppStatus nppiXor\_16u\_C4IR (const Npp16u \* pSrc, int nSrcStep, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.8 NppStatus nppiXor\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.9 NppStatus nppiXor\_32s\_AC4IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel in place image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.10 NppStatus nppiXor\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

Four 32-bit signed integer channel image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



**7.35.2.11 NppStatus nppiXor\_32s\_C1IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.12 NppStatus nppiXor\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI)**

One 32-bit signed integer channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.13 NppStatus nppiXor\_32s\_C3IR (const Npp32s \* pSrc, int nSrcStep, Npp32s \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 32-bit signed integer channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.14** `NppStatus nppiXor_32s_C3R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Three 32-bit signed integer channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.15** `NppStatus nppiXor_32s_C4IR (const Npp32s * pSrc, int nSrcStep, Npp32s * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.16** `NppStatus nppiXor_32s_C4R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI)`

Four 32-bit signed integer channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.17** `NppStatus nppiXor_8u_AC4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.18** `NppStatus nppiXor_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical exclusive or with unmodified alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.35.2.19 NppStatus nppiXor\_8u\_C1IR (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.20 NppStatus nppiXor\_8u\_C1R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.21 NppStatus nppiXor\_8u\_C3IR (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.22** `NppStatus nppiXor_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.23** `NppStatus nppiXor_8u_C4IR (const Npp8u * pSrc, int nSrcStep, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image logical exclusive or.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.35.2.24** `NppStatus nppiXor_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical exclusive or.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.36 Not

Pixel by pixel logical not of image.

### Functions

- **NppStatus nppiNot\_8u\_C1R** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel image logical not.*
- **NppStatus nppiNot\_8u\_C1IR** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*One 8-bit unsigned char channel in place image logical not.*
- **NppStatus nppiNot\_8u\_C3R** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel image logical not.*
- **NppStatus nppiNot\_8u\_C3IR** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 8-bit unsigned char channel in place image logical not.*
- **NppStatus nppiNot\_8u\_AC4R** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical not with unmodified alpha.*
- **NppStatus nppiNot\_8u\_AC4IR** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical not with unmodified alpha.*
- **NppStatus nppiNot\_8u\_C4R** (const **Npp8u** \*pSrc, int nSrcStep, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel image logical not.*
- **NppStatus nppiNot\_8u\_C4IR** (**Npp8u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 8-bit unsigned char channel in place image logical not.*

### 7.36.1 Detailed Description

Pixel by pixel logical not of image.

### 7.36.2 Function Documentation

#### 7.36.2.1 NppStatus nppiNot\_8u\_AC4IR (Npp8u \*pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel in place image logical not with unmodified alpha.

#### Parameters:

*pSrcDst* **In-Place Image Pointer.**

*nSrcDstStep* **In-Place-Image Line Step.**

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.36.2.2** `NppStatus nppiNot_8u_AC4R (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image logical not with unmodified alpha.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.36.2.3** `NppStatus nppiNot_8u_C1IR (Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel in place image logical not.

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.36.2.4** `NppStatus nppiNot_8u_C1R (const Npp8u * pSrc, int nSrcStep, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

One 8-bit unsigned char channel image logical not.

**Parameters:**

*pSrc* Source-Image Pointer.  
*nSrcStep* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.36.2.5 NppStatus nppiNot\_8u\_C3IR (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image logical not.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.36.2.6 NppStatus nppiNot\_8u\_C3R (const Npp8u \* pSrc, int nSrcStep, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel image logical not.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.36.2.7 NppStatus nppiNot\_8u\_C4IR (Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 8-bit unsigned char channel in place image logical not.

**Parameters:**

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.36.2.8 NppStatus nppiNot\_8u\_C4R (const Npp8u \* *pSrc*, int *nSrcStep*, Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)**

Four 8-bit unsigned char channel image logical not.

**Parameters:**

*pSrc* Source-Image Pointer.

*nSrcStep* Source-Image Line Step.

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.37 Alpha Composition

### Modules

- [AlphaCompC](#)  
*Composite two images using constant alpha values.*
- [AlphaPremulC](#)  
*Premultiplies pixels of an image using a constant alpha value.*
- [AlphaComp](#)  
*Composite two images using alpha opacity values contained in each image.*
- [AlphaPremul](#)  
*Premultiplies image pixels by image alpha opacity values.*

## 7.38 AlphaCompC

Composite two images using constant alpha values.

### Functions

- `NppStatus nppiAlphaCompC_8u_C1R` (const `Npp8u` \*pSrc1, int nSrc1Step, `Npp8u` nAlpha1, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` nAlpha2, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*One 8-bit unsigned char channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_8u_C3R` (const `Npp8u` \*pSrc1, int nSrc1Step, `Npp8u` nAlpha1, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` nAlpha2, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Three 8-bit unsigned char channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_8u_C4R` (const `Npp8u` \*pSrc1, int nSrc1Step, `Npp8u` nAlpha1, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` nAlpha2, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Four 8-bit unsigned char channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, `Npp8u` nAlpha1, const `Npp8u` \*pSrc2, int nSrc2Step, `Npp8u` nAlpha2, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Four 8-bit unsigned char channel image composition with alpha using constant source alpha.*
- `NppStatus nppiAlphaCompC_8s_C1R` (const `Npp8s` \*pSrc1, int nSrc1Step, `Npp8s` nAlpha1, const `Npp8s` \*pSrc2, int nSrc2Step, `Npp8s` nAlpha2, `Npp8s` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*One 8-bit signed char channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_16u_C1R` (const `Npp16u` \*pSrc1, int nSrc1Step, `Npp16u` nAlpha1, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` nAlpha2, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*One 16-bit unsigned short channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_16u_C3R` (const `Npp16u` \*pSrc1, int nSrc1Step, `Npp16u` nAlpha1, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` nAlpha2, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Three 16-bit unsigned short channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_16u_C4R` (const `Npp16u` \*pSrc1, int nSrc1Step, `Npp16u` nAlpha1, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` nAlpha2, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Four 16-bit unsigned short channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, `Npp16u` nAlpha1, const `Npp16u` \*pSrc2, int nSrc2Step, `Npp16u` nAlpha2, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI, `NppiAlphaOp` eAlphaOp)  
*Four 16-bit unsigned short channel image composition with alpha using constant source alpha.*

- `NppStatus nppiAlphaCompC_16s_C1R` (const `Npp16s *pSrc1`, int `nSrc1Step`, `Npp16s nAlpha1`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s nAlpha2`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppiAlphaOp eAlphaOp`)  
*One 16-bit signed short channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_32u_C1R` (const `Npp32u *pSrc1`, int `nSrc1Step`, `Npp32u nAlpha1`, const `Npp32u *pSrc2`, int `nSrc2Step`, `Npp32u nAlpha2`, `Npp32u *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppiAlphaOp eAlphaOp`)  
*One 32-bit unsigned integer channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_32s_C1R` (const `Npp32s *pSrc1`, int `nSrc1Step`, `Npp32s nAlpha1`, const `Npp32s *pSrc2`, int `nSrc2Step`, `Npp32s nAlpha2`, `Npp32s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppiAlphaOp eAlphaOp`)  
*One 32-bit signed integer channel image composition using constant alpha.*
- `NppStatus nppiAlphaCompC_32f_C1R` (const `Npp32f *pSrc1`, int `nSrc1Step`, `Npp32f nAlpha1`, const `Npp32f *pSrc2`, int `nSrc2Step`, `Npp32f nAlpha2`, `Npp32f *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppiAlphaOp eAlphaOp`)  
*One 32-bit floating point channel image composition using constant alpha.*

### 7.38.1 Detailed Description

Composite two images using constant alpha values.

### 7.38.2 Function Documentation

**7.38.2.1** `NppStatus nppiAlphaCompC_16s_C1R` (const `Npp16s *pSrc1`, int `nSrc1Step`, `Npp16s nAlpha1`, const `Npp16s *pSrc2`, int `nSrc2Step`, `Npp16s nAlpha2`, `Npp16s *pDst`, int `nDstStep`, `NppiSize oSizeROI`, `NppiAlphaOp eAlphaOp`)

One 16-bit signed short channel image composition using constant alpha.

#### Parameters:

- `pSrc1` Source-Image Pointer.
- `nSrc1Step` Source-Image Line Step.
- `nAlpha1` Image alpha opacity (0 - max channel pixel value).
- `pSrc2` Source-Image Pointer.
- `nSrc2Step` Source-Image Line Step.
- `nAlpha2` Image alpha opacity (0 - max channel pixel value).
- `pDst` Destination-Image Pointer.
- `nDstStep` Destination-Image Line Step.
- `oSizeROI` Region-of-Interest (ROI).
- `eAlphaOp` alpha-blending operation..

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.38.2.2 NppStatus nppiAlphaCompC\_16u\_AC4R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, const Npp16u \* pSrc2, int nSrc2Step, Npp16u nAlpha2, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

Four 16-bit unsigned short channel image composition with alpha using constant source alpha.

**Parameters:**

- pSrc1* [Source-Image Pointer](#).
- nSrc1Step* [Source-Image Line Step](#).
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* [Source-Image Pointer](#).
- nSrc2Step* [Source-Image Line Step](#).
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.3 NppStatus nppiAlphaCompC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, const Npp16u \* pSrc2, int nSrc2Step, Npp16u nAlpha2, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 16-bit unsigned short channel image composition using constant alpha.

**Parameters:**

- pSrc1* [Source-Image Pointer](#).
- nSrc1Step* [Source-Image Line Step](#).
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* [Source-Image Pointer](#).
- nSrc2Step* [Source-Image Line Step](#).
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.4 NppStatus nppiAlphaCompC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, const Npp16u \* pSrc2, int nSrc2Step, Npp16u nAlpha2, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

Three 16-bit unsigned short channel image composition using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.5 NppStatus nppiAlphaCompC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, const Npp16u \* pSrc2, int nSrc2Step, Npp16u nAlpha2, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

Four 16-bit unsigned short channel image composition using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.6 NppStatus nppiAlphaCompC\_32f\_C1R (const Npp32f \* pSrc1, int nSrc1Step, Npp32f nAlpha1, const Npp32f \* pSrc2, int nSrc2Step, Npp32f nAlpha2, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 32-bit floating point channel image composition using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0.0 - 1.0).  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*nAlpha2* Image alpha opacity (0.0 - 1.0).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.7 NppStatus nppiAlphaCompC\_32s\_C1R (const Npp32s \* pSrc1, int nSrc1Step, Npp32s nAlpha1, const Npp32s \* pSrc2, int nSrc2Step, Npp32s nAlpha2, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 32-bit signed integer channel image composition using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*nAlpha2* Image alpha opacity (0 - max channel pixel value).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.38.2.8 NppStatus nppiAlphaCompC\_32u\_C1R (const Npp32u \* pSrc1, int nSrc1Step, Npp32u nAlpha1, const Npp32u \* pSrc2, int nSrc2Step, Npp32u nAlpha2, Npp32u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 32-bit unsigned integer channel image composition using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.9 NppStatus nppiAlphaCompC\_8s\_C1R (const Npp8s \* pSrc1, int nSrc1Step, Npp8s nAlpha1, const Npp8s \* pSrc2, int nSrc2Step, Npp8s nAlpha2, Npp8s \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 8-bit signed char channel image composition using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.10** `NppStatus nppiAlphaCompC_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, const Npp8u * pSrc2, int nSrc2Step, Npp8u nAlpha2, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

Four 8-bit unsigned char channel image composition with alpha using constant source alpha.

**Parameters:**

- pSrc1* [Source-Image Pointer](#).
- nSrc1Step* [Source-Image Line Step](#).
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* [Source-Image Pointer](#).
- nSrc2Step* [Source-Image Line Step](#).
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.11** `NppStatus nppiAlphaCompC_8u_C1R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, const Npp8u * pSrc2, int nSrc2Step, Npp8u nAlpha2, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

One 8-bit unsigned char channel image composition using constant alpha.

**Parameters:**

- pSrc1* [Source-Image Pointer](#).
- nSrc1Step* [Source-Image Line Step](#).
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrc2* [Source-Image Pointer](#).
- nSrc2Step* [Source-Image Line Step](#).
- nAlpha2* Image alpha opacity (0 - max channel pixel value).
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).
- eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.12** `NppStatus nppiAlphaCompC_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, const Npp8u * pSrc2, int nSrc2Step, Npp8u nAlpha2, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

Three 8-bit unsigned char channel image composition using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*nAlpha2* Image alpha opacity (0 - max channel pixel value).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.38.2.13** `NppStatus nppiAlphaCompC_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, const Npp8u * pSrc2, int nSrc2Step, Npp8u nAlpha2, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

Four 8-bit unsigned char channel image composition using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*nAlpha2* Image alpha opacity (0 - max channel pixel value).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.39 AlphaPremulC

Premultiplies pixels of an image using a constant alpha value.

### Functions

- [NppStatus nppiAlphaPremulC\\_8u\\_C1R](#) (const [Npp8u](#) \*pSrc1, int nSrc1Step, [Npp8u](#) nAlpha1, [Npp8u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*One 8-bit unsigned char channel image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_C1IR](#) ([Npp8u](#) nAlpha1, [Npp8u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*One 8-bit unsigned char channel in place image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_C3R](#) (const [Npp8u](#) \*pSrc1, int nSrc1Step, [Npp8u](#) nAlpha1, [Npp8u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Three 8-bit unsigned char channel image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_C3IR](#) ([Npp8u](#) nAlpha1, [Npp8u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Three 8-bit unsigned char channel in place image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_C4R](#) (const [Npp8u](#) \*pSrc1, int nSrc1Step, [Npp8u](#) nAlpha1, [Npp8u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit unsigned char channel image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_C4IR](#) ([Npp8u](#) nAlpha1, [Npp8u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit unsigned char channel in place image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_AC4R](#) (const [Npp8u](#) \*pSrc1, int nSrc1Step, [Npp8u](#) nAlpha1, [Npp8u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit unsigned char channel image premultiplication with alpha using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_8u\\_AC4IR](#) ([Npp8u](#) nAlpha1, [Npp8u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*Four 8-bit unsigned char channel in place image premultiplication with alpha using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_16u\\_C1R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, [Npp16u](#) nAlpha1, [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*One 16-bit unsigned short channel image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_16u\\_C1IR](#) ([Npp16u](#) nAlpha1, [Npp16u](#) \*pSrcDst, int nSrcDstStep, [NppiSize](#) oSizeROI)  
*One 16-bit unsigned short channel in place image premultiplication using constant alpha.*
- [NppStatus nppiAlphaPremulC\\_16u\\_C3R](#) (const [Npp16u](#) \*pSrc1, int nSrc1Step, [Npp16u](#) nAlpha1, [Npp16u](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI)  
*Three 16-bit unsigned short channel image premultiplication using constant alpha.*

- **NppStatus nppiAlphaPremulC\_16u\_C3IR** (**Npp16u** nAlpha1, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Three 16-bit unsigned short channel in place image premultiplication using constant alpha.*
- **NppStatus nppiAlphaPremulC\_16u\_C4R** (const **Npp16u** \*pSrc1, int nSrc1Step, **Npp16u** nAlpha1, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image premultiplication using constant alpha.*
- **NppStatus nppiAlphaPremulC\_16u\_C4IR** (**Npp16u** nAlpha1, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image premultiplication using constant alpha.*
- **NppStatus nppiAlphaPremulC\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, **Npp16u** nAlpha1, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel image premultiplication with alpha using constant alpha.*
- **NppStatus nppiAlphaPremulC\_16u\_AC4IR** (**Npp16u** nAlpha1, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)  
*Four 16-bit unsigned short channel in place image premultiplication with alpha using constant alpha.*

### 7.39.1 Detailed Description

Premultiplies pixels of an image using a constant alpha value.

### 7.39.2 Function Documentation

#### 7.39.2.1 **NppStatus nppiAlphaPremulC\_16u\_AC4IR** (**Npp16u** nAlpha1, **Npp16u** \*pSrcDst, int nSrcDstStep, **NppiSize** oSizeROI)

Four 16-bit unsigned short channel in place image premultiplication with alpha using constant alpha.

#### Parameters:

**nAlpha1** Image alpha opacity (0 - max channel pixel value).

**pSrcDst** In-Place Image Pointer.

**nSrcDstStep** In-Place-Image Line Step.

**oSizeROI** Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

#### 7.39.2.2 **NppStatus nppiAlphaPremulC\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, **Npp16u** nAlpha1, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI)

Four 16-bit unsigned short channel image premultiplication with alpha using constant alpha.

#### Parameters:

**pSrc1** Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nAlpha1* Image alpha opacity (0 - max channel pixel value).

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.39.2.3 NppStatus nppiAlphaPremulC\_16u\_C1IR (Npp16u nAlpha1, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel in place image premultiplication using constant alpha.

**Parameters:**

*nAlpha1* Image alpha opacity (0 - max channel pixel value).

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.39.2.4 NppStatus nppiAlphaPremulC\_16u\_C1R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 16-bit unsigned short channel image premultiplication using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.

*nSrc1Step* Source-Image Line Step.

*nAlpha1* Image alpha opacity (0 - max channel pixel value).

*pDst* Destination-Image Pointer.

*nDstStep* Destination-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.39.2.5 NppStatus nppiAlphaPremulC\_16u\_C3IR (Npp16u nAlpha1, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel in place image premultiplication using constant alpha.

**Parameters:**

*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.39.2.6 NppStatus nppiAlphaPremulC\_16u\_C3R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)**

Three 16-bit unsigned short channel image premultiplication using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.39.2.7 NppStatus nppiAlphaPremulC\_16u\_C4IR (Npp16u nAlpha1, Npp16u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Four 16-bit unsigned short channel in place image premultiplication using constant alpha.

**Parameters:**

*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

### 7.39.2.8 NppStatus nppiAlphaPremulC\_16u\_C4R (const Npp16u \* pSrc1, int nSrc1Step, Npp16u nAlpha1, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI)

Four 16-bit unsigned short channel image premultiplication using constant alpha.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.39.2.9 NppStatus nppiAlphaPremulC\_8u\_AC4IR (Npp8u nAlpha1, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel in place image premultiplication with alpha using constant alpha.

#### Parameters:

- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

### 7.39.2.10 NppStatus nppiAlphaPremulC\_8u\_AC4R (const Npp8u \* pSrc1, int nSrc1Step, Npp8u nAlpha1, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)

Four 8-bit unsigned char channel image premultiplication with alpha using constant alpha.

#### Parameters:

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)



**7.39.2.11 NppStatus nppiAlphaPremulC\_8u\_C1IR (Npp8u nAlpha1, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel in place image premultiplication using constant alpha.

**Parameters:**

*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.39.2.12 NppStatus nppiAlphaPremulC\_8u\_C1R (const Npp8u \* pSrc1, int nSrc1Step, Npp8u nAlpha1, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI)**

One 8-bit unsigned char channel image premultiplication using constant alpha.

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.39.2.13 NppStatus nppiAlphaPremulC\_8u\_C3IR (Npp8u nAlpha1, Npp8u \* pSrcDst, int nSrcDstStep, NppiSize oSizeROI)**

Three 8-bit unsigned char channel in place image premultiplication using constant alpha.

**Parameters:**

*nAlpha1* Image alpha opacity (0 - max channel pixel value).  
*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.39.2.14** `NppStatus nppiAlphaPremulC_8u_C3R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Three 8-bit unsigned char channel image premultiplication using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.39.2.15** `NppStatus nppiAlphaPremulC_8u_C4IR (Npp8u nAlpha1, Npp8u * pSrcDst, int nSrcDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel in place image premultiplication using constant alpha.

**Parameters:**

- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pSrcDst* In-Place Image Pointer.
- nSrcDstStep* In-Place-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.39.2.16** `NppStatus nppiAlphaPremulC_8u_C4R (const Npp8u * pSrc1, int nSrc1Step, Npp8u nAlpha1, Npp8u * pDst, int nDstStep, NppiSize oSizeROI)`

Four 8-bit unsigned char channel image premultiplication using constant alpha.

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- nAlpha1* Image alpha opacity (0 - max channel pixel value).
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

## 7.40 AlphaComp

Composite two images using alpha opacity values contained in each image.

### Functions

- **NppStatus nppiAlphaComp\_8u\_AC1R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 8-bit unsigned char channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_8u\_AC4R** (const **Npp8u** \*pSrc1, int nSrc1Step, const **Npp8u** \*pSrc2, int nSrc2Step, **Npp8u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*Four 8-bit unsigned char channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_8s\_AC1R** (const **Npp8s** \*pSrc1, int nSrc1Step, const **Npp8s** \*pSrc2, int nSrc2Step, **Npp8s** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 8-bit signed char channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_16u\_AC1R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 16-bit unsigned short channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_16u\_AC4R** (const **Npp16u** \*pSrc1, int nSrc1Step, const **Npp16u** \*pSrc2, int nSrc2Step, **Npp16u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*Four 16-bit unsigned short channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_16s\_AC1R** (const **Npp16s** \*pSrc1, int nSrc1Step, const **Npp16s** \*pSrc2, int nSrc2Step, **Npp16s** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 16-bit signed short channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_32u\_AC1R** (const **Npp32u** \*pSrc1, int nSrc1Step, const **Npp32u** \*pSrc2, int nSrc2Step, **Npp32u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 32-bit unsigned integer channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_32u\_AC4R** (const **Npp32u** \*pSrc1, int nSrc1Step, const **Npp32u** \*pSrc2, int nSrc2Step, **Npp32u** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*Four 32-bit unsigned integer channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_32s\_AC1R** (const **Npp32s** \*pSrc1, int nSrc1Step, const **Npp32s** \*pSrc2, int nSrc2Step, **Npp32s** \*pDst, int nDstStep, **NppiSize** oSizeROI, **NppiAlphaOp** eAlphaOp)  
*One 32-bit signed integer channel image composition using image alpha values (0 - max channel pixel value).*

- **NppStatus nppiAlphaComp\_32s\_AC4R** (const [Npp32s](#) \*pSrc1, int nSrc1Step, const [Npp32s](#) \*pSrc2, int nSrc2Step, [Npp32s](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI, [NppiAlphaOp](#) eAlphaOp)  
*Four 32-bit signed integer channel image composition using image alpha values (0 - max channel pixel value).*
- **NppStatus nppiAlphaComp\_32f\_AC1R** (const [Npp32f](#) \*pSrc1, int nSrc1Step, const [Npp32f](#) \*pSrc2, int nSrc2Step, [Npp32f](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI, [NppiAlphaOp](#) eAlphaOp)  
*One 32-bit floating point channel image composition using image alpha values (0.0 - 1.0).*
- **NppStatus nppiAlphaComp\_32f\_AC4R** (const [Npp32f](#) \*pSrc1, int nSrc1Step, const [Npp32f](#) \*pSrc2, int nSrc2Step, [Npp32f](#) \*pDst, int nDstStep, [NppiSize](#) oSizeROI, [NppiAlphaOp](#) eAlphaOp)  
*Four 32-bit floating point channel image composition using image alpha values (0.0 - 1.0).*

### 7.40.1 Detailed Description

Composite two images using alpha opacity values contained in each image.

### 7.40.2 Function Documentation

#### 7.40.2.1 **NppStatus nppiAlphaComp\_16s\_AC1R** (const [Npp16s](#) \* pSrc1, int nSrc1Step, const [Npp16s](#) \* pSrc2, int nSrc2Step, [Npp16s](#) \* pDst, int nDstStep, [NppiSize](#) oSizeROI, [NppiAlphaOp](#) eAlphaOp)

One 16-bit signed short channel image composition using image alpha values (0 - max channel pixel value).

#### Parameters:

- pSrc1* [Source-Image Pointer](#).
- nSrc1Step* [Source-Image Line Step](#).
- pSrc2* [Source-Image Pointer](#).
- nSrc2Step* [Source-Image Line Step](#).
- pDst* [Destination-Image Pointer](#).
- nDstStep* [Destination-Image Line Step](#).
- oSizeROI* [Region-of-Interest \(ROI\)](#).
- eAlphaOp* [alpha-blending operation..](#)

#### Returns:

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.40.2.2 **NppStatus nppiAlphaComp\_16u\_AC1R** (const [Npp16u](#) \* pSrc1, int nSrc1Step, const [Npp16u](#) \* pSrc2, int nSrc2Step, [Npp16u](#) \* pDst, int nDstStep, [NppiSize](#) oSizeROI, [NppiAlphaOp](#) eAlphaOp)

One 16-bit unsigned short channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.40.2.3 NppStatus nppiAlphaComp\_16u\_AC4R (const Npp16u \* pSrc1, int nSrc1Step, const Npp16u \* pSrc2, int nSrc2Step, Npp16u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)

Four 16-bit unsigned short channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.40.2.4 NppStatus nppiAlphaComp\_32f\_AC1R (const Npp32f \* pSrc1, int nSrc1Step, const Npp32f \* pSrc2, int nSrc2Step, Npp32f \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)

One 32-bit floating point channel image composition using image alpha values (0.0 - 1.0).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.

*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.40.2.5 `NppStatus nppiAlphaComp_32f_AC4R (const Npp32f * pSrc1, int nSrc1Step, const Npp32f * pSrc2, int nSrc2Step, Npp32f * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

Four 32-bit floating point channel image composition using image alpha values (0.0 - 1.0).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

#### 7.40.2.6 `NppStatus nppiAlphaComp_32s_AC1R (const Npp32s * pSrc1, int nSrc1Step, const Npp32s * pSrc2, int nSrc2Step, Npp32s * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

One 32-bit signed integer channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.40.2.7 NppStatus nppiAlphaComp\_32s\_AC4R (const Npp32s \* pSrc1, int nSrc1Step, const Npp32s \* pSrc2, int nSrc2Step, Npp32s \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

Four 32-bit signed integer channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.40.2.8 NppStatus nppiAlphaComp\_32u\_AC1R (const Npp32u \* pSrc1, int nSrc1Step, const Npp32u \* pSrc2, int nSrc2Step, Npp32u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 32-bit unsigned integer channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

- pSrc1* Source-Image Pointer.
- nSrc1Step* Source-Image Line Step.
- pSrc2* Source-Image Pointer.
- nSrc2Step* Source-Image Line Step.
- pDst* Destination-Image Pointer.
- nDstStep* Destination-Image Line Step.
- oSizeROI* Region-of-Interest (ROI).
- eAlphaOp* alpha-blending operation..

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.40.2.9 NppStatus nppiAlphaComp\_32u\_AC4R (const Npp32u \* pSrc1, int nSrc1Step, const Npp32u \* pSrc2, int nSrc2Step, Npp32u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

Four 32-bit unsigned integer channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.40.2.10 NppStatus nppiAlphaComp\_8s\_AC1R (const Npp8s \* pSrc1, int nSrc1Step, const Npp8s \* pSrc2, int nSrc2Step, Npp8s \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 8-bit signed char channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

[Image Data Related Error Codes](#), [ROI Related Error Codes](#)

**7.40.2.11 NppStatus nppiAlphaComp\_8u\_AC1R (const Npp8u \* pSrc1, int nSrc1Step, const Npp8u \* pSrc2, int nSrc2Step, Npp8u \* pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)**

One 8-bit unsigned char channel image composition using image alpha values (0 - max channel pixel value).



**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.40.2.12** `NppStatus nppiAlphaComp_8u_AC4R (const Npp8u * pSrc1, int nSrc1Step, const Npp8u * pSrc2, int nSrc2Step, Npp8u * pDst, int nDstStep, NppiSize oSizeROI, NppiAlphaOp eAlphaOp)`

Four 8-bit unsigned char channel image composition using image alpha values (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pSrc2* Source-Image Pointer.  
*nSrc2Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).  
*eAlphaOp* alpha-blending operation..

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

## 7.41 AlphaPremul

Premultiplies image pixels by image alpha opacity values.

### Functions

- `NppStatus nppiAlphaPremul_8u_AC4R` (const `Npp8u` \*pSrc1, int nSrc1Step, `Npp8u` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Four 8-bit unsigned char channel image premultiplication with pixel alpha (0 - max channel pixel value).*

- `NppStatus nppiAlphaPremul_8u_AC4IR` (`Npp8u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)

*Four 8-bit unsigned char channel in place image premultiplication with pixel alpha (0 - max channel pixel value).*

- `NppStatus nppiAlphaPremul_16u_AC4R` (const `Npp16u` \*pSrc1, int nSrc1Step, `Npp16u` \*pDst, int nDstStep, `NppiSize` oSizeROI)

*Four 16-bit unsigned short channel image premultiplication with pixel alpha (0 - max channel pixel value).*

- `NppStatus nppiAlphaPremul_16u_AC4IR` (`Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)

*Four 16-bit unsigned short channel in place image premultiplication with pixel alpha (0 - max channel pixel value).*

### 7.41.1 Detailed Description

Premultiplies image pixels by image alpha opacity values.

### 7.41.2 Function Documentation

#### 7.41.2.1 `NppStatus nppiAlphaPremul_16u_AC4IR` (`Npp16u` \*pSrcDst, int nSrcDstStep, `NppiSize` oSizeROI)

Four 16-bit unsigned short channel in place image premultiplication with pixel alpha (0 - max channel pixel value).

#### Parameters:

*pSrcDst* In-Place Image Pointer.

*nSrcDstStep* In-Place-Image Line Step.

*oSizeROI* Region-of-Interest (ROI).

#### Returns:

Image Data Related Error Codes, ROI Related Error Codes

**7.41.2.2 NppStatus nppiAlphaPremul\_16u\_AC4R** (const Npp16u \* *pSrc1*, int *nSrc1Step*, Npp16u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

Four 16-bit unsigned short channel image premultiplication with pixel alpha (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.41.2.3 NppStatus nppiAlphaPremul\_8u\_AC4IR** (Npp8u \* *pSrcDst*, int *nSrcDstStep*, NppiSize *oSizeROI*)

Four 8-bit unsigned char channel in place image premultiplication with pixel alpha (0 - max channel pixel value).

**Parameters:**

*pSrcDst* In-Place Image Pointer.  
*nSrcDstStep* In-Place-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes

**7.41.2.4 NppStatus nppiAlphaPremul\_8u\_AC4R** (const Npp8u \* *pSrc1*, int *nSrc1Step*, Npp8u \* *pDst*, int *nDstStep*, NppiSize *oSizeROI*)

Four 8-bit unsigned char channel image premultiplication with pixel alpha (0 - max channel pixel value).

**Parameters:**

*pSrc1* Source-Image Pointer.  
*nSrc1Step* Source-Image Line Step.  
*pDst* Destination-Image Pointer.  
*nDstStep* Destination-Image Line Step.  
*oSizeROI* Region-of-Interest (ROI).

**Returns:**

Image Data Related Error Codes, ROI Related Error Codes



# Chapter 8

## Data Structure Documentation

### 8.1 NPP\_ALIGN\_16 Struct Reference

Complex Number This struct represents a long long complex number.

```
#include <nppdefs.h>
```

#### Data Fields

- [Npp64s re](#)  
*Real part.*
- [Npp64s im](#)  
*Imaginary part.*
- [Npp64f re](#)  
*Real part.*
- [Npp64f im](#)  
*Imaginary part.*

#### 8.1.1 Detailed Description

Complex Number This struct represents a long long complex number.

Complex Number This struct represents a double floating-point complex number.

#### 8.1.2 Field Documentation

##### 8.1.2.1 Npp64f NPP\_ALIGN\_16::im

Imaginary part.

**8.1.2.2 Npp64s NPP\_ALIGN\_16::im**

Imaginary part.

**8.1.2.3 Npp64f NPP\_ALIGN\_16::re**

Real part.

**8.1.2.4 Npp64s NPP\_ALIGN\_16::re**

Real part.

The documentation for this struct was generated from the following file:

- C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h

## 8.2 NPP\_ALIGN\_8 Struct Reference

Complex Number This struct represents an unsigned int complex number.

```
#include <nppdefs.h>
```

### Data Fields

- [Npp32u re](#)  
*Real part.*
- [Npp32u im](#)  
*Imaginary part.*
- [Npp32s re](#)  
*Real part.*
- [Npp32s im](#)  
*Imaginary part.*
- [Npp32f re](#)  
*Real part.*
- [Npp32f im](#)  
*Imaginary part.*

### 8.2.1 Detailed Description

Complex Number This struct represents an unsigned int complex number.

Complex Number This struct represents a single floating-point complex number.

Complex Number This struct represents a signed int complex number.

### 8.2.2 Field Documentation

#### 8.2.2.1 Npp32f NPP\_ALIGN\_8::im

Imaginary part.

#### 8.2.2.2 Npp32s NPP\_ALIGN\_8::im

Imaginary part.

#### 8.2.2.3 Npp32u NPP\_ALIGN\_8::im

Imaginary part.

**8.2.2.4 Npp32f NPP\_ALIGN\_8::re**

Real part.

**8.2.2.5 Npp32s NPP\_ALIGN\_8::re**

Real part.

**8.2.2.6 Npp32u NPP\_ALIGN\_8::re**

Real part.

The documentation for this struct was generated from the following file:

- C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h



## 8.3 NppiHaarBuffer Struct Reference

```
#include <nppdefs.h>
```

### Data Fields

- int `haarBufferSize`  
*size of the buffer*
- `Npp32s * haarBuffer`  
*buffer*

### 8.3.1 Field Documentation

#### 8.3.1.1 `Npp32s* NppiHaarBuffer::haarBuffer`

`buffer`

#### 8.3.1.2 `int NppiHaarBuffer::haarBufferSize`

*size of the buffer*

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`

## 8.4 NppiHaarClassifier\_32f Struct Reference

```
#include <nppdefs.h>
```

### Data Fields

- int `numClassifiers`  
*number of classifiers*
- `Npp32s * classifiers`  
*packed classifier data 40 bytes each*
- `size_t classifierStep`
- `NppiSize classifierSize`
- `Npp32s * counterDevice`

### 8.4.1 Field Documentation

#### 8.4.1.1 `Npp32s* NppiHaarClassifier_32f::classifiers`

packed classifier data 40 bytes each

#### 8.4.1.2 `NppiSize NppiHaarClassifier_32f::classifierSize`

#### 8.4.1.3 `size_t NppiHaarClassifier_32f::classifierStep`

#### 8.4.1.4 `Npp32s* NppiHaarClassifier_32f::counterDevice`

#### 8.4.1.5 `int NppiHaarClassifier_32f::numClassifiers`

number of classifiers

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`

## 8.5 NppiHOGConfig Struct Reference

The [NppiHOGConfig](#) structure defines the configuration parameters for the HOG descriptor:.

```
#include <nppdefs.h>
```

### Data Fields

- [int cellSize](#)  
*square cell size (pixels).*
- [int histogramBlockSize](#)  
*square histogram block size (pixels).*
- [int nHistogramBins](#)  
*required number of histogram bins.*
- [NppiSize detectionWindowSize](#)  
*detection window size (pixels).*

### 8.5.1 Detailed Description

The [NppiHOGConfig](#) structure defines the configuration parameters for the HOG descriptor:.

### 8.5.2 Field Documentation

#### 8.5.2.1 [int NppiHOGConfig::cellSize](#)

square cell size (pixels).

#### 8.5.2.2 [NppiSize NppiHOGConfig::detectionWindowSize](#)

detection window size (pixels).

#### 8.5.2.3 [int NppiHOGConfig::histogramBlockSize](#)

square histogram block size (pixels).

#### 8.5.2.4 [int NppiHOGConfig::nHistogramBins](#)

required number of histogram bins.

The documentation for this struct was generated from the following file:

- C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h

## 8.6 NppiPoint Struct Reference

2D Point

```
#include <nppdefs.h>
```

### Data Fields

- `int x`  
*x-coordinate.*
- `int y`  
*y-coordinate.*

### 8.6.1 Detailed Description

2D Point

### 8.6.2 Field Documentation

#### 8.6.2.1 `int NppiPoint::x`

x-coordinate.

#### 8.6.2.2 `int NppiPoint::y`

y-coordinate.

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`

## 8.7 NppiRect Struct Reference

2D Rectangle This struct contains position and size information of a rectangle in two space.

```
#include <nppdefs.h>
```

### Data Fields

- `int x`  
*x-coordinate of upper left corner (lowest memory address).*
- `int y`  
*y-coordinate of upper left corner (lowest memory address).*
- `int width`  
*Rectangle width.*
- `int height`  
*Rectangle height.*

### 8.7.1 Detailed Description

2D Rectangle This struct contains position and size information of a rectangle in two space.

The rectangle's position is usually signified by the coordinate of its upper-left corner.

### 8.7.2 Field Documentation

#### 8.7.2.1 `int NppiRect::height`

Rectangle height.

#### 8.7.2.2 `int NppiRect::width`

Rectangle width.

#### 8.7.2.3 `int NppiRect::x`

x-coordinate of upper left corner (lowest memory address).

#### 8.7.2.4 `int NppiRect::y`

y-coordinate of upper left corner (lowest memory address).

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`

## 8.8 NppiSize Struct Reference

2D Size This struct typically represents the size of a rectangular region in two space.

```
#include <nppdefs.h>
```

### Data Fields

- `int width`  
*Rectangle width.*
- `int height`  
*Rectangle height.*

### 8.8.1 Detailed Description

2D Size This struct typically represents the size of a rectangular region in two space.

### 8.8.2 Field Documentation

#### 8.8.2.1 `int NppiSize::height`

Rectangle height.

#### 8.8.2.2 `int NppiSize::width`

Rectangle width.

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`

## 8.9 NppLibraryVersion Struct Reference

```
#include <nppdefs.h>
```

### Data Fields

- int [major](#)  
*Major version number.*
- int [minor](#)  
*Minor version number.*
- int [build](#)  
*Build number.*

### 8.9.1 Field Documentation

#### 8.9.1.1 int NppLibraryVersion::build

Build number.

This reflects the nightly build this release was made from.

#### 8.9.1.2 int NppLibraryVersion::major

Major version number.

#### 8.9.1.3 int NppLibraryVersion::minor

Minor version number.

The documentation for this struct was generated from the following file:

- C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h

## 8.10 NppPointPolar Struct Reference

2D Polar Point

```
#include <nppdefs.h>
```

### Data Fields

- [Npp32f rho](#)
- [Npp32f theta](#)

### 8.10.1 Detailed Description

2D Polar Point

### 8.10.2 Field Documentation

#### 8.10.2.1 Npp32f NppPointPolar::rho

#### 8.10.2.2 Npp32f NppPointPolar::theta

The documentation for this struct was generated from the following file:

- `C:/src/sw/rel/gpgpu/toolkit/r9.0/NPP/npp/include/nppdefs.h`



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