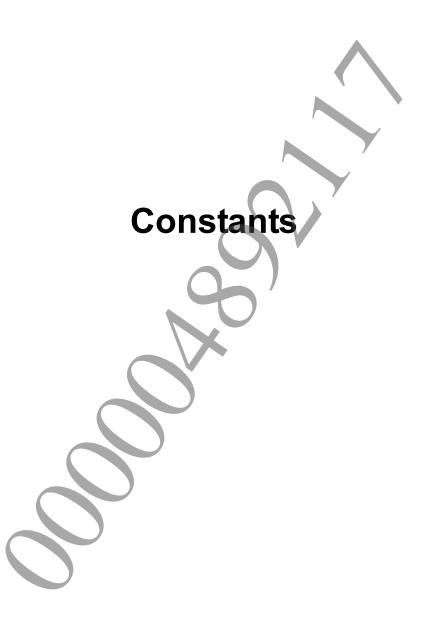


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## SCE SFMT132049 ARRAY SIZE

Array size for SFMT132049 pseudo random number calculation

#### **Definition**

#include <libsfmt132049.h> #define SCE SFMT132049 ARRAY SIZE /\* (132049 / 128) + 1 \*/ 1032

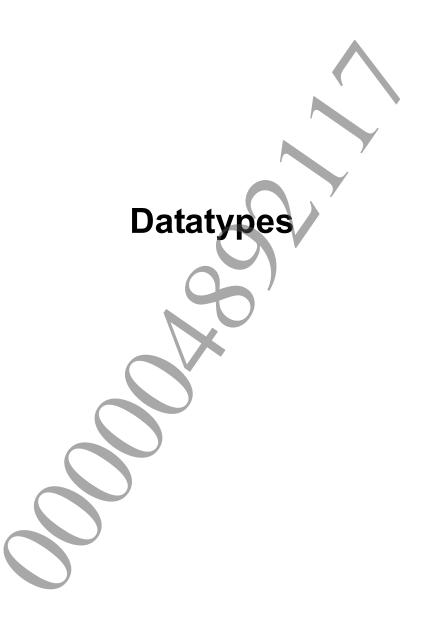
#### **Description**

This constant defines the array size for pseudo random numbers in conformance with SFMT132049. In addition to indicating the array size that is maintained as state in the SoeSfmt132049Context structure, this constant is also used by the sceSfmt132049FillArray32() and sceSfmt132049FillArray64() functions to indicate the minimum size for generating random numbers.

#### See Also

SceSfmt132049Context, sceSfmt132049FillArray32(), sceSfmt132049FillArray64()





## SceSfmt132049Context

Context information for SFMT132049 pseudo random number calculation

#### **Definition**

```
#include <libsfmt132049.h>
typedef struct SceSfmt132049Context {
          unsigned int idx;
          unsigned int sfmt[SCE_SFMT132049_ARRAY_SIZE][4];
} SceSfmt132049Context;
```

#### **Description**

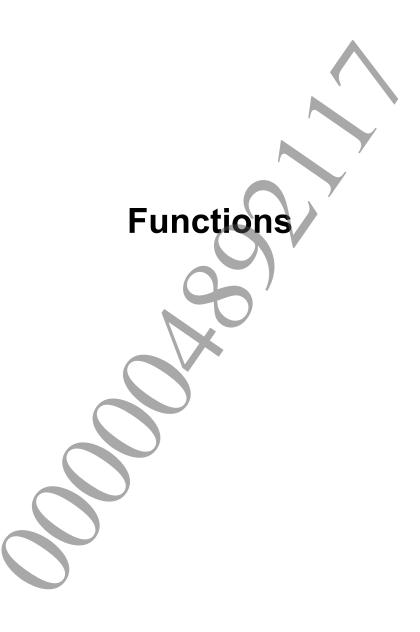
This structure is a work area for calculating pseudo random numbers in conformance with SFMT132049.

One instance of this work area must be prepared for each random number sequence.

#### See Also

SCE\_SFMT132049\_ARRAY\_SIZE, sceSfmt132049InitGenRand(),
sceSfmt132049InitByArray()





## sceSfmt132049InitGenRand

Initialize SFMT132049 pseudo random number work area

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

PCtx Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.

seed Specifies a random number sequence.

#### **Return Values**

If an error occurs, a negative value is returned.

Value	
SCE_OK	Normal completion

#### **Description**

This function uses a 32-bit seed to initialize an SFMT132049 random number sequence, which is represented by the SceSfmt132049Context structure. This function must be executed before the sceSfmt132049GenRand32(), sceSfmt132049GenRand64(), sceSfmt132049FillArray32(), and sceSfmt132049FillArray64() functions.

Since only the SceSfmt132049Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt132049Context structures.

#### See Also

SceSfmt132049Context, sceSfmt132049InitByArray()

# sceSfmt132049InitByArray

Initialize SFMT132049 pseudo random number work area

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.

initkey Specifies the array to be used for initializing, keylength Number of elements in initkey.

#### **Return Values**

If an error occurs, a negative value is returned.

Value	
SCE_OK	Normal completion

#### **Description**

This function uses an array of 32-bit seeds to initialize an SFMT132049 random number sequence, which is represented by the SceSfmt132049Context structure. This function must be executed before the sceSfmt132049GenRand32(), sceSfmt132049GenRand64(), sceSfmt132049FillArray32(), and sceSfmt132049FillArray64() functions.

Since only the SceSfmt132049Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt132049Context structures.

#### See Also

SceSfmt132049Context, sceSfmt132049InitGenRand()

# Document serial number: 000004892117

## sceSfmt132049GenRand32

Generate an SFMT132049 32-bit pseudo random number

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.

#### **Return Values**

32-bit pseudo random number

#### **Description**

This function generates a 32-bit pseudo random number that conforms to SFMT132049.

Before using this function, the SceSfmt132049Context structure must be initialized by calling the sceSfmt132049InitGenRand() or sceSfmt132049InitByArray() functions.

#### See Also

SceSfmt132049Context, sceSfmt132049InitGenRand(), sceSfmt132049InitByArray()

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## sceSfmt132049GenRand64

Generate an SFMT132049 64-bit pseudo random number

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.

#### **Return Values**

64-bit pseudo random number

#### **Description**

This function generates a 64-bit pseudo random number that conforms to SFMT132049.

Before using this function, the SceSfmt132049Context structure must be initialized by calling the sceSfmt132049InitGenRand() or sceSfmt132049InitByArray() functions.

Note that if the sceSfmt132049GenRand32() and sceSfmt132049GenRand64() functions are used together and the sceSfmt132049GenRand64() function is called after the sceSfmt132049GenRand32() function has been called an odd number of times, a full 64-bit random number will not be obtained. Instead, this function will return a 64-bit value in which the upper 32 bits are zero.

#### See Also

SceSfmt132049Context, sceSfmt132049InitGenRand(), sceSfmt132049InitByArray()

# sceSfmt132049FillArray32

Generate an array of SFMT132049 32-bit pseudo random numbers

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

```
    Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.
    Buffer for receiving the generated random numbers
    Size Number of elements in array (multiple of 4 that is larger than SCE_SFMT132049_ARRAY_SIZE*4)
```

#### **Return Values**

If an error occurs, a negative value is returned.

Value	
SCE_OK	Normal completion

#### **Description**

This function generates an arbitrary number of 32-bit pseudo random numbers that conform to SFMT132049. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (SCE SFMT132049 ARRAY SIZE \* 4).

Before using this function, the SceSfmt132049Context structure must be initialized by calling the sceSfmt132049InitGenRand() or sceSfmt132049InitByArray() functions.

When the sceSfmt132049FillArray32() function is used together with the sceSfmt132049GenRand32() function, the sceSfmt132049FillArray32() function can be called only after the sceSfmt132049GenRand32() function has been called (SCE SFMT132049 ARRAY SIZE \* 4) times.

When the sceSfmt132049FillArray32() function is used together with the sceSfmt132049GenRand64() function, the sceSfmt132049FillArray32() function can be called only after the sceSfmt132049GenRand64() function has been called (SCE\_SFMT132049\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt132049Context, sceSfmt132049InitGenRand(), sceSfmt132049InitByArray()

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## sceSfmt132049FillArray64

Generate an array of SFMT132049 64-bit pseudo random numbers

#### **Definition**

#### **Calling Conditions**

Multithread safe

#### **Arguments**

```
Pointer to an SceSfmt132049Context structure, which represents a random number sequence as a context.
Buffer for receiving the generated random numbers
Size
Number of elements in array (multiple of 2 that is larger than
SCE_SFMT132049_ARRAY_SIZE*2)
```

#### **Return Values**

If an error occurs, a negative value is returned.

Value	
SCE_OK	Normal completion

#### **Description**

This function generates an arbitrary number of 64-bit pseudo random numbers that conform to SFMT132049. *size* specifies the number of elements in *array* and must be a multiple of 2 that is larger than (SCE SFMT132049 ARRAY SIZE \* 2).

Before using this function, the SceSfmt132049Context structure must be initialized by calling the sceSfmt132049InitGenRand() or sceSfmt132049InitByArray() functions.

When the sceSfmt132049FillArray64() function is used together with the sceSfmt132049GenRand32() function, the sceSfmt132049FillArray64() function can be called only after the sceSfmt132049GenRand32() function has been called (SCE SFMT132049 ARRAY SIZE \* 4) times.

When the sceSfmt132049FillArray64() function is used together with the sceSfmt132049GenRand64() function, the sceSfmt132049FillArray64() function can be called only after the sceSfmt132049GenRand64() function has been called (SCE\_SFMT132049\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt132049Context, sceSfmt132049InitGenRand(), sceSfmt132049InitByArray()

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