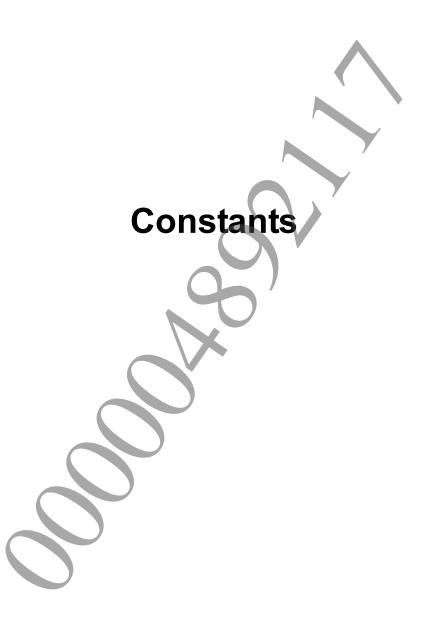


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# SCE SFMT1279 ARRAY SIZE

Array size for SFMT1279 pseudo random number calculation

#### **Definition**

#include <libsfmt1279.h> #define SCE SFMT1279 ARRAY SIZE /\* (1279 / 128) + 1 \*/ 10

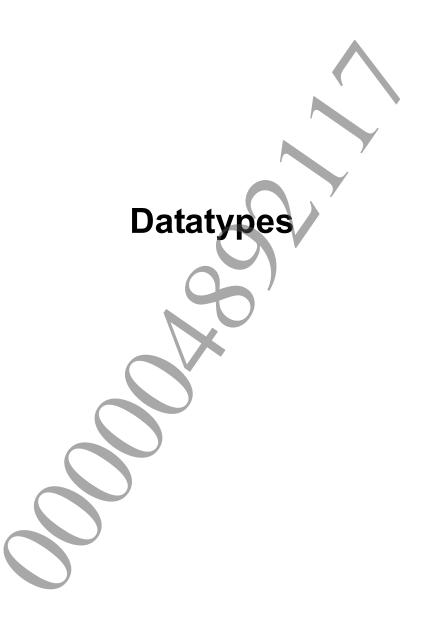
# **Description**

This constant defines the array size for pseudo random numbers in conformance with SFMT1279. In addition to indicating the array size that is maintained as state in the SceSfmt1279Context structure, this constant is also used by the sceSfmt1279FillArray32() and sceSfmt1279FillArray64() functions to indicate the minimum size for generating random numbers.

#### See Also

SceSfmt1279Context, sceSfmt1279FillArray32(), sceSfmt1279FillArray64()





# SceSfmt1279Context

Context information for SFMT1279 pseudo random number calculation

# **Definition**

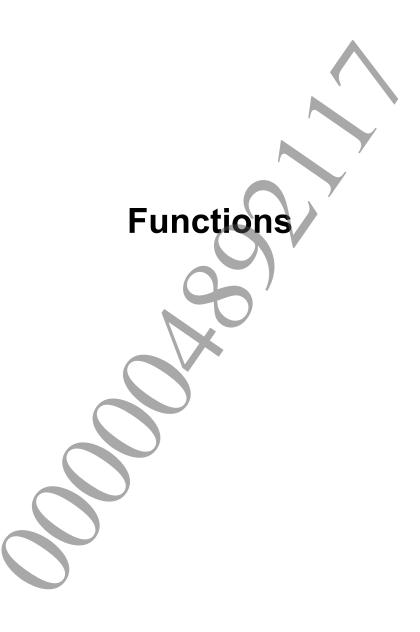
```
#include <libsfmt1279.h>
typedef struct SceSfmt1279Context {
          unsigned int idx;
          unsigned int sfmt[SCE_SFMT1279_ARRAY_SIZE][4];
} SceSfmt1279Context;
```

# **Description**

This structure is a work area for calculating pseudo random numbers in conformance with SFMT1279. One instance of this work area must be prepared for each random number sequence.

# See Also

SCE SFMT1279 ARRAY SIZE, sceSfmt1279InitGenRand(), sceSfmt1279InitByArray()



# sceSfmt1279InitGenRand

Initialize SFMT1279 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

PCtx Pointer to an SceSfmt1279Context 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 SFMT1279 random number sequence, which is represented by the SceSfmt1279Context structure. This function must be executed before the sceSfmt1279GenRand32(), sceSfmt1279GenRand64(), sceSfmt1279FillArray32(), and sceSfmt1279FillArray64() functions.

Since only the SceSfmt1279Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt1279Context structures.

### See Also

SceSfmt1279Context, sceSfmt1279InitByArray()

# sceSfmt1279InitByArray

Initialize SFMT1279 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

## **Arguments**

PCtx Pointer to an SceSfmt1279Context 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.
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 SFMT1279 random number sequence, which is represented by the SceSfmt1279Context structure. This function must be executed before the sceSfmt1279GenRand32(), sceSfmt1279GenRand64(), sceSfmt1279FillArray32(), and sceSfmt1279FillArray64() functions.

Since only the SceSfmt1279Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt1279Context structures.

## See Also

SceSfmt1279Context, sceSfmt1279InitGenRand()

# sceSfmt1279GenRand32

Generate an SFMT1279 32-bit pseudo random number

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

Pointer to an SceSfmt1279Context 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 SFMT1279.

Before using this function, the SceSfmt1279Context structure must be initialized by calling the sceSfmt1279InitGenRand() or sceSfmt1279InitByArray() functions.

#### See Also

SceSfmt1279Context, sceSfmt1279InitGenRand(), sceSfmt1279InitByArray()

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# sceSfmt1279GenRand64

Generate an SFMT1279 64-bit pseudo random number

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

*pCtx* Pointer to an SceSfmt1279Context 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 SFMT1279.

Before using this function, the SceSfmt1279Context structure must be initialized by calling the sceSfmt1279InitGenRand() or sceSfmt1279InitByArray() functions.

Note that if the sceSfmt1279GenRand32() and sceSfmt1279GenRand64() functions are used together and the sceSfmt1279GenRand64() function is called after the sceSfmt1279GenRand32() 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

SceSfmt1279Context, sceSfmt1279InitGenRand(), sceSfmt1279InitByArray()

# sceSfmt1279FillArray32

Generate an array of SFMT1279 32-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

## **Arguments**

```
Pointer to an SceSfmt1279Context structure, which represents a random number sequence as a context.

array Buffer for receiving the generated random numbers

size Number of elements in array (multiple of 4 that is larger than SCE_SFMT1279_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 SFMT1279. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (SCE SFMT1279 ARRAY SIZE \* 4).

Before using this function, the SceSfmt1279Context structure must be initialized by calling the sceSfmt1279InitGenRand() or sceSfmt1279InitByArray() functions.

When the sceSfmt1279FillArray32() function is used together with the sceSfmt1279GenRand32() function, the sceSfmt1279FillArray32() function can be called only after the sceSfmt1279GenRand32() function has been called (SCE\_SFMT1279\_ARRAY\_SIZE \* 4) times.

When the sceSfmt1279FillArray32() function is used together with the sceSfmt1279GenRand64() function, the sceSfmt1279FillArray32() function can be called only after the sceSfmt1279GenRand64() function has been called (SCE\_SFMT1279\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt1279Context, sceSfmt1279InitGenRand(), sceSfmt1279InitByArray()

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# sceSfmt1279FillArray64

Generate an array of SFMT1279 64-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

## **Arguments**

```
Pointer to an SceSfmt1279Context structure, which represents a random number sequence as a context.

array Buffer for receiving the generated random numbers

size Number of elements in array (multiple of 2 that is larger than SCE_SFMT1279_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 SFMT1279. *size* specifies the number of elements in *array* and must be a multiple of 2 that is larger than (SCE SFMT1279 ARRAY SIZE \* 2).

Before using this function, the SceSfmt1279Context structure must be initialized by calling the sceSfmt1279InitGenRand() or sceSfmt1279InitByArray() functions.

When the sceSfmt1279FillArray64() function is used together with the sceSfmt1279GenRand32() function, the sceSfmt1279FillArray64() function can be called only after the sceSfmt1279GenRand32() function has been called (SCE\_SFMT1279\_ARRAY\_SIZE \* 4) times.

When the sceSfmt1279FillArray64() function is used together with the sceSfmt1279GenRand64() function, the sceSfmt1279FillArray64() function can be called only after the sceSfmt1279GenRand64() function has been called (SCE\_SFMT1279\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt1279Context, sceSfmt1279InitGenRand(), sceSfmt1279InitByArray()

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