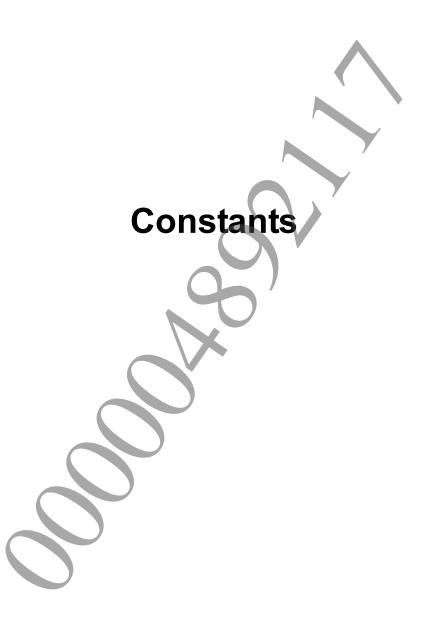


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# SCE\_SFMT607\_ARRAY\_SIZE

Array size for SFMT607 pseudo random number calculation

#### **Definition**

#include <libsfmt607.h> #define SCE SFMT607 ARRAY SIZE /\* (607 / 128) + 1 \*/

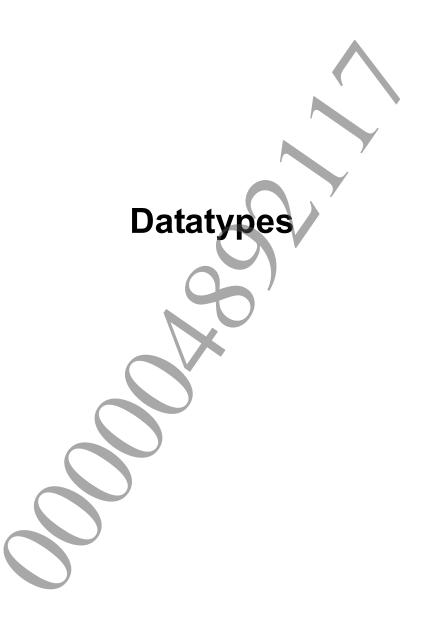
## **Description**

This constant defines the array size for pseudo random numbers in conformance with SFMT607. In addition to indicating the array size that is maintained as state in the SoeSfmt607Context structure, this constant is also used by the sceSfmt607FillArray32() and sceSfmt607FillArray64() functions to indicate the minimum size for generating random numbers.

#### See Also

SceSfmt607Context, sceSfmt607FillArray32(), sceSfmt607FillArray64()





# SceSfmt607Context

Context information for SFMT607 pseudo random number calculation

# **Definition**

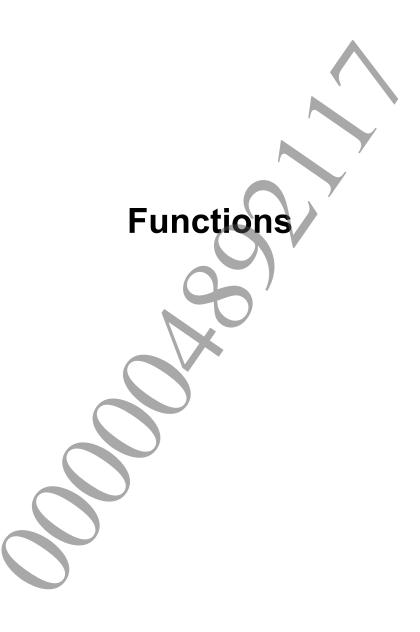
```
#include <libsfmt607.h>
typedef struct SceSfmt607Context {
          unsigned int idx;
          unsigned int sfmt[SCE_SFMT607_ARRAY_SIZE][4];
} SceSfmt607Context;
```

# **Description**

This structure is a work area for calculating pseudo random numbers in conformance with SFMT607. One instance of this work area must be prepared for each random number sequence.

# See Also

SCE SFMT607 ARRAY SIZE, sceSfmt607InitGenRand(), sceSfmt607InitByArray()



# sceSfmt607InitGenRand

Initialize SFMT607 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

#### **Arguments**

PCtx Pointer to an SceSfmt607Context 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	1100011
SCE_OK	Normal completion

## **Description**

This function uses a 32-bit seed to initialize an SFMT607 random number sequence, which is represented by the SceSfmt607Context structure. This function must be executed before the sceSfmt607GenRand32 (), sceSfmt607GenRand64 (), sceSfmt607FillArray32 (), and sceSfmt607FillArray64 () functions.

Since only the SceSfmt607Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt607Context structures.

#### See Also

SceSfmt607Context, sceSfmt607InitByArray()

# sceSfmt607InitByArray

Initialize SFMT607 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

#### **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 SFMT607 random number sequence, which is represented by the SceSfmt607Context structure. This function must be executed before the sceSfmt607GenRand32(), sceSfmt607GenRand64(), sceSfmt607FillArray32(), and sceSfmt607FillArray64() functions.

Since only the SceSfmt607Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt607Context structures.

#### See Also

SceSfmt607Context, sceSfmt607InitGenRand()

# Document serial number: 000004892117

# sceSfmt607GenRand32

Generate an SFMT607 32-bit pseudo random number

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

*pCtx* Pointer to an SceSfmt607Context 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 SFMT607.

Before using this function, the SceSfmt607Context structure must be initialized by calling the sceSfmt607InitGenRand() or sceSfmt607InitByArray() functions.

#### See Also

SceSfmt607Context, sceSfmt607InitGenRand(), sceSfmt607InitByArray()

# sceSfmt607GenRand64

Generate an SFMT607 64-bit pseudo random number

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

*pCtx* Pointer to an SceSfmt607Context 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 SFMT607.

Before using this function, the SceSfmt607Context structure must be initialized by calling the sceSfmt607InitGenRand() or sceSfmt607InitByArray() functions.

Note that if the sceSfmt607GenRand32() and sceSfmt607GenRand64() functions are used together and the sceSfmt607GenRand64() function is called after the sceSfmt607GenRand32() 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

SceSfmt607Context,sceSfmt607InitGenRand(),sceSfmt607InitByArray()

# sceSfmt607FillArray32

Generate an array of SFMT607 32-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

#### **Arguments**

```
PCtx Pointer to an SceSfmt607Context 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_SFMT607_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 SFMT607. size specifies the number of elements in array and must be a multiple of 4 that is larger than (SCE SFMT607 ARRAY SIZE \* 4).

Before using this function, the SceSfmt607Context structure must be initialized by calling the sceSfmt607InitGenRand() or sceSfmt607InitByArray() functions.

When the sceSfmt607FillArray32() function is used together with the sceSfmt607GenRand32() function, the sceSfmt607FillArray32() function can be called only after the sceSfmt607GenRand32() function has been called (SCE\_SFMT607\_ARRAY\_SIZE \* 4) times.

When the sceSfmt607FillArray32() function is used together with the sceSfmt607GenRand64() function, the sceSfmt607FillArray32() function can be called only after the sceSfmt607GenRand64() function has been called (SCE\_SFMT607\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt607Context, sceSfmt607InitGenRand(), sceSfmt607InitByArray()

# sceSfmt607FillArray64

Generate an array of SFMT607 64-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

#### **Arguments**

```
PCtx Pointer to an SceSfmt607Context 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_SFMT607_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 SFMT607. size specifies the number of elements in array and must be a multiple of 2 that is larger than (SCE SFMT607 ARRAY SIZE \* 2).

Before using this function, the SceSfmt607Context structure must be initialized by calling the sceSfmt607InitGenRand() or sceSfmt607InitByArray() functions.

When the sceSfmt607FillArray64() function is used together with the sceSfmt607GenRand32() function, the sceSfmt607FillArray64() function can be called only after the sceSfmt607GenRand32() function has been called (SCE\_SFMT607\_ARRAY\_SIZE \* 4) times.

When the sceSfmt607FillArray64() function is used together with the sceSfmt607GenRand64() function, the sceSfmt607FillArray64() function can be called only after the sceSfmt607GenRand64() function has been called (SCE\_SFMT607\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt607Context, sceSfmt607InitGenRand(), sceSfmt607InitByArray()