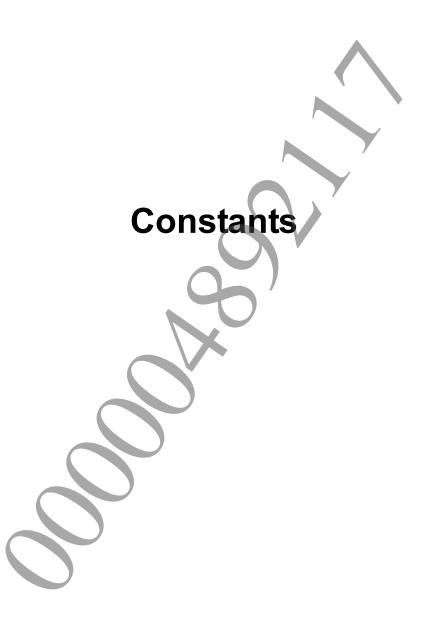


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# SCE SFMT4253 ARRAY SIZE

Array size for SFMT4253 pseudo random number calculation

#### **Definition**

#include <libsfmt4253.h> #define SCE SFMT4253 ARRAY SIZE /\* (4253 / 128) + 1 \*/ 34

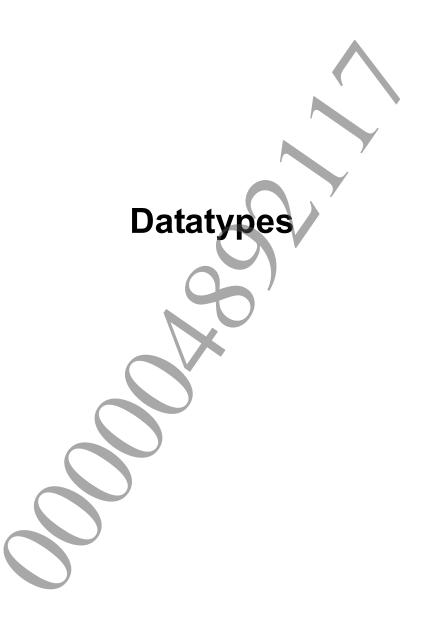
# **Description**

This constant defines the array size for pseudo random numbers in conformance with SFMT4253. In addition to indicating the array size that is maintained as state in the SceSfmt4253Context structure, this constant is also used by the sceSfmt4253FillArray32() and sceSfmt4253FillArray64() functions to indicate the minimum size for generating random numbers.

#### See Also

SceSfmt4253Context, sceSfmt4253FillArray32(), sceSfmt4253FillArray64()





# SceSfmt4253Context

Context information for SFMT4253 pseudo random number calculation

# **Definition**

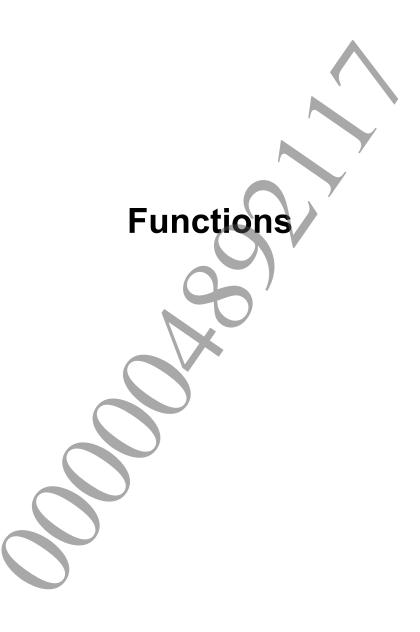
```
#include <libsfmt4253.h>
typedef struct SceSfmt4253Context {
          unsigned int idx;
          unsigned int sfmt[SCE_SFMT4253_ARRAY_SIZE][4];
} SceSfmt4253Context;
```

# **Description**

This structure is a work area for calculating pseudo random numbers in conformance with SFMT4253. One instance of this work area must be prepared for each random number sequence.

# See Also

SCE SFMT4253 ARRAY SIZE, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()



# sceSfmt4253InitGenRand

Initialize SFMT4253 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

## **Arguments**

PCtx Pointer to an SceSfmt4253Context 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 SFMT4253 random number sequence, which is represented by the SceSfmt4253Context structure. This function must be executed before the sceSfmt4253GenRand32(), sceSfmt4253GenRand64(), sceSfmt4253FillArray32(), and sceSfmt4253FillArray64() functions.

Since only the SceSfmt4253Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt4253Context structures.

#### See Also

SceSfmt4253Context, sceSfmt4253InitByArray()

# sceSfmt4253InitByArray

Initialize SFMT4253 pseudo random number work area

#### **Definition**

# **Calling Conditions**

Multithread safe

### **Arguments**

Pointer to an SceSfmt4253Context 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 SFMT4253 random number sequence, which is represented by the SceSfmt4253Context structure. This function must be executed before the sceSfmt4253GenRand32(), sceSfmt4253GenRand64(), sceSfmt4253FillArray32(), and sceSfmt4253FillArray64() functions.

Since only the SceSfmt4253Context structure indicated by pCtx is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt4253Context structures.

### See Also

SceSfmt4253Context, sceSfmt4253InitGenRand()

# sceSfmt4253GenRand32

Generate an SFMT4253 32-bit pseudo random number

#### **Definition**

# **Calling Conditions**

Multithread safe

# **Arguments**

*pCtx* Pointer to an SceSfmt4253Context 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 SFMT4253.

Before using this function, the SceSfmt4253Context structure must be initialized by calling the sceSfmt4253InitGenRand() or sceSfmt4253InitByArray() functions.

#### See Also

SceSfmt4253Context, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()

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# sceSfmt4253GenRand64

Generate an SFMT4253 64-bit pseudo random number

#### **Definition**

### **Calling Conditions**

Multithread safe

# **Arguments**

*pCtx* Pointer to an SceSfmt4253Context 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 SFMT4253.

Before using this function, the SceSfmt4253Context structure must be initialized by calling the sceSfmt4253InitGenRand() or sceSfmt4253InitByArray() functions.

Note that if the sceSfmt4253GenRand32() and sceSfmt4253GenRand64() functions are used together and the sceSfmt4253GenRand64() function is called after the sceSfmt4253GenRand32() 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

SceSfmt4253Context, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()

# sceSfmt4253FillArray32

Generate an array of SFMT4253 32-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

### **Arguments**

```
    Pointer to an SceSfmt4253Context structure, which represents a random number sequence as a context.
    Buffer for receiving the generated random numbers
    Number of elements in array (multiple of 4 that is larger than SCE_SFMT4253_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 SFMT4253. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (SCE SFMT4253 ARRAY SIZE \* 4).

Before using this function, the SceSfmt4253Context structure must be initialized by calling the sceSfmt4253InitGenRand() or sceSfmt4253InitByArray() functions.

When the sceSfmt4253FillArray32() function is used together with the sceSfmt4253GenRand32() function, the sceSfmt4253FillArray32() function can be called only after the sceSfmt4253GenRand32() function has been called (SCE\_SFMT4253\_ARRAY\_SIZE \* 4) times.

When the sceSfmt4253FillArray32() function is used together with the sceSfmt4253GenRand64() function, the sceSfmt4253FillArray32() function can be called only after the sceSfmt4253GenRand64() function has been called (SCE\_SFMT4253\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt4253Context, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()

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# sceSfmt4253FillArray64

Generate an array of SFMT4253 64-bit pseudo random numbers

#### **Definition**

# **Calling Conditions**

Multithread safe

### **Arguments**

```
PCtx Pointer to an SceSfmt4253Context 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_SFMT4253_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 SFMT4253. size specifies the number of elements in array and must be a multiple of 2 that is larger than (SCE SFMT4253 ARRAY SIZE \* 2).

Before using this function, the SceSfmt4253Context structure must be initialized by calling the sceSfmt4253InitGenRand() or sceSfmt4253InitByArray() functions.

When the sceSfmt4253FillArray64() function is used together with the sceSfmt4253GenRand32() function, the sceSfmt4253FillArray64() function can be called only after the sceSfmt4253GenRand32() function has been called (SCE\_SFMT4253\_ARRAY\_SIZE \* 4) times.

When the sceSfmt4253FillArray64() function is used together with the sceSfmt4253GenRand64() function, the sceSfmt4253FillArray64() function can be called only after the sceSfmt4253GenRand64() function has been called (SCE\_SFMT4253\_ARRAY\_SIZE \* 2) times.

#### See Also

SceSfmt4253Context, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()

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