

**NAME**

`csinh`, `csinhf`, `csinhl` – complex hyperbolic sine

**SYNOPSIS**

```
#include <complex.h>
```

```
double complex csinh(double complex z);
```

```
float complex csinhf(float complex z);
```

```
long double complex csinhl(long double complex z);
```

Link with `-lm`.

**DESCRIPTION**

These functions calculate the complex hyperbolic sine of  $z$ .

The complex hyperbolic sine function is defined as:

$$\operatorname{csinh}(z) = (\exp(z) - \exp(-z))/2$$

**VERSIONS**

These functions first appeared in glibc in version 2.1.

**ATTRIBUTES**

For an explanation of the terms used in this section, see **attributes(7)**.

Interface	Attribute	Value
<code>csinh()</code> , <code>csinhf()</code> , <code>csinhl()</code>	Thread safety	MT-Safe

**CONFORMING TO**

C99, POSIX.1-2001, POSIX.1-2008.

**SEE ALSO**

**cabs(3)**, **casinh(3)**, **ccosh(3)**, **ctanh(3)**, **complex(7)**

**COLOPHON**

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