

GoFast® for 8051 Family

Features

- Fast
- ROMable
- Conforms to IEEE 754
- Includes single and double precision
- Includes test programs

Description

GOFAST® for 8051 was carefully designed for high performance operation on 8051 and derivative architectures. The product optimizes for a balance of space and speed.

Functionality

GOFAST contains the following floating point routines in both single and double precision:

- add, subtract, multiply, divide
- conversion operations
- compare operations
- sin, cos, tan
- asin, acos, atan, atan2
- sinh, cosh, tanh
- log, log10
- exp, pow
- fabs, ceil, floor
- modf, fmod, frexp, ldexp

Speed

Timings for some functions follow. These sample microsecond timings are based on a 12 MHz 8051.

Approximate Timings in Microseconds

(Typical - Maximum)

Functions	Single	Double
add	260-370	750 - 1100
multiply	450 - 560	1380 - 1530
divide	1070 - 1390	5300 - 6900
sin/cos	5050	23400
ln	6000	23000
sqrt	2850	18500

Floating Point Technology

GOFAST for 8051 is based on U S Software's proven floating point algorithms the company has been developing for over a decade. The algorithms have been thoroughly tested using automated methods. GOFAST was specifically optimized and integrated for high performance on 8051 processors.

Functionality

GOFAST for 8051 implements a floating point accumulator (FAC) in read-write memory. Operations and functions are performed using the value in FAC

GOFAST for 8051 is not naturally reentrant. However, reentrancy can be achieved by saving/restoring the FAC and other GOFAST temporaries during a context switch. An application note included with the product describes the procedure.

- + - * /
- comparison operations
- sqrt
- sin, cos, tan
- atan
- ln, log
- exp, xtoi
- Integer to/from Float conversions
- ASCII to/from Float conversions

GOFAST Support

U S Software maintains a test lab where comprehensive confidence tests are performed on GOFAST in each target environment. A demonstration test program is included with your product delivery, and you are encouraged to run it on your own target hardware to verify system operation. Phone and fax support are provided with the product. Extended support is also available.