

GOFAST[®] for M68k Microtec C

Features

- ◆ Fast
- ◆ Reentrant
- ◆ ROMable
- ◆ Conforms to IEEE 754
- ◆ "Link and Go" compiler support for Microtec C
- ◆ Includes C startup code
- ◆ Includes test programs and make file

Description

GOFAST[®] for Microtec C was carefully designed for high performance operation and ease of use including "link and go" compatibility with the Microtec C compiler. GOFAST provides ROMable, reentrant IEEE and ANSI compatible 68K floating point support.

Functionality

GOFAST supports reentrant floating point calculations for the Microtec C compiler. GOFAST includes the following routines for both single and double precision in library format:

- ◆ **intrinsic basic operations + - * /**
- ◆ **intrinsic conversions**
- ◆ **sqrt**
- ◆ **sin, cos, tan**
- ◆ **asin, acos, atan, atan2**
- ◆ **sinh, cosh, atanh**
- ◆ **log, log10, exp, pow**
- ◆ **floor, ceil, fabs**
- ◆ **modf, fmod, frexp, ldexp**

The following files are included in source format to support GOFAST testing:

- ◆ **makefile** Sample makefile
- ◆ **putchr.c** To read and display characters
- ◆ **start.s** Skeleton startup
- ◆ **suppa.s** Assembly support for putchr.c
- ◆ **test1.c** Simple test program

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Target Processors

GOFAST for Microtec C includes two libraries. GOFAST16.LIB is a floating point library designed for operation with 68K processors that do not support the 32 bit multiply and divide instructions (e.g. 68000). GOFAST.LIB is a floating point library designed for operation with processors that support the 32 bit multiply and divide instructions (e.g. 68020 etc.).

Considerations

GOFAST is primarily designed to facilitate embedded operation. However, it is also tuned for performance. The following table gives the timing of some floating point operations, both with and without GOFAST. The times, given in microseconds, were measured using a 25 MHz 68360.

Microsecond Timings

Library Function	Single Precision		Double Precision			
	MRI	C	MRI	C	w/GF	
add		25		28	51	48
multiply		32		30	73	51
divide		32		28	152	51
sqrt		250		50	712	62
exp		487		62	1550	225
pow		1025		137	3112	437
log		450		62	1587	200
log 10		487		62	1650	225
sin		287		62	1187	175
cos		487		75	1675	162
tan		275		62	1212	250
asin		612		100	2337	262
acos		575		100	2237	287
atan		425		75	1737	175

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