GoFast® for M68k Microtec C

Features

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

- 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

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	w/GF	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	2337	287
atan	425	75	1737	175