

dsPIC30F Math Library

Summary

The dsPIC30F Math Library is the compiled version of the math library that is distributed with the highly optimized, ANSI-compliant dsPIC30F MPLAB® C30 compiler (SW006012). It contains advanced single and double-precision floating-point arithmetic and trigonometric functions from the standard C header file `<math.h>`. The library delivers small program code size and data size, reduced cycles and high accuracy.

Features

- The Math Library is callable from either MPLAB C30 or dsPIC30F assembly language.
- The functions are IEEE-754 compliant, with signed zero, signed infinity, NaN (Not a Number) and denormal support and operated in the "round to nearest" mode.
- Compatible with MPLAB ASM30 and MPLAB LINK30, which are available at no charge from Microchip's web site.
- Total library memory usage^{1, 2}:
 - Code size: 5250 bytes
 - Data size: 4 bytes

Function Group	Function	Performance (Cycles) ^{1, 3, 4}
Basic Floating Point	Addition	122
	Subtraction	124
	Multiplication	109
	Division	361
	Remainder	385
Trigonometric and Hyperbolic	acos	478
	asin	363
	atan	696
	atan2	3206
	cos	3249
	sin	2238
	tan	2460
	cosh	1049
	sinh	525
	tanh	338
Logarithmic and Exponential	exp	530
	frexp	39
	ldexp	44
	log	2889
	log10	3007
Power Functions	pow	2134
	sqrt	493
Rounding Functions	ceil	94
	floor	51
Absolute Value Function	fabs	6
Modular Arithmetic Functions	modf	151
	fmod	129

1. Results are based on using the dsPIC30F MPLAB C30 Compiler (SW006012) version 1.20.
2. Maximum "Memory Usage" when all functions in the library are loaded. Most applications will use less.
3. All performance statistics represented here are for 32-bit IEEE754 floating-point input and output data types.
4. Performance (in instruction cycles) listed here represent an average number of instruction cycles required to perform the floating-point operation.



MICROCHIP

Development Systems

Microchip Technology Incorporated

Part Numbers and Ordering Information:

dsPIC30F Math Library		
Part Number	Description	Availability
SW300020	dsPIC30F Math Library (Free download from the Microchip web site)	Now
	The library is already included in MPLAB dsPIC30F C30 Compiler (SW006012) MPLAB C30 owners do NOT need to download this standalone library.	

Development Tools from Microchip	
MPLAB® IDE	Integrated Development Environment (IDE)
MPASM™ Assembler	Universal PICmicro® Macro-Assembler
MPLINK™ Linker/MPLIB™ Librarian	Linker/Librarian
MPLAB SIM Simulator	Software Simulator
MPLAB C18	C Compiler for PIC18CXXX MCUs
MPLAB C30	C Compiler for dsPIC30F MCUs
PICKit™ 1	Flash Starter Kit
MPLAB ICD 2	In-Circuit Debugger
MPLAB ICE 2000	Full-featured Modular In-Circuit Emulator for PIC12, PIC16 and PIC18 MCUs
MPLAB ICE 4000	Full-featured Modular In-Circuit Emulator for PIC18 and dsPIC MCUs
PICSTART® Plus Programmer	Entry-level Development Kit with Programmer
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