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Proteus VSM for MSP430®

System Level Simulation for Texas Instruments™ MSP430 Variants.

Summary

Proteus Virtual System Modelling (VSM) combines mixed mode SPICE circuit simulation, animated components and microprocessor models to facilitate co-simulation of complete microcontroller based designs.The 'Proteus VSM for MSP430' product includes the following main software modules:

- Professional Schematic Capture module

- ProSPICE professional Simulation Engine

- All supported VSM microcotroller variants in the MSP430® Family.

- All of the Proteus Embedded Simulation Peripheral Libraries.

- VSM Studio IDE with automatic compiler configuration.

- Over 10,000 standard simulation models.

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Variants

The following is a current list of supported variants in the MSP430® family:

- MSP430C1101, MSP430C1111, MSP430C1121, MSP430F233
- MSP430F235, MSP430F247, MSP430F248, MSP430F249
- MSP430F1101, MSP430F1111, MSP430F1121, MSP430F2001
- MSP430F2011, MSP430F2101, MSP430F2111, MSP430F2112
- MSP430F2121, MSP430F2122, MSP430F2131, MSP430F2132
- MSP430F2232, MSP430F2252, MSP430F2272, MSP430F2330
- MSP430F2350, MSP430F2370, MSP430F2410, MSP430F2416
- MSP430F2417, MSP430F2418, MSP430F2419, MSP430F2471
- MSP430F2481, MSP430F2491, MSP430G2001, MSP430G2101
- MSP430G2102, MSP430G2111, MSP430G2112, MSP430G2121
- MSP430G2131, MSP430G2132, MSP430G2152, MSP430G2153

- MSP430G2201, MSP430G2202, MSP430G2203, MSP430G2210
- MSP430G2211, MSP430G2212, MSP430G2213, MSP430G2221
- MSP430G2230, MSP430G2231, MSP430G2232, MSP430G2233
- MSP430G2252, MSP430G2253, MSP430G2302, MSP430G2303
- MSP430G2312, MSP430G2313, MSP430G2332, MSP430G2333
- MSP430G2352. MSP430G2353, MSP430G2402, MSP430G2403
- MSP430G2412, MSP430G2413, MSP430G2432, MSP430G2433
- MSP430G2444, MSP430G2452, MSP430G2453, MSP430G2513
- MSP430G2533, MSP430G2544, MSP430G2553, MSP430G2744
- MSP430G2755, MSP430G2855, MSP430G2955

Features

We believe our simulation models are the most accurate and the most complete on the market today. A summary of model capabilities is listed below:

- The entire instruction set.
- Supports all port and other I/O pin operations.
- Supports all counter/timers including seperate prescalers, capture compare and PWM modes.
- Supports watchdog timer.
- Supports serial U(S)ART.
- Supports Analogue-to-Digital Conversion (ADC) and analogue comparator modules in all modes.
- Supports all internal and external interrupt modes.
- Supports internal and external code, data and EEPROM memory inc. code protection and data persistence.
- Internally generated processor clock for performance. Event timing accurate to one clock period.
- Allows disassembly of code when no or limited debug information available.
- Provides internal consistency checks on code (e.g. execution of invalid op-codes, illegal memory accesses, stack overflow checking, etc.).
- Fully integrated in to the VSM source level debugging system.
- Fully integrated into the Proteus Diagnostic Control System.

Limitations

The following is a listing of known limitations in the current version of the MSP430®:

x No significant functional limitations.

Compilers

Supported Third Party Compilers

Proteus VSM models will fundamentally work with the exact same HEX file as you would program the physical device with. However, far more debugging information is available when using a compiler to write the firmware and providing these object files to Proteus in place of the HEX file provides a much richer working environment.

We recommend you use the free Labcenter VSM Studio IDE. This will greatly simplify the task as it will automatically configure supported compilers to work with a Proteus VSM simulation.

If you prefer to work inside your own IDE then you will need to set your compiler options manually. After compiling for debug, all you need to do is specify the debug file from the compiler as the program property of the microcontroller on the schematic.

VSM Studio supported toolchains

- Code Composer
- GCC