Freescale Semiconductor, Inc.

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digital dna™

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OVERVIEW

The DSP56300 family of digital signal processors (DSPs) is fully supported by Motorola's Suite56 software development tools. This robust tool suite, which has helped to develop millions of lines of DSP software, includes an assembler, linker, simulator, debugger and several utilities. Suite56 supports developing with multiple DSPs, ideal for DSP farm applications.

The Suite56 assembler provides a rich set of features designed to enable efficient embedded software development, including support for macros that give the user the ability to write a sequence of instructions once, and call the sequence from multiple points in the code without incurring the overhead of a subroutine call. In addition, structured assembly is designed to provide high-level constructs such as looping ("do while") and conditional execution ("if then else") in assembly language programs.
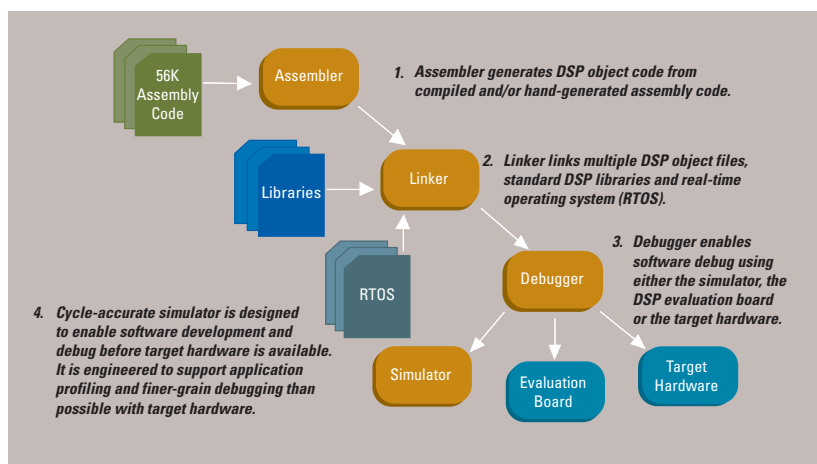
The suite's full-featured linker is engineered to provide complete control over placement of code and data in memory, as well as more sophisticated features such as overlays to allow the user to copy sections of code into program memory while the program is running. The code is generally stored in slower, less complex memory and copied into fast memory to be executed, lowering system development costs without sacrificing execution time.

On the code execution side, the debugger is designed to provide C and assembly language development support for the simulator, evaluation boards, and user systems, all from the same intuitive user interface. The debugger can run scripts of commands to automate frequently executed development tasks.

The Suite56 simulator is a cycle-approximate simulator for the DSP56300 core; it also simulates peripherals for DSP56300 derivatives. It has sophisticated I/O capabilities and supports multidevice simulation, an important and convenient feature for developers of DSP farm-based solutions.

Profiling capabilities are built into the debugger for use with the DSP56300 simulator. The profiler tracks how much time is spent in each section of code so that developers can better determine where to optimize the program.

SUITE56™ SOFTWARE DEVELOPMENT

56K Assembly Code → Assembler

1. Assembler generates DSP object code from compiled and/or hand-generated assembly code.

Libraries → Linker

2. Linker links multiple DSP object files, standard DSP libraries and real-time operating system (RTOS).

RTOS

Debugger

3. Debugger enables software debug using either the simulator, the DSP evaluation board or the target hardware.

4. Cycle-accurate simulator is designed to enable software development and debug before target hardware is available. It is engineered to support application profiling and finer-grain debugging than possible with target hardware.

Simulator   Evaluation Board   Target Hardware

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EASE-OF-USE AND PLATFORM SUPPORT

The Suite56 software development environment is designed to support Ethernet, PCI and USB command converters; users can connect Suite56 to any DSP56300 development platform using one of these target host interfaces. High-performance target connections can significantly improve software debugging performance.

Suite56 supports platforms including Windows® 98, Windows NT 4.0, Windows 2000 and Windows XP operating systems, and Solaris™ 2.6, Solaris 7 and Solaris 8 operating environments.

Suite56 Platform Support

Available Today

√	Windows 98
√	Windows NT 4.0
√	Windows 2000
√	Windows XP
√	Solaris 2.6
√	Solaris 7
√	Solaris 8
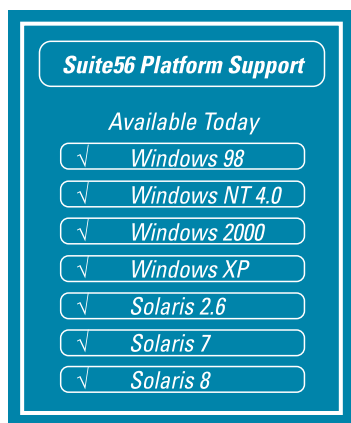
EVALUATION MODULE (EVM)

A low-cost, stand-alone EVM is designed to enable users to evaluate and develop software for a specific 56300 DSP. The EVM kit includes a hardware debugger based on the Windows operating system that communicates with the EVM board over a standard parallel cable to the host PC. The debugger uses the DSP's built-in OnCE port for unobtrusive, real-time debugging. The kit also includes a Motorola cross assembler, audio or telephony codec, JTAG connector and expansion memory. The EVM can also be used with the supported host target interfaces from a host system based on Windows OS or Solaris operating environment.

LEARN MORE

Suite56 software development tools are available—absolutely free—on the Web at www.metrowerks.com.

The tools suite is supported by Metrowerks, a Motorola company and leading manufacturer of professional software development tools. Metrowerks' Software Solutions Group also provides a broad range of services including hardware and software integration, custom software development, support for new platforms, custom training services, project porting services and API consulting.

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