BR1797/D

MSC8101

Industry's most powerful network-ready DSP.

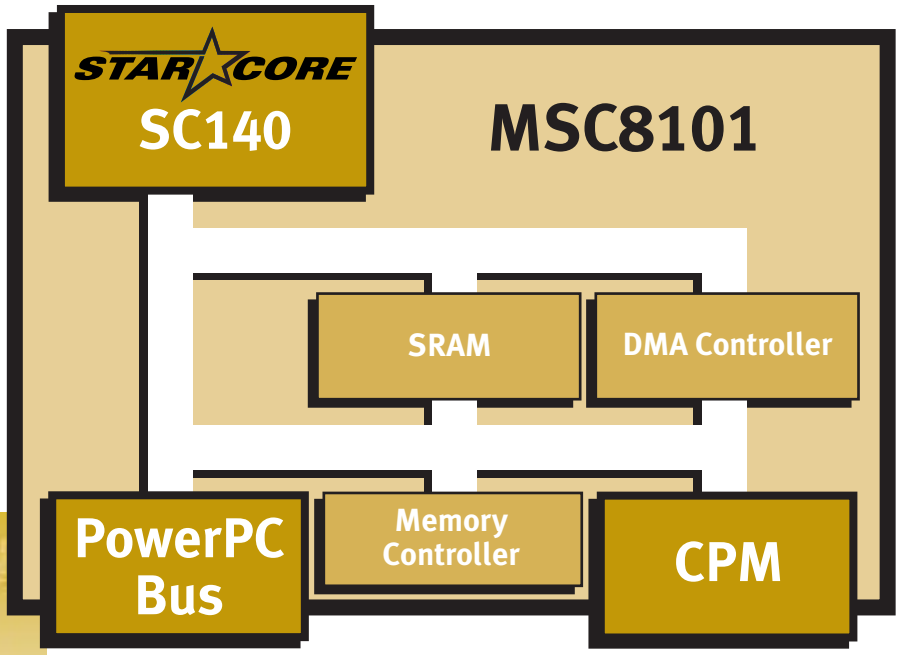
Leading the way with the first generation of Star*Core™ architecture-based DSPs, Motorola introduces the MSC8101 - the industry's most powerful integrated DSP optimized for networking infrastructure applications.

With its unique combination of a SC140 DSP core, programmable Communications Processor Module (CPM) and PowerPC™ bus interface, the MSC8101 offers unprecedented signal processing performance, flexible network connectivity, and seamless system integration.

The SC140 core, composed of four 16-bit ALUs (Arithmetic Logic Units), uses an internal 300 MHz clock to deliver 1200 MMACS or 3000 RISC MIPS of usable DSP performance. The MSC8101 CPM is a programmable 32-bit RISC protocol machine that allows connectivity to such standard network backbones as ATM, Fast Ethernet, and fast TDM highways. This CPM is the same engine found in Motorola's popular MPC8260 PowerQUICC II™ microcontroller.

A fully integrated 64-bit PowerPC bus interface allows easy connections to multi-master PowerPC microprocessor-based systems and direct connectivity to PowerPC bus peripherals.

The MSC8101 contains 512KB of static RAM and a powerful 16-channel DMA controller to facilitate data transfers between the SC140 core, internal memory, CPM, and the PowerPC bus interface. In addition, the programmable MPC8260 memory controller is integrated to support a wide variety of external memory devices and peripherals.



Product Features

- 300 MHz SC140 Core
  - 1200 MMACS, 3000 RISC MIPS
- 100 MHz 64/32-bit, 60x PowerPC Bus
- 150 MHz CPM
  - 155 Mbps ATM
  - 10/100 Mbps Ethernet
  - up to Four E1/T1
- 512KB (256K words) of On-chip SRAM
- 16-channel DMA Controller

- Eight Bank Memory Controller
  - SDRAM, SRAM, DRAM, EPROM, FLASH
- 32-bit Enhanced Filter Coprocessor (EFCOP)
- 16-bit Host Interface
- Very Low Power Consumption
  - < 0.25 W Core
  - 0.5 W Device
- Enhanced On-chip Emulation (EOnCE™)
- Small, Space Saving 17mm x 17mm Plastic Package

Digital DNA™ from Motorola

Big Things Come In Small Packages

Motorola employs its unique capabilities to combine proven cores and intellectual property on a single integrated device using advanced manufacturing process technology. The MSC8101 is the industry's first DSP implemented in Motorola's new 0.13 micron copper interconnect process technology. This technology enables high-frequency performance, high levels of integration and very low power consumption in a cost-effective 17mm x 17mm plastic package.

Target Applications

The MSC8101 is suited for the high performance demands of the networking infrastructure applications:

- Wireless Infrastructure
  - cost reduced 2G systems
  - new 2.5G and 3G systems
- IP Telephony
  - voice, FAX, modem, video IP gateways
- ATM Edge/Carrier Switches
  - voice, fax, modem, video IP gateways
- Modem Banks
  - xDSL/hybrid modem banks
- WAN Switching & Transmission
  - centralized DSP services (compression & echo cancellation)

Today's networking infrastructure systems are characterized by separate voice, FAX, and data subsystems over independent real-time voice (circuit switched) and data (packet) networks. These fixed-platform systems are often based on closed, proprietary architectures. Tomorrow's systems will be based on a configurable open architecture platform that supports a combination of real-time voice, FAX, and data on a packet-switched network. Through its integrated CPM, the MSC8101 has the unique ability to connect to the network, manage the layer 2 and layer 3 protocols, and extract the data directly.

Time to Market...Time to Money

In order to minimize development cycle time, a comprehensive set of software development tools and application software modules supports the MSC8101. The baseline set of development tools includes the assembler, linker, C/C++ compiler, optimizer, simulator, and other utilities all supplied by Motorola. The Star*Core SC140 core was designed with C compilation in mind, so the compiler provides unsurpassed efficiency in code optimization while maintaining optimum code density. In addition, Motorola is working with several third-party companies to offer a wide choice of Integrated Development Environments (IDE) and Real-Time Operating Systems (RTOS). Interoperability is affirmed through a common Application Binary Interface (ABI). Another key factor in accelerating time to market is the availability of optimized application software modules, both in C code and assembly, for use in the customer's application. Examples of software modules include speech coders, echo cancellers, FAX, and modem. Motorola is working with a variety of third-party developers to ensure software availability with the silicon.

Key Advantages of Motorola MSC8101

High Performance

- High speed (300 MHz) yielding 1200 MMACS
- Four orthogonal data ALUs yielding excellent flexibility
- Efficient execution of up to six parallel instructions in one clock cycle

Compatibility

- Fast time-to-market through C programming
- High code density resulting in lower system costs
- High level of maintainability by using C code

Low Power Dissipation

- Supports plastic packaging
- Enables a variety of applications

Software Development Tools

- Tools integrated under an IDE
- Real-time debug capability
- Optimizing C/C++ compiler generates efficient control and DSP code
- Low overhead operating systems

Raising the Bar

The Motorola MSC8101 raises the bar in DSP performance, networking connectivity, and system integration. To learn more about the MSC8101 please visit our website: http://www.motorola-dsp.com or contact your local Motorola sales office.

Digital DNA™ from Motorola