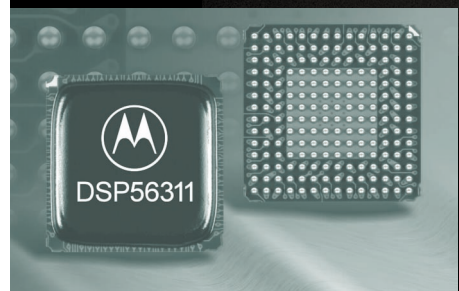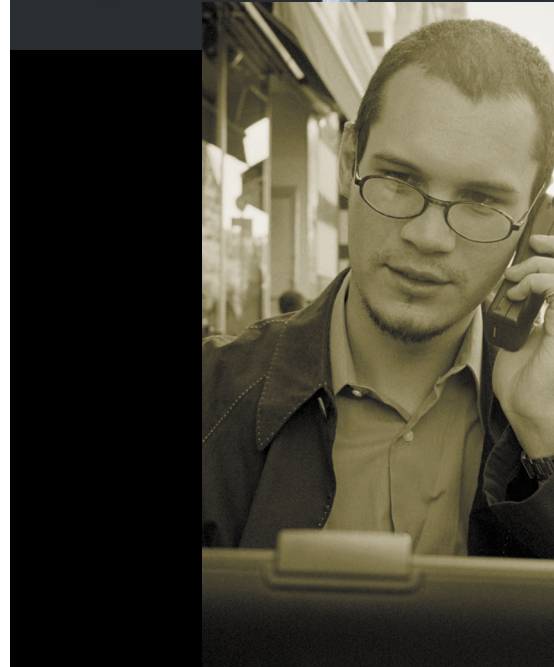# DSP56311

Higher performance programmable DSP for demanding voice and data applications

With 150 MHz of core processing power, the DSP56311 is ideal for multi-channel voice and data applications such as digital cellular base stations and Internet Protocol (IP) telephony. Providing an extra performance boost, its 150 MHz on-chip Enhanced Filter Coprocessor (EFCOP) allows filtering-based applications, such as echo cancellation, to be processed in parallel with core operations.
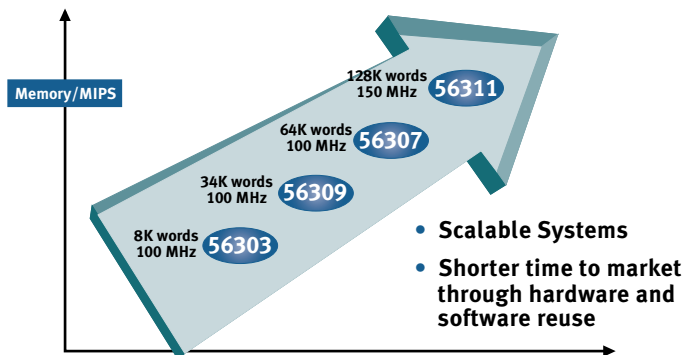
The DSP56311 provides higher system performance while consuming minimal power and board space. Designs based on this DSP solution can gain up to 50 percent more processing capability, resulting in higher channel density per DSP and increased functionality, without sacrificing board space or increasing power consumption. The DSP56311 delivers 270 MIPS (effective) and 3 megabits of on-chip static RAM in a 15mm x 15mm footprint, while consuming only 0.7mA/MIPS of power.

With 384K bytes, or 128K 24-bit words, of integrated SRAM, the DSP56311 can eliminate the need for external memory devices which may reduce performance and consume both power and space. All of this is important for smart networking applications where an array of DSPs handles hundreds or thousands of voice, fax or data channels on a single board.

The programmable DSP56311 meets the needs of wireless communication infrastructure and IP telephony providers to perform future services through software upgrades. The DSP56311's DigitalDNA™ technology addresses the next generation of communication standards, which command higher data rates, support for more complex media streams, and increased traffic channel density.

DSP56300 Migration Path

Memory/MIPS

- 128K words / 150 MHz — 56311
- 64K words / 100 MHz — 56307
- 34K words / 100 MHz — 56309
- 8K words / 100 MHz — 56303

- Scalable Systems
- Shorter time to market through hardware and software reuse

For More Information On This Product
Go to: www.freescale.com

Product Features

- Large on-chip memory: 128K words on-chip SRAM

- Unparalleled performance: 150 MHz core, 270 effective MIPS

- Enhanced voice quality: 150 MHz Enhanced Filter Coprocessor for filtering and echo cancellation

- Lower power consumption: 0.7mA/MIPS@1.8V

- Small Package: 15mm x 15mm 196 PBGA

- Code compatible with DSP56300 and DSP56000 families of devices

- Hardware and software migration path for 56303, 56309, and 56307 users

- Suite56™ and third-party development tools available

Applications

- Wireless Infrastructure
  - Base transceiver station
  - Base station controllers
  - Mobile switching centers

- IP Telephony

- Multichannel Wireless Local Loop

- DSP resource boards

- Wireline switching equipment

- High-speed modem banks

- Network interface cards

Contact Information

For more information about the DSP56311 please visit our website:
http://www.motorola-dsp.com
or contact your local Motorola sales office.

Semiconductor, Inc.

Time to Market Advantage

Because the DSP56311 is code and footprint compatible with other Motorola 56300 devices, investment in legacy code and hardware board design is preserved. This enables infrastructure companies to build next generation wireless systems quickly and more cost effectively. The DSP56311 offers a smooth migration path within the DSP56300 family, including the DSP56303, DSP56309, and DSP56307 in the 196-pin PBGA package. Existing designs based on any of these

products can easily migrate to the 56311 through reuse of application code, simulation models, and system development tools, offering a faster time to market advantage over competing solutions.

Development Support

The DSP56311 is fully supported by Motorola's integrated Suite56™ software development tool kit, which is available on CD-ROM or at http://www1.motorola-dsp.com/. The suite includes an assembler, linker, compiler, simulator, and debugger. A best-of-breed C compiler created by Tasking Inc. enables high-performance DSP applications to be written in C in

combination with optimizations in assembly language. The compiler is compatible with Motorola's tool suite and is available as part of a complete 56300 integrated development environment (IDE) provided by Tasking. A library of applications software modules including GSM, CDMA, ITU-standard speech codecs, and echo cancellation modules is available for the DSP56300 family through Motorola and its third party suppliers.

On the hardware side, Motorola provides a low-cost Evaluation Module (EVM) kit for the 56311. The EVM kit provides an evaluation board including the DSP56311 along with on-board command converter interface for connection to a host development system.

A Winning DSP Solution

Since its announcement in May 1999, the DSP56311 has won praise from leading analysts and media in the electronics industry including *EDN* and *Cahners Electronics Group*. The DSP56311 was selected as one of EDN's Hot 100 Products in the Microprocessor category and ranked as one of the Top 10 Microprocessors and Microcontrollers in *Cahners Electronics Group Electronics Industry Year Book*, 2000 Edition.

MOTOROLA