

# Freescale Semiconductor audio DSP performs big in small package

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DSP56374 enables customized high-quality audio on the road and in the home

[Freescale Semiconductor](#) has combined digital signal processor ([DSP](#)) performance and a low price point for audio applications that require small board space. The DSP56374 furthers the company's commitment to the digital audio market by offering a device that marries speed, [memory](#) and value for automotive and consumer entertainment.

In the car, the DSP56374 offers sound equalization and audio delays to provide "smart" audio that tailors sound based on where vehicle occupants are sitting or by specific car model. This same device extends high-quality sound to "home theatre in a box," DVD and shelf systems, as well as next-generation television platforms. The DSP56374 occupies a small footprint, critical for these audio applications, in which space is at a premium.

The DSP56374 provides significant performance-for-price value. It is also code-compatible with Freescale's 56000 and 56300 DSP families, which greatly reduces new product design time by enabling code reuse.

"Once again, good things come in small packages. The DSP56374 delivers more speed, memory, comprehensive peripherals and signal processing capability than you would expect at this price point," said Bill Pfaff, vice president and general manager of Freescale's Digital Audio,

Radio and Telematics business. "It also extends our leadership in the digital audio market and specifically the DSP56300 family."

Freescale's DSP technology has been a leader in the industry since the first 24-bit DSP was introduced in 1987. Since then, top names in the industry have standardized on Freescale technology to develop applications that deliver high-quality sound to listeners in their homes and vehicles and in commercial settings around the world.

The DSP56374 is a consumer-qualified device, with plans for full AEC automotive qualification in 2005. The DSP56374 can perform various audio equalizing algorithms, compression, speaker compensation, tone control, fade and balance functions, as well as audio sound-field processing algorithms via built-in software in the ROM developed by Freescale using the widely adopted plug-and-play software architecture. Matrix decoders such as Dolby® Pro-Logic IIx and DTS® Neo:6 are available on certain ROM versions of the parts. Customers are also able to develop their own software by downloading software to the on-board RAM.

## **DSP56374 Features**

- 150 MIPS at 150 MHz clock frequency
- Onyx™ core
- 18K x 24 RAM
- 28K x 24 ROM
- 24-bit MAC with a 56-bit accumulator with capabilities for double precision modes when necessary
- Six-channel DMA controller
- Triple timer
- Dual Enhanced Serial Audio Interface
- Built-in oscillator circuit
- Hardware watchdog in addition to the software watchdog on the timer

for extra protection in applications without a microcontroller

- JTAG port
- Low-jitter PLL-based clocking
- Static CMOS design operation at frequencies down to DC

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