

## Product Overview

MCF5249

COLD FIRE®  
FAMILY OF 32-BIT  
MICROPROCESSORS

Freescale Semiconductor, Inc.



digital dna™

**NEW TRENDS CALL FOR  
NEW TECHNOLOGY**

While sales of consumer electronics and home audio devices are growing, and the popularity of the low cost/high capacity MP3 format is increasing, Motorola is keeping the pace with new innovative devices that address these trends. The latest addition to the ColdFire family – the MCF5249 – is entering the market at a time when a convergence is taking place between home audio electronics and computer technologies. At the same time, Motorola has positioned this new ColdFire device for many other growing markets such as security and biometrics for fingerprint recognition and iris scanning applications. Many corporations, educational facilities, law enforcement and public transport authorities are placing increased emphasis and investment in the protection of their staff and assets. As such, the use of biometric security is expected to grow exponentially over the next few years.

**ENHANCED FEATURES  
OPEN THE DOOR TO  
NEW POSSIBILITIES**

The Motorola ColdFire® MCF5249 32-bit integrated microprocessor, based on the Version 2 (V2) ColdFire core, includes new features that are ideal for any application that requires significant control processing for file management, signal processing and data buffering. In fact, the MCF5249, with up to 125 Dhrystone 2.1 MIPS at 140 MHz, is diverse enough to drive a wide range of applications, everything from digital audio to security to industrial control.

The MCF5249 is uniquely designed to enable fewer system components and, with low system power requirements, you can design products with a longer battery life. Additionally, its integrated features keep your development costs low and time-to-market short.

The MCF5249 also protects the investments you've already made in technology and training. With its seamless, fully compatible upgrade path, the MCF5249 is an attractive option for MCF5206e users looking to add performance and capabilities.

**PRICE PERFORMANCE  
THAT'S HARD TO BEAT**

While the MCF5249 is well suited for the digital audio market, advanced features make it a good fit for many industrial control applications, such as information kiosks, as well as security and biometrics. The advanced features include an Enhanced Multiply and Accumulate (eMAC) unit, 96KBytes of on-chip SRAM, 8KBytes instruction cache, serial interfaces, a 12-bit Analog to Digital Converter (ADC), a 4-channel Direct Memory Access (DMA), timers, general purpose input/output lines, system integration and a glueless SDRAM controller.

The MCF5249, our highest performing V2 yet, gives you flexibility to cost-effectively design the feature-rich products your customers demand in significantly less time.

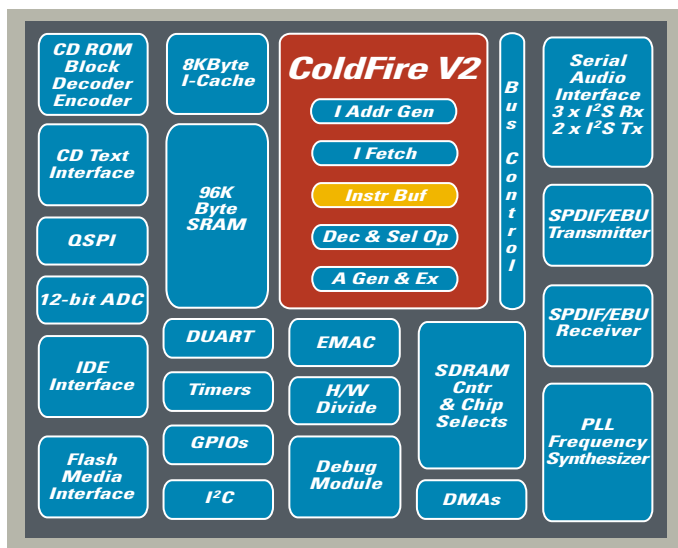
**NEW FEATURES GIVE YOU  
MORE DESIGN OPTIONS**

The MCF5249 includes exciting enhancements – serial audio ports compatible with industry-standard formats, CD-ROM block decoder/encoder, SPDIF/EBU transmitter/receiver, flash media interface, IDE master interface – that eliminate the need for additional audio interfaces. The innovative

MCF5249

**For More Information On This Product,  
Go to: [www.freescale.com](http://www.freescale.com)**

## COLDFIRE® MCF5249



on-chip audio bus allows a direct connection between audio interfaces with no intervention from the CPU, adding even more intelligence to this smart device. With the ColdFire family, system design time is accelerated and development costs are reduced.

### A SEAMLESS MIGRATION PATH PROTECTS YOUR TECHNOLOGY INVESTMENT

By leveraging your existing development tools and software, the MCF5249 protects the resources you've already invested in 68K and ColdFire microprocessor technology and training. For example, when you move from 68K to ColdFire microprocessors you can use code translation and emulation tools, free of charge to registered users, to modify and reuse 68K assembly code.

The 100-percent synthesizable ColdFire family secures your investment in technology and training well into the future. Even better, the ColdFire family of microprocessors, including the MCF5249, gives you the freedom to experiment with powerful capabilities for visionary electronic products, without sacrificing system costs or time-to-market.

### FLEXIBILITY TO MEET YOUR CUSTOMERS' NEEDS

The MCF5249 incorporates advanced technologies that allow you to build greater performance into your products and get them to market faster than your competition.

The innovative ColdFire microprocessor family has been a key member of Motorola's 32-bit family of products for more than six years. And the ColdFire family development roadmap ensures your creativity, time and resources are protected into the future.

### MCF5249 FEATURES:

- Version 2 (V2) ColdFire processor core
- 8KByte instruction cache
- 96KByte Static Random Access Memory (SRAM)
- Enhanced Multiply and Accumulate (eMAC) unit
- Hardware integer divide unit
- Industry-leading debug module offering both background and real-time capability

- Integrated processor
  - Synchronous Dynamic Random Access Memory (SDRAM) controller
  - Two independent Universal Asynchronous Receiver and Transmitter (UARTs)
  - Two I²C interface
  - Queued Serial Peripheral Interface (QSPI)
  - 4-channel Direct Memory Access (DMA) (2 internal/2 external)
  - 12-bit Analog-to-Digital Converter (ADC)
  - Two independent 16-bit timers
  - Chip selects
  - 16-bit general purpose I/Os
  - CD-ROM block decoder/encoder
- CD text interface
- Sony Phillips Digital Interface (SPDIF)/EBU transmitter/receiver
- IIS transmitter/receivers
- Hard disk drive interface
- Flash media interface
- System integration (PLL, Software Watchdog)
- Doze Mode and variable frequency operation

### PRODUCT SPECIFICATIONS – MCF5249

- 125 (Dhrystone 2.1) MIPS at 140 MHz
- 0°-70°C operating temperature
- Requires 1.8-V and 3.3-V power supply
- 160-pin MAPBGA package

Motorola offers user's manuals, product briefs and application notes for all of its ColdFire microprocessors. In addition, local support is also provided for these products. Learn more about the MCF5249 and the ColdFire family of products. Visit us on the Web at [www.motorola.com/semiconductors](http://www.motorola.com/semiconductors)



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MCF5249FACT/D  
For More Information On This Product,  
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