



Freescale ColdFire® portfolio additions build bridge to higher performance

[http://www.freescale.com/webapp/sps/site/display.jsp?nodeId=093623&filePath=/media\\_center/news\\_releases/2005/tspg/05-24-05\\_MCF520X\\_521X.html&title=News%20Release](http://www.freescale.com/webapp/sps/site/display.jsp?nodeId=093623&filePath=/media_center/news_releases/2005/tspg/05-24-05_MCF520X_521X.html&title=News%20Release)

Entry-level 32-bit MCF520x and MCF521x embedded controllers simplify migration for cost-sensitive applications

AUSTIN, Texas – May 24, 2005 – Freescale Semiconductor (NYSE:FSL, FSL.B) is enhancing its 32-bit leadership with the introduction of two ColdFire® device families. The MCF520x and MCF521x families ease the migration to 32-bit performance for applications that require low power consumption and flexible integration at an affordable price point.

“The move toward low-cost, low-power 32-bit embedded controllers is definitely on the rise,” said Tony Massimini, chief of technology at Semico Research. “Results from our most recent report indicate that worldwide sales for 32-bit microcontrollers (MCUs) are growing at a CAGR (2004-2009) of 19.4 percent, with low cost and low power as driving factors. Freescale is in a good position to capitalize on this market and be a market leader.”

Designed for a wide variety of control applications, including factory automation, lighting control, security and retail point-of-sale scanners, the MCF520x and MCF521x devices address the need for high-performance, cost-effective, low-power embedded connectivity.

“Our new 32-bit ColdFire families are a natural upgrade for customers migrating from 8- and 16-bit performance or who need a scaled-down design of higher-performance applications,” said John Sansing, operations manager for Freescale’s consumer and industrial MCU business. “These devices are ideal for customers looking for increased performance and flexibility in a low-power 32-bit embedded controller, and this is only the beginning. We’re planning more introductions in early 2006.”

Low-power devices deliver high performance

With a typical current draw of less than 1mA/MHz, the MCF520x and MCF521x families specifically address the need for high-performance, low-power embedded connectivity in industrial control applications.

The families are the first ColdFire products to offer integrated distributed clocking and low-power divider functionality to scale the central processing unit (CPU) below 1MHz without going into shutdown mode. Freescale has also minimized leakage and focused on packaging enhancements to optimize power consumption without sacrificing performance.

For embedded connectivity applications in which performance is the driving factor, the MCF520x microprocessor (MPU) family delivers as much as 159 million instructions per second (MIPS) at suggested resale pricing less than \$5 (USD). The MCF520x family offers an enhanced multiply-accumulate (eMAC) module and instruction/data cache with an optional Ethernet controller. The devices feature a flexible memory controller, flash, static random access memory (SRAM) and a choice of single data rate (SDR) or double data rate (DDR) synchronous dynamic random access memory (SDRAM) memory.

The MCF521x MCU family is ideal for control applications that require a high level of integration and in which space, system costs and power consumption are at a premium. These devices offer up to

256KB of integrated flash memory, a 12-bit analog-to-digital converter (ADC), a MAC module for digital signal processing (DSP) functionality and an optional controller area network (CAN) module.

Both families are code-compatible with the Freescale ColdFire product portfolio and use the high-performance V2 ColdFire core with on-chip memory, direct memory access (DMA) controller, general purpose I/Os and connectivity peripherals – including universal asynchronous receiver/transmitters (UARTs), inter-IC bus (I2C) interface and queued serial peripheral interface (QSPI).

#### Comprehensive development support

Freescale is committed to helping customers introduce products to market easier and faster through direct development support and services. Freescale also offers assistance with migration from the 68K family via free translators and tools.

The MCF520x and MCF521x processor evaluation boards ship with a fully licensed, complimentary Special Edition of the CodeWarrior Development Studio for ColdFire Architectures. The Special Edition is code-size limited and includes a ColdFire optimizing compiler designed for maximizing performance and generating compact code. The Special Edition is ideal for cost-sensitive solutions and eliminates time restrictions during evaluation of ColdFire processors. Developers who require more comprehensive tools can purchase Standard and Professional Editions of the CodeWarrior Development Studio.

Freescale offers comprehensive software and tools solutions through partnerships with world-class suppliers, including Green Hills, MOX Embedded, Wind River and Accelerated Technology, as well as many other independent suppliers. Customers also have access to full open source software solutions, as well as third-party off-the-shelf boards.

#### MCF520x family (MCF5207, MCF5208) features

- Up to 159 (Dhrystone 2.1) MIPS at 166MHz
- eMAC module and hardware divide
- Eight KB I/D-cache, 16KB SRAM
- Optional 10/100 Ethernet media access controller
- Three UARTs
- QSPI
- Inter-IC bus (I2C) interface
- Four 32-bit timers with DMA support
- 16-channel DMA controller
- 16-bit DDR / 32-bit SDR SDRAM controller
- Up to 50 general-purpose I/O
- System integration: phased-lock loop (PLL), software watchdog
- 1.5V core, 2.5V DDR, 3.3V I/O voltages
- Low power consumption: < 1mA/MHz typical
- Complimentary CodeWarrior Special Edition

#### MCF521x family (MCF5211, MCF5212, MCF5213) features

- Up to 76 (Dhrystone 2.1) MIPS at 80 MHz
- MAC module and hardware divide
- Up to 256KB high-performance, single-cycle access flash
- Up to 32KB SRAM
- Optional CAN (2.0B)
- Three UARTs
- QSPI Interface
- Inter-IC bus (I2C) interface
- Four 32-bit timers with DMA support
- Four-channel DMA controller

Eight-channel 12-bit ADC  
Pulse width modulation timers  
Up to 55 general-purpose I/O  
System integration (PLL, software watchdog)  
Single 3.3V supply  
Low pin count (64-pin LQFP)  
Low power consumption: < 1mA/MHz typical  
Complimentary CodeWarrior Special Edition  
Pricing and availability

Samples of the MCF521x family are currently available, and samples of the MCF520x family are expected to be available in June 2005. Production quantities for both the MCF521x and MCF520x are planned for late 2005. Suggested resale pricing in 10,000-piece quantities starts at \$4.99 (USD) for the MCF521x and MCF520x devices.

Freescale intends to further extend its ColdFire portfolio in early 2006 with next-generation MCF5210 and MCF522x device families featuring cost-reduced scalability and combinations of USB and Ethernet connectivity.

For more information about MCF521x and MCF520x families and available services and support, visit <http://www.freescale.com/files/pr/MCF52xx.html>.

#### About ColdFire

In 1996, the innovative ColdFire microprocessor family was added to the Freescale family tree. Since that time, Freescale has shipped more than 500 million 68K and ColdFire products. Building upon the 68K foundation, the variable-length RISC ColdFire architecture is comprised of high-performance cores with industry-leading code density and a rich set of connectivity peripherals.

#### About Freescale Semiconductor

Freescale Semiconductor, Inc. (NYSE:FSL, FSL.B) is a global leader in the design and manufacture of embedded semiconductors for the automotive, consumer, industrial, networking and wireless markets. Freescale became a publicly traded company in July 2004 after more than 50 years as part of Motorola, Inc. The company is based in Austin, Texas, and has design, research and development, manufacturing or sales operations in more than 30 countries. Freescale, a member of the S&P 500®, is one of the world's largest semiconductor companies with 2004 sales of \$5.7 billion (US).  
[www.freesale.com](http://www.freesale.com)

#### Freescale Technology Forum

Learn more about this inaugural forum, June 20 -23, 2005, Orlando, Fla., featuring visionary keynote speeches, in-depth technical presentations and technology demonstrations from Freescale and leading hardware, software and tools providers. [www.freescale.com/ftf](http://www.freescale.com/ftf).

At the forum, attendees can explore the MCF520x and MCF521x ColdFire device families in hands-on labs, demonstrations and training sessions including:

Small form-factor networking: getting on the Internet with kilobytes instead of megabytes (NAR413)  
New ColdFire MCUs and MPUs: Low- to high-end embedded processors (ZAR318)  
ColdFire architectural introduction (ZAR332)  
Introducing the 32-bit cost-effective, high-value ColdFire MCF5213 microcontroller (ZBA317)  
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