



News Release

Freescale eases embedded development with “one-stop-shop” 32-bit industrial connectivity solution

Ultra-integrated ColdFire® microcontroller with on-chip USB, Ethernet, CAN and encryption ships with complimentary Freescale MQX™ RTOS

[MCF5225x ColdFire MCUs, backed by complimentary Freescale MQX software, target industrial connectivity designs](#)
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AUSTIN, Texas – Jan. 22, 2009 – Embedded developers face constant pressure to do more with less—to enhance application performance and connectivity, reduce cost and speed time to market. To help developers successfully meet their design challenges, Freescale Semiconductor has introduced a “one-stop-shop” industrial connectivity solution that combines its most highly integrated 32-bit ColdFire® microcontroller (MCU) family with a complimentary offering of the Freescale MQX™ real-time operating system (RTOS).

Freescale’s high-performance MCF5225x MCU family offers the ultimate industrial connectivity solution with on-chip USB, Ethernet, controller area network (CAN) and encryption, along with Freescale MQX RTOS and associated tools and software stacks. The combined silicon and software solution gives developers exceptional design flexibility, connectivity options and fast time-to-market backed by a full-featured, scalable RTOS platform valued at approximately \$95,000 (USD).

“Recognizing that the majority of an embedded development team’s resources are spent on software, we’re offering our next-generation MCF5225x ColdFire devices with the market-proven Freescale MQX RTOS at no extra charge,” said Aiden Mitchell, director of industrial and multi-market MCUs at Freescale. “The combination of high-performance ColdFire MCUs and Freescale MQX software gives developers a comprehensive, cost-effective solution that helps accelerate their application development success.”

Based on the 32-bit ColdFire V2 core, the MCF5225x MCUs are well-suited for a broad range of industrial networking, building/lighting control and medical applications that require high performance and connectivity options. For factory automation systems, the MCF5225x MCU’s USB port can be used to develop interfaces to standard USB barcode scanners, and the embedded Fast Ethernet controller makes it easy to control various terminals in a networked building. When used in building control applications, the MCU’s embedded cryptographic accelerator unit enables secure communications through Ethernet. The MCU’s USB connectivity supports fast, easy downloads of patient data for medical applications, and its serial connectivity options simplify connection to wireless modules and LCD screens used in personal medical devices.

“In today’s challenging business environment, developers are looking for ways to reduce cost – through extensive software reuse and by leveraging turnkey platforms that combine best-of-breed hardware and software,” said Tony Massimini, chief of technology at Semico Research Corporation. “The MCF5225x MCU family, coupled with complimentary Freescale MQX software, provides a comprehensive platform that squarely addresses the need to reduce development cost and speed time to market for industrial connectivity applications.”

Industry-leading connectivity and security

By integrating USB device/host/on-the-go, Fast Ethernet and CAN on the same device, the MCF5225x family allows developers to implement the optimal connectivity protocol for their application requirements, without having to add separate communication controllers. The MCUs also include extensive integrated serial communications capabilities, such as a serial peripheral interface (SPI), two inter-integrated circuit (I2C) buses and three universal asynchronous receiver transmitters (UARTs).

The MCF5225x MCUs feature an on-chip cryptographic accelerator unit and random number generator designed to help safeguard valuable data and intellectual property during transmissions across industrial and building control networks. The encryption module supports DES, 3DES, AES, MD5 and SHA-1 algorithms.

Best-in-class performance and design flexibility

The MCF5225x MCUs feature a 32-bit ColdFire V2 core designed to deliver up to 76 Dhrystone 2.1 MIPS at 80 MHz. The devices offer ample embedded memory (up to 512 KB flash and 64 KB SRAM) for performance-intensive applications and simplified coding. An enhanced multiply-accumulate controller (EMAC) with hardware divide capability and a direct-memory access (DMA) controller enhance system performance by freeing the ColdFire core to perform other tasks.

The MCF5225x family offers a broad range of core frequency, on-chip memory, external memory interfaces, embedded function modules and packaging options to address a wide range of system performance and application needs. An external bus gives developers the flexibility to add more memory and/or peripherals.

Backed by Freescale MQX RTOS and leading development tools

The MCF5225x MCUs ship with full-production Freescale MQX RTOS source code, including communications software stacks, at no additional cost. The RTOS is available to Freescale customers with a commercial-friendly licensing model that enables them to keep their source code modifications. Freescale MQX offers a small, configurable footprint, straightforward application programming interface (API) and a modular architecture that can be fine-tuned to fit a wide range of application needs.

To ease the development process, Freescale offers a comprehensive ecosystem of software development tools, evaluation and demonstration boards, reference designs, application notes, software examples and webinars. The MCF5225x family is supported by a complimentary 30-day evaluation version of Freescale’s CodeWarrior® Development Studio for ColdFire v7.1. Designers can further accelerate development with the help of Processor Expert™ software, an award-winning rapid application development tool in the CodeWarrior tool suite. The CodeWarrior environment is Freescale MQX RTOS aware, giving developers a highly integrated development ecosystem.

MCF5225x MCU family features

- ColdFire V2 core with 66 MHz and 80 MHz options
- Connectivity: USB 2.0 full-speed host/device/OTG controller; FlexCAN controller; 10/100 Ethernet controller
- External Mini-FlexBus interface
- Cryptographic accelerator unit
- Up to 512Kbytes of flash memory
- Up to 64Kbytes SRAM
- Timers: 2-channel periodic interrupt timer; 4-channel 32-bit DMA timers; 4-channel 16-bit capture/compare/PWM timers
- Real-time clock with 32kHz crystal
- 12-bit analog-to-digital converter (ADC)
- Two I2C bus interface modules
- Up to 56 general-purpose I/Os (GPIOs)
- Serial peripheral interface (queued SPI)
- Three on-chip UARTs
- Supply voltage range: 3 V - 3.6 V
- Package options: 100-pin and 144-pin LQFP, 144 MAPBGA

Freescale MQX RTOS features

- RTOS with full priority-based, preemptive scheduler
- Real-time TCP/IP communication suite (RTCS) with TCP/IP, FTP, Telnet, DHCP, SNMP and more
- USB host and device stacks (HID, MASS, HUB)
- MS-DOS file system (MFS)
- Board support package (BSP) I/O driver supporting CAN, UART and more
- HTTP Web server support
- Supported by CodeWarrior Development Studio with kernel and task awareness

Pricing and availability

MCF5225x product samples are available now. Suggested resale pricing for the MCF5225x family starts at \$4.93 (USD) in 10,000-unit quantities.

Evaluation and demonstration systems for the MCF5225x family are available now. The M52259EVB evaluation board is a full-featured development system available at a suggested resale price of \$299. The cost-effective M52259DEMOKIT demonstration board is available at a suggested resale promotional price of \$49. (All prices USD)

For more information about Freescale's MCF5225x ColdFire MCU family, visit www.freescale.com/files/pr/coldfire.html .

For more information about the Freescale MQX RTOS including a link to a video demonstration of the MCF5225x MCU running the RTOS, visit www.freescale.com/files/pr/mqx.html .

About Freescale Semiconductor

Freescale Semiconductor is a global leader in the design and manufacture of embedded semiconductors for the automotive, consumer, industrial, networking and wireless markets. The privately held company is based in Austin, Texas, and has design, research and development, manufacturing or sales operations around the world. www.freescale.com.

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