

### ColdFire® Embedded Controllers

# MCF5223x Family

### Fact Sheet

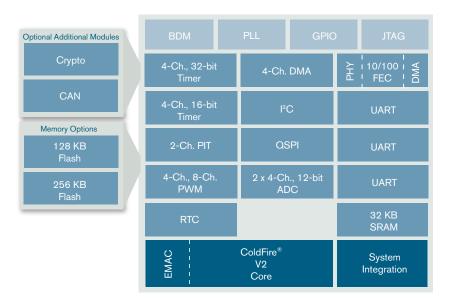
#### Overview

Connecting 32-bit controlled applications in the industrial, commercial and consumer markets is fast becoming a necessity rather than an option. Many new applications, such as remote data collection, home automation and networked appliances, require secure, high-performance connectivity at an economical price. Freescale Semiconductor gives design engineers the flexibility to choose the right 32-bit microcontroller from a broad portfolio of ColdFire® embedded controllers.

To help ensure secure connectivity, the MCF5223x family of ColdFire devices are single-chip solutions that provide 32-bit control with an Ethernet interface. It combines a 10/100 Fast Ethernet controller (FEC), Ethernet Physical Layer (EPHY), CAN 2.0B and a Cryptographic Acceleration Unit (CAU) for secure hardware encryption with the Version 2 ColdFire core to provide exceptional performance at a reasonable cost. The MCF5223x embedded controller family provides designers with the right set of peripherals and memory sizes for a compact Ethernet-enabled platform that cuts development time and cost to help your products get to market quicker.

The MCF5223x family integrates standard ColdFire peripherals, including three universal asynchronous receiver/transmitters (UARTs) for medium and long distance connections, an inter-integrated circuit (I<sup>2</sup>C) and a queued serial peripheral interface (QSPI) for in-system communications to connected peripherals.

### MCF5223x Family Block Diagram



### **Delivering Cost-Effective ColdFire Solutions**

The MCF5223x family expands the entry-level to 32-bit performance and supports standard protocols for applications that need connectivity options with security encryption. Industrial and commercial applications typically have long lifetimes, and Freescale has demonstrated a commitment to long-term support.

A natural migration for current MCF521x customers looking to integrate Ethernet into their applications, the MCF5223x family delivers cost-effective, feature-rich microcontrollers with industry-standard

connectivity. These devices widen the migration bridge for existing 8- and 16-bit users who need a low-cost, entry-level 32-bit solution that incorporates 32-bit performance, Fast Ethernet features and comprehensive tools support. The Freescale ColdFire roadmap to high-end 32-bit performance and connectivity will allow customers to migrate their applications easily and quickly.





ColdFire® Selector Guide				
Part Number	Memory Flash/SRAM	Key Features	Package	Speed
MCF52230	128 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA	80/112 LQFP	60 MHz
MCF52231	128 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA, CAN	80/112 LQFP	60 MHz
MCF52232	128 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA	80 LQFP	50 MHz
MCF52233	256 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA	80/112 LQFP	60 MHz
MCF52234	256 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA, CAN	112 LQFP 121 MAPBGA	60 MHz
MCF52235	256 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, CAN, DMA, Crypto	112 LQFP 121 MAPBGA	60 MHz
MCF52236	256 KB/32 KB	FEC, EPHY, 3 UARTs, I <sup>2</sup> C, QSPI, A/D, 16-bit/32-bit/PWM timers, DMA	80 LQFP	50 MHz
M52235EVB		Development Kit \$299*		
M52233DEMO		Cost-Effective Board \$99*		

<sup>\*</sup>Manufacturer Suggested Resale Price

## Developing with the MCF5223x Family

The easy to use and fully functional M52235EVB development kit simplifies MCF5223x product development, which helps customers reach their markets quickly with a new generation of products. Each kit includes open source software and CodeWarrior™ Development Studio for ColdFire Architectures, Special Edition. Further development assistance is available through Freescale's web-based Fast Track™ support resources, including online training and tech support. In addition, the MCF52223x family of embedded controllers benefits from the support of a number of world-class third-party tool vendors.

### MCF52230/1/2 Features

- 128 KB of embedded flash memory
- · 32 KB of SRAM
- 80 LQFP
- 112 LQFP (MCF52230 and MCF52231 only)

### MCF52233/6 Features

- · 256 KB of embedded flash memory
- 32 KB of SRAM
- 80 LQFP
- 112 LQFP (MCF52233 only)

### MCF52234/5 Features

- 256 KB of embedded flash memory
- 32 KB of SRAM
- 112 LQFP
- 121 MAPBGA

#### Integration

- Up to 32 KB SRAM
- Up to 256 KB flash: 100 KB W/E cycles, 10 years data retention
- 10/100 Fast Ethernet controller (FEC) with PHY
- Ethernet media access controller (EMAC) module
- Cryptographic accelerator unit with random number generator
- CAN 2.0B controller
- Three UARTs
- Queued serial peripheral interface (QSPI)
- Inter-integrated circuit (I2C) bus interface
- Four 32-bit timer channels with DMA capability
- 4-channel, 16-bit timer for capture, compare and pulse width modulation (PWM)
- 2-channel periodic interrupt timer
- 4-channel, 16-bit or 8-channel, 8-bit PWM generator
- Two 4-channel, 12-bit analog-to-digital (ADC) converters
- 4-channel DMA controller
- Up to 73 general-purpose I/Os
- · System integration (PLL, SW watchdog)
- Single 3.3-volt supply

### MCF5223x Specifications

- 10/100 Fast Ethernet controller (FEC)
- Ethernet Physical Layer (EPHY)
- Up to 57 Dhrystone 2.1 MIPS @ 60 MHz
- EMAC module and HW divide
- Optional CAN 2.0
- Optional Crypto
- · Real-time clock

Learn More:

For more information about ColdFire family products, please visit **www.freescale.com/coldfire**.

