

# MCF5223x Family

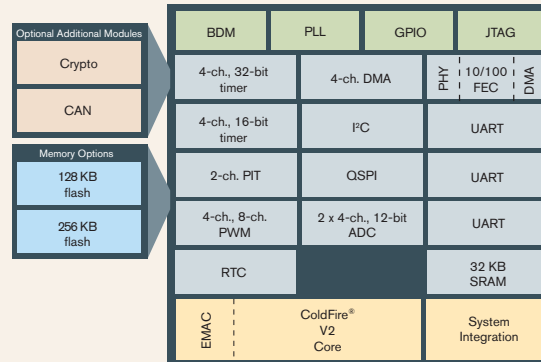
## Overview

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 development 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 provides the designer 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  
BLOCK DIAGRAM**



## Delivering Cost-Effective ColdFire Solutions

The MCF5223x Family expands the entry-level 32-bit options available through the ColdFire portfolio, supporting customers who need connectivity options which support standard protocols with security encryption. Freescale's continued dedication to providing networked connectivity devices assures customers that they will be designing with products that have a long product lifetime.

A natural migration for current MCF521x customers looking to integrate Ethernet into their applications, the MCF5223x delivers a low-cost, feature-rich microcontroller 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.

## 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 MCF5223x family of embedded controllers benefits from the support of a number of world-class third-party tool vendors.

## COLDFIRE MCF5223X FAMILY DEVICE MATRIX

Part Number	Flash/SRAM	Key Features	Package	Speed	10K MSRP*
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	From \$7.99
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	From \$8.79
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	From \$8.69
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	From \$9.42
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	From \$11.32
M52235EVB	Development Kit				\$299
M52233DEMO	Cost-Effective Board				\$99

\*Manufacturer's suggested resale pricing in units of 10K

### 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 (I<sup>2</sup>C) 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

### MCF52230/1 Features

- > 128 KB of embedded flash memory
- > 32 KB of SRAM
- > 80 LQFP
- > 112 LQFP

### MCF52233 Features

- > 256 KB of embedded flash memory
- > 32 KB of SRAM
- > 80 LQFP
- > 112 LQFP

### MCF52234/5 Features

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

**Learn More:** For more information about Freescale products, please visit [www.freescale.com](http://www.freescale.com).