

# MCF527x ColdFire® Family of Microprocessors

### Overview

While the lower-end connectivity and networking market space requires solutions with the system performance and high integration benefits of a 32-bit microprocessor, it also brings more power and cost constraints. To meet those various needs, Freescale Semiconductor expands the MCF527x family of microprocessors with a menu of devices that combine higher integration and lower cost options in addition to delivering a new level of performance on the Version 2 ColdFire® core with up to 159 MIPS (Dhrystone 2.1) at 166 MHz.

The advanced MCF527x family members are offered in low-power, high-performance 0.13µ technology and build upon the widely used peripheral mix of the popular MCF5272 ColdFire microprocessor by adding more connectivity options and encryption capability.

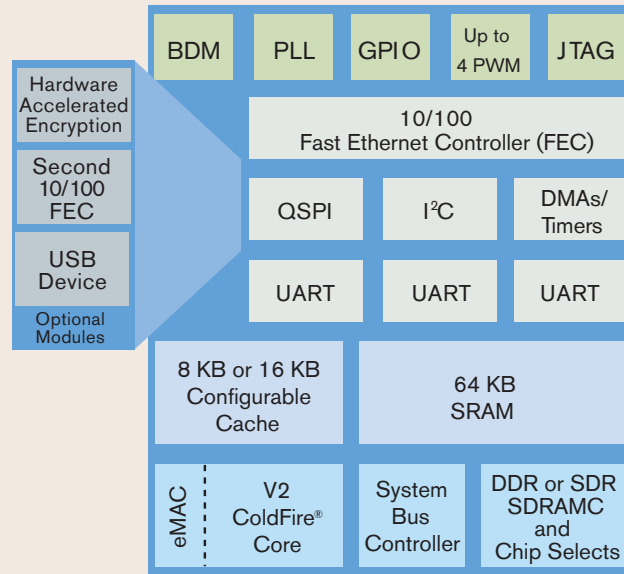
These highly integrated microprocessors also feature an enhanced multiply-accumulate (eMAC) unit and large on-chip memory with 64 KB SRAM and 8 KB or 16 KB configurable cache.

And because Freescale knows the importance of low system cost, several of the advanced MCF527x family members feature a DDR SDRAM memory controller, and offer a choice between MAPBGA and QFP package versions.

### MCF527x Applications

The impressive combination of connection, protection and peripheral selection makes the MCF527x Family ideal for power-conscious, cost-sensitive applications requiring significant

MCF527x BLOCK DIAGRAM



control processing for file management, connectivity, data buffering, user interface and signal processing.

MCF527x target applications include remote monitoring, data security, voice-over-Internet Protocol (VoIP) phones, healthcare-related instrumentation, gaming equipment, Ethernet switches, server appliances, point-of-sale printers and home routers.

### Extensive Connectivity Options

The MCF527x Family offers a rich array of connectivity choices, including up to two

10/100 Ethernet controllers, USB, three UARTs, QSPI and I<sup>2</sup>C.

### Connection with Protection

Today's embedded applications demand increased connectivity, requiring a higher level of data protection, with security at the node. The MCF527x Family offers the encryption option (DES, AES, BCE, MD5, SHA-1, 3DES, HMAC, RNG) in hardware, and data can be encrypted from any interface on the processor.

Part Number	Temp. Ranges	Features	Package	Max Speed (MHz)	Memory	Pricing*
MCF5275	-40°C to +85°C	3 UARTs, USB device, encryption 2x10/100 FEC, DDR SDRAMC	256 MAPBGA	166	16 KB C-Cache 64 KB SRAM	\$12
MCF5275L	-40°C to +85°C	3 UARTs, USB device, encryption 1x10/100 FEC, DDR SDRAMC	196 MAPBGA	166	16 KB C-Cache 64 KB SRAM	\$10
MCF5274	0°C to +70°C	3 UARTs, USB device 2x10/100 FEC, DDR SDRAMC	256 MAPBGA	166	16 KB C-Cache 64 KB SRAM	\$10
MCF5274L	0°C to +70°C	3 UARTs, USB device 1x10/100 FEC, DDR SDRAMC	196 MAPBGA	166	16 KB C-Cache 64 KB SRAM	\$8
MCF5272	-40°C to +85°C	2 UARTs, USB device 1x10/100 FEC, SDR SDRAMC	196 MAPBGA	66	1 KB I-Cache 4 KB SRAM	\$10
MCF5271	-40°C to +85°C	3 UARTs, encryption 1x10/100 FEC, SDR SDRAMC	196 BGA 160 QFP	100	8 KB C-Cache 64 KB SRAM	\$9.50
MCF5270	0°C to +70°C	3 UARTs 1x10/100 FEC, SDR SDRAMC	196 BGA 160 QFP	100	8 KB C-Cache 64 KB SRAM	\$7.50

\*Freescale 10K suggested resale

### Low System Cost

#### with DDR SDRAM Controller

With 10K suggested resale prices starting at \$7.50, the MCF527x Family offers a low-cost, highly integrated solution. Furthermore, taking advantage of current pricing trends in the memory space, most of the MCF527x Family members feature a DDR SDRAM memory controller, appealing to those on tight budgets. Potential cost savings can be realized with the DDR SDRAM memory controller by allowing users to attach up to 256 MB (1 Gbit) of DDR SDRAM to the processor.

#### MCF527x Key Features

- > V2 ColdFire core with performance up to 159 (Dhrystone 2.1) MIPS @ 166 MHz
- > eMAC (32x32) module, hardware divide
- > 8 KB or 16 KB configurable I-/D-Cache
- > Integrated peripherals
  - Up to two 10/100 Fast Ethernet Controllers (FECs)
  - Optional USB 2.0 full-speed device
  - Three UARTs
  - QSPI

- I<sup>2</sup>C
- Optional encryption—RNG, DES, 3DES, AES, BCE, MD5, SHA-1, HMAC, Hash Accelerator
- Up to four PWMs
- Four 32-bit timers
- Four Programmable Interrupt Timers (PITs)
- Watchdog timer
- Four-channel DMA
- External DMA req/ack
- 64 KB SRAM
- DDR or SDR SDRAM memory controller
- Chip selects, GPIOs
- World-class BDM
- JTAG
- Technology: 0.13μ
- Temperature range: -40°C to +85°C or 0°C to 70°C
- 160-QFP, 196-MAPBGA, and 256-MAPBGA options

### Tools Support for Fast Development

The ColdFire Family benefits from extensive support by a world-class development tools suite from Metrowerks, Green Hills, Wind River and other leading third-party tools developers.

**Learn More:** For more information about Freescale's products, visit [www.motorola.com/semiconductors](http://www.motorola.com/semiconductors).