

# MCF520x Family

**Overview**

The marketplace for lower-end connectivity and control applications is at a crossroads. The demand for improved performance is pushing developers to the 32-bit microprocessor, while the stringent low power and low cost restrictions remain paramount in the development process. Freescale Semiconductor gives the product designer the opportunity to drive straight-ahead with the next generation MCF520x ColdFire® embedded controllers. The MCF5207 and MCF5208 embedded controllers combine exceptional performance and integration with low power characteristics and system cost efficiencies. Built with the Version 2 ColdFire core, these two embedded controllers deliver 159 MIPS (Dhrystone 2.1) at 166 MHz and include the enhanced multiply-accumulate (eMAC) unit, resulting in DSP-like functionality. Furthermore, these devices are optimized for low power applications with several low power modes and a low frequency clock divider.

**Big Punch, Small Cost**

Adding advanced capabilities to the breadth of ColdFire devices, the MCF5207 and MCF5208 embedded controllers start at a suggested resale of US\$4.99 in 10,000 piece quantities. Answering the call for low system cost, the new devices each feature a flexible memory controller, allowing the options of attaching a combination of external SRAM, Flash memory, and a choice of single-data rate (SDR), double-data rate (DDR) or mobile-double-data rate (M-DDR) SDRAM memory. The MCF5207 and MCF5208 embedded controllers integrate the standard ColdFire communications peripherals, including three universal asynchronous receiver/transmitters (UARTs) for medium and long distance connections, an inter-integrated circuit (I<sup>2</sup>C) and queued serial peripheral interface (QSPI) for in-system communication to connected peripherals. In addition, the MCF5208 embedded controller features a 10/100 Fast Ethernet Controller.



**Delivering ColdFire to Volume-Driven Markets**

The MCF520x family of ColdFire embedded controllers extends the long and distinguished line of 68K and ColdFire-based processors that dates back to the introduction of the MC68000 in 1979. With the introduction of the MCF5207 and MCF5208 embedded controllers, Freescale enables a new customer community to design volume applications affordably and attractively with 32-bit performance and integration. Moreover, the seamless ColdFire roadmap to the high end means customers can continue to rely on the Freescale ColdFire Family across their entire product offerings. Freescale's dedication to the ColdFire family of processors for control applications means customers can feel secure that they are designing in quality with a long product lifetime.

**Easy-to-Use Product Development System**

The cost-effective, fully functional and easy-to-use M5208EVB development kit simplifies MCF5207 and MCF5208 embedded controllers product development and speeds customers to market. Each kit includes open source software and a CodeWarrior™ Special Edition suite for ColdFire. The MCF5207 and MCF5208 embedded controllers also benefit from extensive software support from Freescale's leading third party tools partners. With a suggested resale price of US\$349, the M5208EVB features full access to the 196-pin fully-integrated MCF5208 embedded controller and integrates the MC13192 ZigBee™-ready transceiver with integrated antenna.

### MCF520x Family

Part Number	Temperature Range	Key Features	Package	Speed	10 K FSRP*
<b>MCF5208</b>	-40°C to 85°C	<b>3 UARTs, EMAC, QSPI, I<sup>2</sup>C, 10/100 FEC, DDR/SDR SDRAMC, 16 KB SRAM, 8 KB C-Cache</b>	<b>196 MAPBGA 160 QFP</b>	<b>166 MHz 166 MHz</b>	<b>\$ 6.49 \$ 7.69</b>
<b>MCF5207</b>	-40°C to 85°C	<b>3 UARTs, EMAC, QSPI, I<sup>2</sup>C, DDR/SDR SDRAMC, 16 KB SRAM, 8 KB C-Cache</b>	<b>144 LQFP 144 MAPBGA</b>	<b>166 MHz 166 MHz</b>	<b>\$ 6.69 \$ 4.99</b>
MCF5206E	-40°C to 85°C	2 UARTs, MAC, I <sup>2</sup> C, EDO/FPM DRAMC, 8 KB SRAM, 4 KB I-Cache	160 QFP	54 MHz 40 MHz	\$ 8.69 \$ 6.99
MCF5206	-40°C to 85°C	2 UARTs, MAC, I <sup>2</sup> C, EDO/FPM DRAMC, 512B SRAM, 512B I-Cache	160 QFP	33 MHz 25 MHz 16 MHz	\$11.52 \$10.20 \$ 9.27

<b>M5208EVB</b>	<b>MCF5207/08 Development Kit</b>	<b>\$349</b>
M5206EC3	MCF5206E Development Kit	\$549

\*Freescale Suggested Resale Price.

### MCF5207 and MCF5208 Specifications

#### > ColdFire V2 Core

- Up to 159 (Dhrystone 2.1) MIPS @ 166 MHz
- Enhanced MAC Module and HW Divide
- Low-Power Optimization

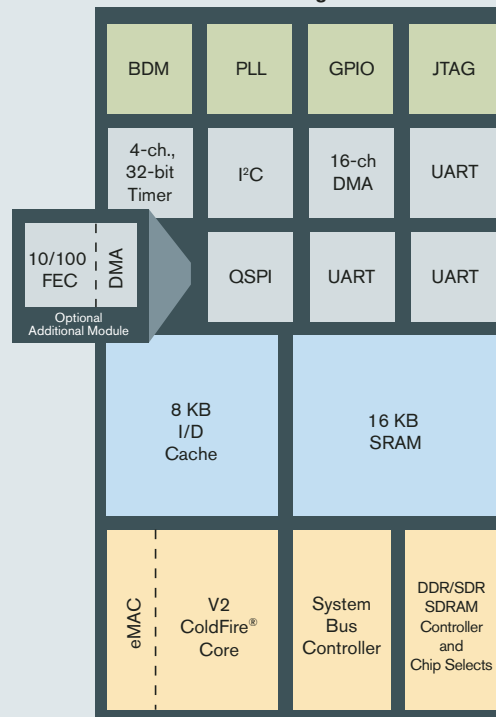
#### > Integration

- 8K bytes I/D-Cache
- 16K bytes SRAM
- Optional 10/100 Ethernet MAC (MCF5208 only)
- 3 UARTs
- Queued Serial Peripheral Interface (QSPI)
- I<sup>2</sup>C bus interface
- 4 ch. 32-bit timers with DMA support
- 16 ch. DMA controller
- 16-bit DDR / 32-bit SDR SDRAM controller
- Up to 50 General-Purpose I/O
- System Integration (PLL, SW Watchdog)
- 1.5V core, 2.5V DDR, 3.3V I/O voltages

#### > Availability

- Temperature Range: -40°C to +85°C
- Package Options:
  - MCF5208: 196-ball MAPBGA and 160-pin QFP
  - MCF5207: 144-ball MAPBGA and 144-pin LQFP

### MCF5207 and MCF5208 Block Diagram



### MCF5207 and MCF5208 Key Features

- > Fast Ethernet Controller
- > Low power modes and low-frequency clock divider
- > Memory Flexibility: Supports SDR, DDR, Mobile-DDR SDRAM
- > Upward-compatible ColdFire Roadmap
- > Big Punch, Small Cost: 166MHz with eMAC for DSP-like functionality
- > Long Product Lifetime

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