

MCF527x Family

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 is expanding the MCF527x family of embedded controllers with a menu of devices that combine higher integration and lower cost options in addition to delivering a new level of performance on the V2 ColdFire® core with up to 159 MIPS (Dhrystone 2.1) at 166 MHz.

The advanced MCF527x family members are built upon the widely used peripheral mix of the popular MCF5272 by adding more connectivity options and encryption capability.

These highly integrated embedded controllers also feature an enhanced multiplier-accumulator (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 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, health care-related instrumentation, gaming equipment, Ethernet switches, server appliances, point-of-sale printers and home routers.

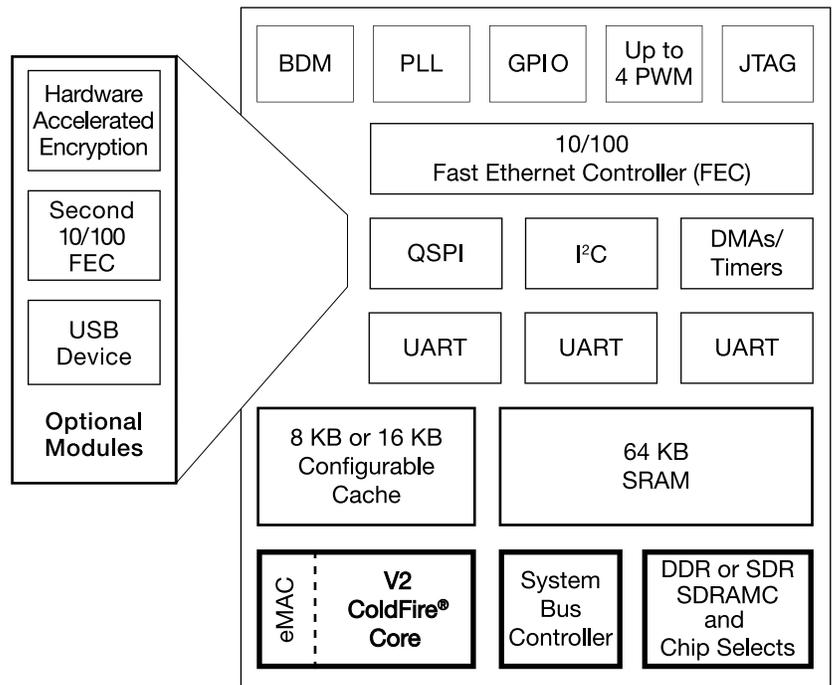
Extensive Connectivity Options

The MCF527x family offers a rich array of connectivity choices, including up to two 10/100 Ethernet controllers, USB, three UARTs, QSPI and I²C.

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, MD5, SHA-1, 3DES, HMAC, RNG) in hardware, and data can be encrypted from any interface on the processor.

MCF527x Block Diagram



Low System Cost with DDR SDRAM Controller

The MCF527x family offers a cost-effective, highly integrated solution. Taking advantage of current pricing trends in the memory space, most of the MCF527x family members feature a DDR SDRAM memory controller, which can be quite 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 of DDR SDRAM to the processor.

MCF527x Key Features

- V2 ColdFire core with performance up to 159 (Dhrystone 2.1) MIPS @ 166 MHz
- eMAC (32 x 32) 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
 - I²C
 - Optional encryption—RNG, DES, 3DES, AES, MD5, SHA-1, HMAC, Hash Accelerator
 - Up to four pulse-width modulators (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
 - BDM
 - JTAG
 - Temperature range: -40°C to +85°C or 0°C to +70°C
 - 160-QFP, 196-MAPBGA and 256-MAPBGA options

ColdFire® Selector Guide

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

*Freescale 10K suggested resale

Tools Support for Fast Development

The ColdFire family benefits from extensive support through development tools from Freescale, Green Hills Software, Wind River Systems and other leading third-party tool developers.

M5271EVBE Features

The M5271EVBE evaluation board for the MCF5270 or MCF5271 ColdFire embedded controllers provides 16 MB of SDRAM, 2 MB of flash (upgradable to 4 MB), 10/100 BaseT Ethernet connectivity, three serial ports (two available to the user) and access to the ColdFire debug module.

M5275EVBE Features

The M5275EVBE evaluation board for the MCF5274 or MCF5275 ColdFire embedded controllers provides 16 MB of DDR SDRAM, 2 MB of flash (upgradable to 4 MB), dual 10/100 BaseT Ethernet connectivity, three serial ports (two available to the user) and access to the ColdFire debug module.

Learn More: For more information about ColdFire family products, please visit freescale.com/coldfire.