

# MCF547x and MCF548x Families

## Fact sheet

### Overview

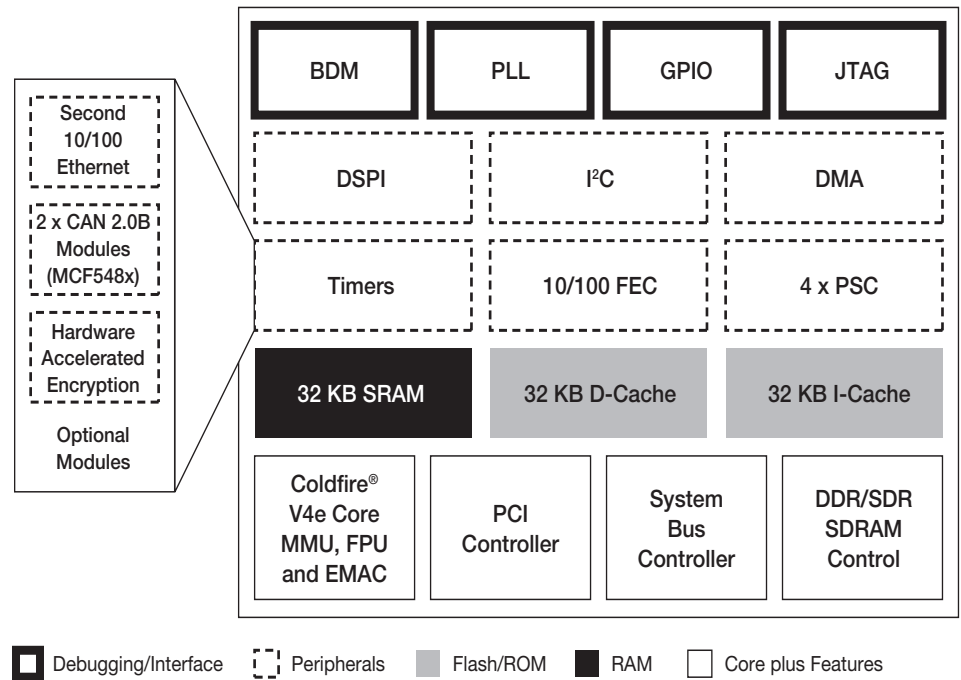
Increasingly complex embedded 32-bit applications demand higher system performance. To meet advanced performance requirements, Freescale Semiconductor designed the MCF547x and MCF548x families on the V4e ColdFire® core. The advanced V4e offers the highest level of integration of a ColdFire product to date. Features of the V4e core include the following:

- Memory management unit (MMU) that enables process isolation for a high level of reliability and security, and expanded use of protected-mode OS, such as Linux® OS
- Floating point unit (FPU) for excellent performance levels on complex applications and algorithms
- Enhanced Multiply-Accumulate (eMAC) unit, dual-ported processor RAMs and user-defined address permutation for DSP functionality on a microprocessor with a single, unified code stream
- On-chip multiprocessing for improved throughput on numerically intensive algorithms as well as general-purpose control processing

### MCF547x and MCF548x Applications

Both of these ColdFire families are well suited for network-connected control applications that require a broad range of communications peripherals and high performance to enable competitive and cost-effective system solutions. The MCF547x devices, operating at a 0°C to +70°C range, are targeted at applications such as point-of-sale systems, security systems, robotics and medical instrumentation.

### MCF547X Block Diagram



The MCF548x devices, featuring two CAN modules and operating at a -40°C to +85°C range, are better suited for embedded designs in factory and building automation systems, process control equipment, as well as other industrial control applications.

The combination of a performance level of up to 400+ MIPS, the DDR memory controller, and the communication peripherals onboard the MCF547x and MCF548x devices makes these families an ideal solution for flexible, connected control applications.

The addition of hardware-accelerated encryption helps to ensure that the communication enabled by these processors can be done safely and securely. Both families offer a broad range of choices for connectivity, a robust encryption solution and competitive system solution costs. These processor families also contain integrated general-purpose peripherals—including timers, I<sup>2</sup>C and DSPI—that are essential in order to function as the main control processor in an embedded system.

## ColdFire® Selector Guide

Part Number	Temperature Range	Features	Package	Speed
MCF5485	-40°C to +85°C	2 x FEC 2 x CAN, PCI, DDR, encryption	388 PBGA	200 MHz
MCF5484	-40°C to +85°C	2 x FEC, 2 x CAN, PCI, DDR	388 PBGA	200 MHz
MCF5483	-40°C to +85°C	2 x FEC 2 x CAN, PCI, DDR, encryption	388 PBGA	166 MHz
MCF5482	-40°C to +85°C	2 x FEC, 2 x CAN, PCI, DDR	388 PBGA	166 MHz
MCF5481	-40°C to +85°C	2 x FEC 2 x CAN, PCI, DDR, encryption	388 PBGA	166 MHz
MCF5480	-40°C to +85°C	2 x FEC, 2 x CAN, PCI, DDR	388 PBGA	166 MHz
MCF5475	0°C to +70°C	2 x FEC PCI, DDR, encryption	388 PBGA	266 MHz 200 MHz
MCF5474	0°C to +70°C	2 x FEC PCI, DDR	388 PBGA	266 MHz 200 MHz
MCF5473	0°C to +70°C	FEC, PCI, DDR, encryption	388 PBGA	200 MHz
MCF5472	0°C to +70°C	FEC, PCI, DDR	388 PBGA	200 MHz
MCF5471	0°C to +70°C	2 x FEC, PCI, DDR, encryption	388 PBGA	200 MHz
MCF5470	0°C to +70°C	2 x FEC, PCI, DDR	388 PBGA	200 MHz
M5485EVB	Development System for the MCF548x Family \$850*			
M5484LITEKIT	Linux® Development Kit for the MCF548x Family \$350*			
M5475EVB	Development System for the MCF547x Family \$850*			
M5474LITEKIT	Linux Development Kit for the MCF547x Family \$350*			

\*Manufacturer Suggested Resale Price

### Pin-Compatible Families

Pin compatibility offers scalability and flexibility for embedded designs as needs evolve over time.

### Rich Communications Peripherals Mix

The MCF547x and MCF548x families provide substantial communication functionality by integrating the following connectivity peripherals:

- Up to two 10/100 Mbps Ethernet controllers
- Four UART/USART/IrDA/modem programmable serial controllers (PSCs)

- 32-bit PCI interface, 33/66 MHz, five external masters
- A DMA serial peripheral interface (DSPI)
- An Inter-Integrated Circuit (I<sup>2</sup>C) bus controller

With on-chip support for multiple common communications interfaces, these devices require only the addition of memory and certain physical layer transceivers to be cost-effective system solutions for many applications.

### Tools Support for Fast Development

The ColdFire family is supported by an integrated development environment including our CodeWarrior™ Development Studio and our Fire Engine system-on-module development board, as well as extensive third-party support from ARC, Green Hills Software, Wind River Systems and other leading tools developers.

### Key Features

- V4e ColdFire core with performance up to:
  - 410 Dhrystone 2.1 MIPS @ 266 MHz (MCF547x)
  - 308 Dhrystone 2.1 MIPS @ 200 MHz (MCF548x)
- 32 KB I-Cache, 32 KB D-Cache
- MMU, FPU and eMAC
- High level of integration
  - Up to two 10/100 Ethernet controllers
  - 32-bit PCI interface, 33/66 MHz, five external masters
  - 32 KB on-chip SRAM
  - 16-channel direct memory access (DMA) controller
  - Four 32-bit timers, two 32-bit slice timers, one watchdog timer
  - Four programmable serial controllers (UART, USART, IrDA and modem capability)
  - Two CAN 2.0B (MCF548x)
  - Optional hardware-accelerated encryption (DES, 3DES, RC4, AES, MD5, SHA-1, RNG)
  - 32-bit 133 MHz DDR/SDR-SDRAM controller
  - 1.5V core, 2.5V DDR, 3.3V I/O

### Learn More:

For more information about ColdFire family products, please visit [www.freescale.com/coldfire](http://www.freescale.com/coldfire).