MCF5214 : Integrated ColdFire Version 2 Microcontroller

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The MCF5214 addresses the growing demand for 32-bit microcontrollers at a lower cost and expands Freescale Semiconductor's 32-bit Flash-based ColdFire MCU family. The MCF5214 provides an upgrade for current MMC2114 users who require higher performance with a richer set of the same peripheral mix while standardizing on one low-cost, low-power MCU family. Also, current users of the MMC2107 and MMC2113 can utilize the MCF5214 for applications requiring more flash.

The MCF5214 cost-effectively integrates digital and analog peripherals with RAM, embedded FLASH memory, and a 32-bit ColdFire core on a single-chip. The MCF5214 includes a QADC, QSPI and CAN for industrial control, security and other control-oriented applications.

MCF5214 Features

- V2 ColdFire core delivering 63 (Dhrystone 2.1) MIPS at 66 MHz running from Cache/RAM (max running from internal flash 54 MIPS)
- 256Kbytes embedded flash memory
- Enhanced Multiply-Accumulate Unit (eMAC) for DSP functionality
- 64 Kbytes of static RAM
- Cache for external access support
- Address decode and chip selects
- CAN 2.0B controller area network interface with 16 message buffers
- Three UARTs with DMA capability
- Queued serial peripheral interface (QSPI) with four peripheral chip selects
- 8-channel 10-bit queued analog-to-digital converter (QADC)
- Four 32-bit timers with capture, compare and DMA capability
- Eight 16-bit timer channels for capture, compare, and pulse width modulation
- Four periodic interrupt timers (PITs)
- I2C bus controller
- JTAG for board testing
- BDM for debug, including real-time trace
- 17 mm x 17 mm x 1.6 mm 256-ball MAPBGA package
- Operation at 66 MHz from -40C to +85C
- Available software package including real-time operating system
- Metrowerks CodeWarrior support
- Extensive third party tools and software support

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MCF5214 Parametrics

CPU Performance (Max) (MIPS)	Operating Frequency (Max) (MHz)	Ambient Operating Temperature (Min) (oC)	Ambient Operating Temperature (Max) (oC)	Core Operating Voltage (Spec) (V)	I/O Operating Voltage (Max) (V)	GPIO Pins	Internal RAM (Byte)
54	66	-40	85	3.3	5	142	64000

Serial Interface		Other Peripherals
Type	Number of Interfaces	
FlexCAN, I2C, QSPI, UART	1, 3	256KB Flash, DMA Controller, EMAC, Interrupt Controller, JTAG, PLL, Watchdog Timer

View expanded set of parameters | Parametric Search

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MCF5214 Documentation

Documentation

Application Notes

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
AN2393 Migrating from the MMC2114 to the MCF5282	FREESCALE	pdf	1020	0	11/22/2002
AN2168 AN2168 ColdFire Microprocessor DMA Controller Application Note	FREESCALE	pdf	791	0	1/31/2001
AN1766 Using the SDRAM Controller on the MCF5307 ColdFire Integrated Processor Application Note	FREESCALE	pdf	428	2.0	3/12/1999

Brochures

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
BRCOLDFIRESUM ColdFire Product Summary Guide	FREESCALE	pdf	165	2	4/24/2006
COLDFIRE_OVERVIEW ColdFire Family Overview Brochure	FREESCALE	pdf	6925	2	3/20/2006

Errata - **Click here for important errata information**

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
MCF5216DE MCF5216 Integrated Microcontroller Device Errata (Supports MCF5214)	FREESCALE	pdf	451	1.7	9/28/2004

Product Briefs

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
MCF5216PB MCF5216 Integrated Microcontroller Product Brief	FREESCALE	pdf	717	0	3/29/2004

Reference Manuals

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
CFLMOPM Library of Macros for Optimization Using eMAC and MAC Programmer's Manual	FREESCALE	pdf	477	1	10/24/2005
CFLMOPMSW Software for the Library of Macros for Optimization Using eMAC and MAC Programmer's Manual	FREESCALE	zip	55	0	10/24/2005
CFPRM ColdFire Family Programmer's Reference Manual	FREESCALE	pdf	1666	3	3/08/2005
DSPLIBUM Digital Signal Processing Libraries Using the ColdFire eMAC and MAC	FREESCALE	pdf	294	1.2	3/13/2006
DSPLIBUMSW "Digital Signal Processing Libraries Using the ColdFire eMAC and MAC User's Manual" Software	FREESCALE	zip	1007	0	5/18/2006
MCF5216UM MCF5216 ColdFire Microcontroller User's Manual	FREESCALE	pdf	6729	0	3/29/2004

Roadmap

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
COLDFIRERD ColdFire Performance Roadmap	FREESCALE	pdf	29	1	6/07/2005

Selector Guides

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
SG1001 32-Bit Embedded Processors SG1001Q12006	FREESCALE	pdf	1409	0	4/26/2006
SG1006 Microcontrollers	FREESCALE	pdf	1531	0	4/26/2006

White Papers

ID and Description	Vendor ID	Format	Size K	Rev #	Date Last Modified
MCF5XXXDBWP MCF5XXXDBWP Debug Support on the ColdFire Architecture	FREESCALE	pdf	215	0	1/01/1999

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MCF5214 Design Tools

Hardware Tools

Emulators/Probes/Wigglers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
ADV-BDM-CF Advanced BDM Adaptor The Cybertec Advanced BDM PC Parallel Port Adaptor provides an inexpensive means of connecting the Background Debug Mode (BDM) interface of a variety of Freescale ColdFire microprocessors (5206e, 52xx series, 53xx series and 54xx series)	**CYBERTEC**	-	-	-	-
CABLE_CFLV CABLE_CFLV P&E's Shielded ColdFire Interface Cable provides access to the Background Debug Mode (BDM) on Freescale ColdFire microcontroller. It is the hardware interface between a standard IBM PC parallel port and a standard 26 pin connector.	**PEMICRO**	-	-	-	-
PKGCFZ-USB PKGCFZ-USB The ColdFire BDM Development Package (USB Interface And Software) is a powerful, inexpensive, Windows-based development suite for Freescale's MCF52xx/53xx/54xx microcontrollers. Produce ColdFire applications and debug your applications.	**PEMICRO**	-	-	-	-

PROBE Green Hills Probe & Slingshot High speed on-chipo download and run control.	**GREENHILLS**	-	-	-	-
WRICE Wind River ICE The Wind River ICE is a JTAG hardware run control device that supports multiple JTAG, EJTAG,and BDM devices on a single scan chain. It can support connections for up to eight devices simultaneously in a scan chain of up to 128 JTAG devices.	**WINDRIV**	-	-	-	-

Evaluation/Development Boards and Systems

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
M5282EVB M5282EVB Evaluation Board supporting MCF5282/81/80/16/14	FREESCALE	-	-	-	Buy Direct Distributor

Models

BSDL

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
MCF5214BSDL MCF5214 BSDL	FREESCALE	zip	10	1.2	

Programmers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
CYCLONE MAX CYCLONE MAX A stand-alone programmer and hardware debug interface for ColdFire, PowerPC, and ARM, the Cyclone Max is an extremely flexible tool designed for Flash Programming, Debugging, and Testing of microprocessor based systems.	**PEMICRO**	-	-	-	-
CYCLONEMAX Cyclone Max High-speed, low-cost, in-circuit programming of Freescale ColdFire and PowerPC based systems. Stand-alone or host-controlled operation. USB, serial, 10/100 ethernet, and 1.8v-5.0v target support. Programs internal and external flash.	**PEMICRO**	-	-	-	-

Software

Application Software

Code Examples

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
M5282EVBDBUG M5282EVB dBUG source files	FREESCALE	zip	580	v3a.1a.1b	
MCF5282I2C MCF5282 I2C example code	FREESCALE	zip	126	2.0	
MCF5282SC MCF5282/MCF5280 processor initialization template, header files, and software examples updated revision to include TFTP example and CodeWarrior projects for internal flash	FREESCALE	zip	97	1c	
RAM_CACHE_TEST MCF528x and MCF5216/14 SRAM and cache test code	FREESCALE	zip	1856	1.1	

Board Support Packages

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
INTEGRITY/VELOSITY/MULTI BSP Green Hills BSP The Green Hills BSP provides INTEGRITY & velOSity RTOSes and MULTI debugger for board- specific cross development through the Green Hills Probe, Slingshot or P&E Wiggler or, if no board is available, to the MULTI instruction set simulator.	**GREENHILLS**	-	-	-	-

Device Drivers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
5282FLASH MCF5282 internal Flash program/erase software driver	FREESCALE	zip	1620	3.1.1	

Operating Systems

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
ARC-MQX-RTOS MQX RTOS MQX RTOS provides proven performance, with blazing real-time speed within a tiny footprint. MQX RTOS is designed to be easy to configure to balance code size with performance requirements.	**MQX**	-	-	-	-
CMX00215 CMX-RTX	**CMX**	-	-	-	
CMX00215A CMXKAware	**CMX**	-	-	-	-
CMX00305 CMX TCP/IP CMX TCP/IP is a full-featured and fast TCP/IP stack that allows designers to offer networking connectivity for their embedded applications. CMX TCP/IP offers a low licensing fee, full source code, no royalties, and free technical support.	**CMX**	-	-	-	-
CMX00305B TCP/IP DHCP Server The CMX TCP/IP DHCP Server Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Dynamic Host Configuration Protocol standard. A source code example is provided for fast design start up.	**CMX**	-	-	-	-
CMX00305C TCP/IP FTP C/S The CMX TCP/IP FTP Client/Server Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the File Transfer Protocol standard. A source code example is provided for fast design start up.	**CMX**	-	-	-	-
CMX00305E TCP/IP NAT The CMX TCP/IP NAT Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to add Network Address Translation function to a network application. Source code example provided for fast design start up.	**CMX**	-	-	-	-
CMX00305F TCP/IP POP3 The CMX TCP/IP POP3 Client Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Post Office Protocol Client standard. A source code example is provided for fast design start up.	**CMX**	-	-	-	-
CMX00305G TCP/IP PPP The CMX TCP/IP PPP Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Point to Point Protocol serial or modem connectivity standard. Source code example provided for fast start up.	**CMX**	-	-	-	-
CMX00305H TCP/IP PPPoE The CMX TCP/IP PPPoE Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Point to Point Protocol over Ethernet standard. A source code example is provided for fast design start up.	**CMX**	-	-	-	-
CMX00305I TCP/IP SMTP The CMX TCP/IP SMTP Client Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Simple Mail Transfer Protocol standard. A source code example is provided for fast design start up.	**CMX**	-	-	-	-

CMX00305J TCP/IP SNMP The CMX TCP/IP SNMP V1 and V2c Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Simple Network Management Protocol standard. Source code example provided for fast design start up.	**CMX**	-	-	-	-
CMX00305L TCP/IP Telnet The CMX TCP/IP TFTP Client/Server Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Trivial File Transfer Protocol Client/Server standard. Source code example for fast start up.	**CMX**	-	-	-	-
CMX00305M TCP/IP Web Client The CMX TCP/IP Web Client/Server Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Hyper Text Transfer Protocol (HTTP) Web Client/Server standard. Source code example provided.	**CMX**	-	-	-	-
CMX00305N TCP/IP Web Server The CMX TCP/IP Web Server Add-On Option provides CMX TCP/IP (see CMX00300, CMX00305, or CMX00310) with functionality to support the Hyper Text Transfer Protocol (HTTP) Web Server standard. Source code example provided for fast start up.	**CMX**	-	-	-	-
CMX00610 CMX-FFS CMX-FFS is a very small, standard Flash File System that allows designers to offer file system functionality for their embedded applications. CMX-FFS offers a low licensing fee, full source code, no royalties, and free technical support.	**CMX**	-	-	-	-
SMXCF SMX Modular RTOS for ColdFire smxCF is designed for the ColdFire processor family. It features hard real-time multitasking, networking, file management, USB, user interface, and full support for Metrowerks CodeWarrior.	**MICRODIG**	-	-	-	-

Programmers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
CFFLASHER CFflasher 3.1 A free flash programming utility for Freescale ColdFire evaluation boards.	FREESCALE	zip	4377	3.1.1	
PROGCFZ PRO USB PROGCFZ PRO USB The PROGCF PRO ColdFire Flash/EEPROM Programmer is a Windows BDM Programmer allows you to program/reprogram external flash devices in-circuit, via one of P&E's hardware interfaces, to give the user access to all on-chip resources.	**PEMICRO**	-	-	-	-

Protocol Stacks

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
SSH_SERVER Embedded SSH Server MOCANA SSH SERVER: Supports Freescale chipsets out of the box. Small (70KB), fast, trusted. FIPS Cryptos. Supports all major cryptos. Royalty free, source code license. FREE EVAL: http://www.mocana.com/fsevaluate.html	**MOCANA**	-	-	-	-
SSL_CLIENT Embedded SSL/TLS Client MOCANA SSL/TLS CLIENT: Supports Freescale chipsets out of the box. Small (65KB), fast, trusted. FIPS crypto. Supports all major cryptos. Royalty free, source code license. FREE EVAL: http://www.mocana.com/fsevaluate.html	**MOCANA**	-	-	-	-
SSL_SERVER Embedded SSL/TLS Server MOCANA SSL/TLS SERVER: Supports Freescale chipsets out of the box. Small (50KB), fast, trusted. FIPS cryptos. Supports all major cryptos. Royalty free, source code license. FREE EVAL: http://www.mocana.com/fsevaluate.html	**MOCANA**	-	-	-	-

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
UC/TCP-IP uC/TCP-IP uC/TCP-IP is a compact, reliable, high performance TCP/IP protocol stack. Built from the ground up with Micrium's renowned quality, scalability and reliability, uC/TCP-IP enables the rapid configuration of required network options.	**MICRIUM**	-	-	-	-

Software Tools

Compilers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
COMPILER C/C++ Compiler Optimizing C, C++, EC++ compilers for Freescale PowerPC, ColdFire, StarCore, 68K, MCore and ARM-based MAC architectures.	**GREENHILLS**	-	-	-	-
CWS-MCF-STDED-CX CodeWarrior Development Studio for ColdFire Architectures, Standard Edition	FREESCALE	-	-	-	Buy Direct Distributor

Debuggers

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
CWS-MCF-STDED-CX CodeWarrior Development Studio for ColdFire Architectures, Standard Edition	FREESCALE	-	-	-	Buy Direct Distributor
ICDCFZ ICDCFZ P&E's ICDCFZ for Windows is a powerful ColdFire In-Circuit Debugger. It uses the processor's background debug mode (BDM), via one of P&E's hardware interfaces, to give the user access to all on-chip resources.	**PEMICRO**	-	-	-	-

IDE (Integrated Development Environment)

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
CROSSFIRE-LINUX CrossFire Tools The CrossFire Tools are a low cost, easy to install, C/C++ development environment for the Freescale ColdFire family of Microprocessors. Based on GNU compiler tools, CrossFire Tools are available in both Windows and Linux versions	**CYBERTEC**	-	-	-	-
CROSSFIRE-WIN CrossFire Tools The CrossFire Tools are a low cost, easy to install, C/C++ development environment for the Freescale ColdFire family of Microprocessors. Based on GNU compiler tools, CrossFire Tools are available in both Windows and Linux versions	**CYBERTEC**	-	-	-	-
CWS-MCF-STDED-CX CodeWarrior Development Studio for ColdFire Architectures, Standard Edition	FREESCALE	-	-	-	Buy Direct Distributor
IC-SW-OPR winIDEA winIDEA integrates a Project Manager, Source Code Editor, High and Low Level Debugger, and Flash Programmer, all into one easy-to- use Windows application. It is the one user interface for all of our emulators and debuggers.	**ISYS**	-	-	-	-
MULTI MULTI MULTI is a complete integrated development environment for embedded applications for C/C++, Embedded C++ and includes an advanced debugger, profiler, run-time memory checking, project builder, editor, instruction set simulator and more.	**GREENHILLS**	-	-	-	-
SBCTOOLS-WF SBCTools-WF, Eclipse Edition Complete software development tools-set, including GCC, GDB, TCPIP stack, serial console and target config services, all accessible seamlessly through Eclipse. Includes WildFire BSP with h/w interface libraries and annotated demo programs.	**INTEC**	-	-	-	-

Initialization/Boot Code Generation

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
COLDFIRE_INIT MicroAPL Limited's ColdFire Graphical Configuration Tool	**MICROAPL**	zip	6	n/a	

Performance and Testing

ID and Description	Vendor ID	Format	Size K	Rev #	Availability
UNITCFZ_DIST UNITCFZ_DIST The UNITCFZ software package consists of an interface DLL and sample code which allows a custom application to be built which can interact with and debug a ColdFire based system via one of P&E's hardware interfaces.	**PEMICRO**	-	-	-	-

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Orderable Parts Information

Order	Part Number	Package Description	Tape and Reel	Application/ Qualification Tier	Status	Budgetary Price QTY 1000+ ($US)	Compliance		RoHS Replacement Part	Details
							Package Peak Temperature (°C)	RoHS		
Order Samples Distributor	MCF5214CVF66	**MAPBGA 256 17*17*0.8P1.0**	No	COMMERCIAL, INDUSTRIAL	Active	$14.43	260	**No**	**MCF5214CVM66**	**view**
Order Samples Distributor	MCF5214CVM66	**MAPBGA 256 17*17*0.8P1.0**	No	COMMERCIAL, INDUSTRIAL	Active	$11.97	260	RoHS	-	**view**

NOTE:

- Not all orderable parts are offered through our online sampling program. For further assistance in selecting a similar part from within the program, please submit a Request for a sample order advice.
- Refer to Samples FAQ for more information.
- Looking for an obsolete part? Check our new part number search

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Related Products

- MCF5211 : Integrated ColdFire Version 2 Microcontroller
  The MCF5211 microcontroller is a low cost, low power single-chip solution with up to 128KB of high performance, near-single access, interleaved and securable ...
- MCF5212 : Integrated ColdFire Version 2 Microcontroller
  The MCF5212 microcontroller is a cost-sensitive, low power single-chip solution with up to 256KB of high performance, near-single access, interleaved and ...
- MCF5213 : Integrated ColdFire Version 2 Microcontroller
  The MCF5213 microcontroller is a cost-sensitive, low power single-chip solution with up to 256KB of high performance, near-single access, interleaved and securable ...

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Related Links

- 68K/ColdFire
- Freescale's Advanced Telecommunications Computing Architecture (ATCA)
- Industrial Control
- CodeWarrior Development Studio Instructions for MCF5214 and MCF5216 Support

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