

Connect Serial to Ethernet in Seconds

## MCF51CN128

### Target Applications

- Industrial operator interfaces
- Consumer and industrial appliances
- Medical monitoring and instrumentation
- Point-of-sale and courier systems
- Security and building control systems

### Overview

MCF51CN Ethernet MCUs are low-cost, low-power, high-performance 32-bit devices designed for developers who want to add Ethernet connectivity to their commercial and industrial applications. Backed by Freescale's extensive development ecosystem, the highly integrated MCF51CN devices combine a 10/100 Base-T/TX Fast Ethernet controller (FEC) and media independent interface (MII) to give developers an easy way to connect an external physical layer (PHY) transceiver. This device also includes a multi-function external bus and multiple communication interfaces for various Ethernet gateway applications.

Features	Benefits
<b>CPU and System Configuration</b>	
<ul style="list-style-type: none"> <li>• 32-bit V1 ColdFire® CPU offering 46 MIPS at 50 MHz</li> <li>• 1.8V–3.6V single supply</li> </ul>	<ul style="list-style-type: none"> <li>• Offers high performance across the entire voltage range</li> </ul>
<b>On-chip Memory</b>	
<ul style="list-style-type: none"> <li>• Up to 128 KB flash</li> <li>• Up to 24 KB SRAM</li> <li>• Mini-FlexBus (external bus interface)</li> </ul>	<ul style="list-style-type: none"> <li>• Offers enough on-chip memory for serial to Ethernet bridge applications or Web server data storage</li> <li>• Security circuitry helps to prevent unauthorized RAM access</li> <li>• External bus interface available on 80-pin LQFP packages</li> <li>• Glueless connection to external memory devices</li> </ul>
<b>Power Management</b>	
<ul style="list-style-type: none"> <li>• Low-power operation modes</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid response to interrupts from the low-power sleep mode</li> </ul>
<b>Peripherals</b>	
<ul style="list-style-type: none"> <li>• Fast Ethernet controller</li> <li>• Fast analog-to-digital converter (ADC)</li> <li>• Up to 70 general purpose input/output (GPIO)</li> </ul>	<ul style="list-style-type: none"> <li>• 10/100 Base-T/TX capability, half-duplex or full-duplex transmission</li> <li>• 12 analog input channels</li> <li>• 12-bit resolution</li> <li>• 2.5 <math>\mu</math>s conversion time</li> <li>• Provides a large number of flexible I/O pins</li> </ul>
<b>Software and Tools</b>	
<ul style="list-style-type: none"> <li>• Background debug mode (BDM) for in-circuit debugging</li> <li>• Complimentary Freescale MQX™ software solutions: RTOS, Ethernet, File System</li> <li>• Strong Third-Party Alliance Network</li> </ul>	<ul style="list-style-type: none"> <li>• Real-time trace and debug support</li> <li>• Provides an Internet-enabled controller with serial capability that allows for real-time remote monitoring and configuration</li> <li>• Value added tools and software, including GUI, stacks and RTOS</li> </ul>

**Development Tools**

- TWR-MCF51CN (\$39USD)
- TWR-MCF51CN-KIT (\$99USD)

The MCF51CN128 evaluation and demonstration board can be purchased individually or as part of a complete kit for quick and easy development.

- TWR-MCF51CN features the MCF51CN128 MCU in an 80-pin LQFP package with Ethernet connectivity
- TWR-MCF51CN-KIT, which includes:
  - TWR-MCF51CN standalone development board
  - TWR-SER serial board that supports Ethernet, USB, RS232, RS485 and CAN
  - TWR-ELEV elevator boards that connect the MCU and serial boards
  - USB and Ethernet cables
  - Interactive DVD complete with tools, software, lab supplements and other helpful resources

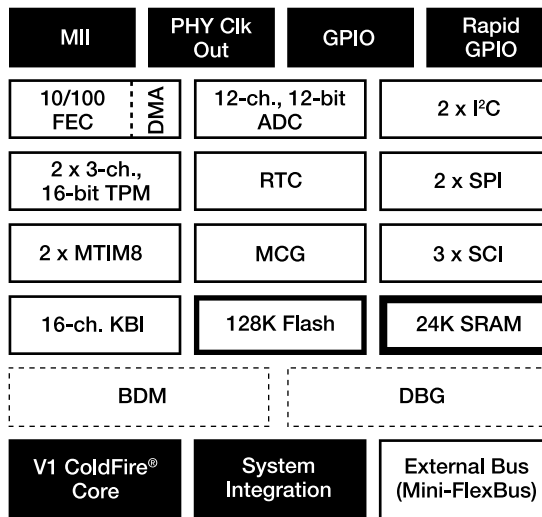
The MCF51CN is the first Freescale MCU to be included in the Tower System, a low-cost, reconfigurable evaluation and demonstration platform that speeds time to market and enables advanced development through rapid prototyping. The purchase of the complete development kit (TWR-MCF51CN-KIT) provides the basic building blocks for future designs using Freescale microcontrollers.

**Freescale's MQX™ Software Solution (complimentary)**

Integrating the MCF51CN MCU and Freescale MQX software provides an Internet-enabled controller with serial capability that allows for real-time remote monitoring and configuration. By providing both hardware and software, this small and cost-effective solution eliminates the need for customers to spend their resources designing network connectivity into a product.

- RTOS: full priority-based, pre-emptive scheduler
- Configurable real-time TCP/IP communication suite (RTCS): Telnet, FTP, HTTP and more

**MCF51CN128 Block Diagram**



[- - -] Debugging/Interface    □ Peripherals    ■ Flash/ROM    ■ RAM    ■ Core + System Features

**Package Options**

Part Number	Temp Ranges	Package
MCF51CN128CLK	-40°C to +85°C	80 LQFP
MCF51CN128CGT	-40°C to +85°C	48 QFN
MCF51CN128CLH	-40°C to +85°C	64 LQFP

- MS-DOS FAT32 file system (MFS): SD card and CompactFlash
- Time stamped status via e-mail
- Ultra-low-power modes
- Web server for device communication
- Serial-to-wireless application
- Board support package (BSP) I/O driver supporting RTC, A/D, UART, Ethernet, Mini-FlexBus and more

reduces overhead by allowing developers to choose only those components required for their applications.

**CodeWarrior™ Development Studio for Microcontrollers 6.2 (complimentary)**

CodeWarrior Development Studio for Microcontrollers is a single tool suite that supports software development for applications targeting either Freescale's 8-bit or 32-bit microcontrollers. Designers can further accelerate application development with the help of Processor Expert™, an award-winning rapid application development tool integrated into the CodeWarrior tool suite.

Leveraging 15 years in the market, Freescale MQX has been providing powerful real-time performance within a small, configurable footprint in over a million Freescale enabled products. Freescale MQX, a component-based architecture, provides scalability and

**Learn More:** For current information about Freescale ColdFire products, Tower System and MQX, please visit [www.freescale.com/coldfire](http://www.freescale.com/coldfire), [www.freescale.com/tower](http://www.freescale.com/tower) and [www.freescale.com/mqx](http://www.freescale.com/mqx).