Freescale DSCs

MC56F823xx and MC56F827xx

Half the power with twice the performance for energy-efficient applications

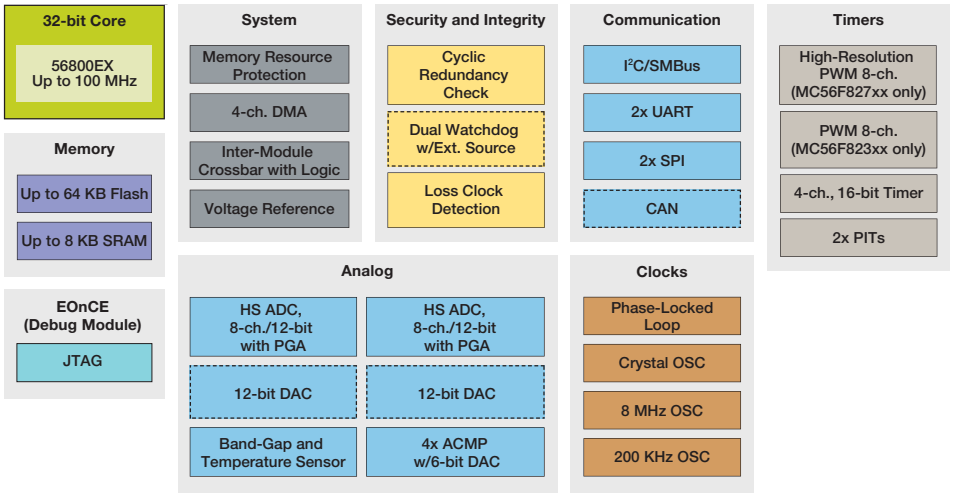
Target Applications

- Switched mode power supply
- Advanced motor control
- Smart appliances
- Uninterruptable power supply
- Photovoltaic systems
- Wireless charging
- Advanced lighting

Overview

The MC56F823xx/7xx is a low-power DSP MCU family, offering outstanding power consumption at run time in a compact 5 x 5 mm package with exceptional performance, precision and control for high-efficiency digital power conversion (MC56F827xx) and advanced motor control (MC56F823xx) applications. The MC56F827xx includes advanced high-speed and high-accuracy peripherals such as high-resolution pulse width modulation (PWM) with 312 pico-second resolution, dual high-speed 12-bit analog-to-digital converters (ADCs) with built-in PGA sampling up to 1.25 mega samples per second (MSPS) at 12 bits. Faster application-specific control loops are driven via a 32-bit DSP core with single-cycle math computation, fractional arithmetic support and parallel moves.

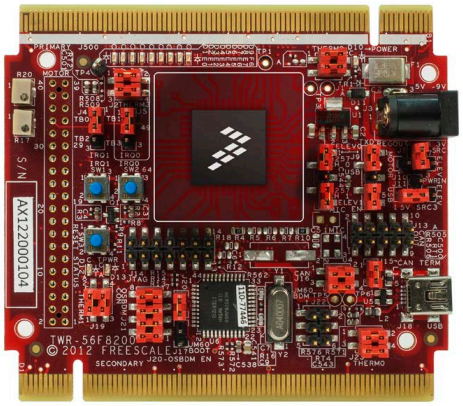
MC56F823xx and MC56F827xx



freescale™
Digital Signal Controllers

Features and Benefits

- Low-power operation enables higher system efficiency due to lower power losses
- 5 mm x 5 mm package option enables compact PCB design for space-constrained applications while still providing the precision and control needed
- 50/100 MHz 32-bit core provides math capabilities needed for advanced power efficiency and motor control applications
- Single-cycle math computations, fractional arithmetic support and parallel moves improve performance, driving tighter and faster control loops
- High-resolution PWM with 312 pico-second resolution enables higher switching frequencies, reducing cost and increasing efficiency
- Two 12-bit high-speed (HS) ADCs with up to 1.25 MSPS resolution improve system accuracy by reducing jitter on input values
- 16 KB to 64 KB flash memory provides scalability needed for key digital power and motor control applications
- Pin to pin compatible with the MC56F84xxx and MC56F824x/5x families for performance and peripheral scalability
- 5 V-tolerant I/O provides design flexibility and system cost reduction
- Direct memory access (DMA) controller reduces core interruption, increasing performance
- Four analog comparators with integrated 6-bit DACs speed system event identification and emergency shutdown of the PWM outputs
- Memory protection capability increases system safety by restricting user code from accessing key memory locations and peripherals reserved for supervisor access



Package Options

Part Number	Package	Speed	Flash Size	SRAM Size	Key Features
MC56F82748	64-pin LQFP	100/50 MHz	64 KB	8 KB	High-Res PWM, 12-bit DAC, HS ADC, MSCAN
MC56F82746	48-pin LQFP				High-Res PWM,12-bit DAC, HS ADC, MSCAN
MC56F82743	32-pin LQFP				High-Res PWM , 12-bit DAC, HS ADC
	32-pin QFN				
MC56F82738	64-pin LQFP		48 KB	8 KB	High-Res PWM, 12-bit DAC, HS ADC, MSCAN
MC56F82736	48-pin LQFP				High-Res PWM, 12-bit DAC, HS ADC, MSCAN
MC56F82733	32-pin LQFP				High-Res PWM, 12-bit DAC, HS ADC
	32-pin QFN				
MC56F82728	64-pin LQFP		32 KB	6 KB	High-Res PWM, 12-bit DAC, HS ADC, MSCAN
MC56F82726	48-pin LQFP				High-Res PWM, 12-bit DAC, HS ADC, MSCAN
MC56F82723	32-pin LQFP				High-Res PWM, 12-bit DAC, HS ADC
	32-pin QFN				
MC56F82323	32-pin QFN	50 MHz	32 KB	6 KB	Motor Control PWM, HS ADC
MC56F82316	48-pin LQFP		16 KB	4 KB	Motor Control PWM, 12-bit DAC, HS ADC
MC56F82313	32-pin LQFP				Motor Control PWM, HS ADC

Development Tools

TWR-56F8200

A cost-effective development board that is part of the Freescale Tower System—a modular development platform that enables rapid prototyping and re-use through reconfigurable hardware. The TWR system comes complete with the TWR-56F8200 MCU board, P&E MultiLink Universal development interface, USB cable, software and instructions on how to control the TWR-MC-LV3PH motor via the Tower System and FreeMASTER.

TWR-MC-LV3PH

Turns your Tower System development tool into a complete motor control reference design kit that includes a BLDC motor. This three-phase low-voltage motor control peripheral module for the TWR-56F8200 is used to develop DC, BLDC and PMSM motor control solutions using various algorithms provided by Freescale. BLDC motor control demonstration software is included with the TWR-56F8200. For more information on the TWR-MC-LV3PH, visit **freescale.com/TWR-MC-LV3PH**.

CodeWarrior Development Studio for Microcontrollers V10.4

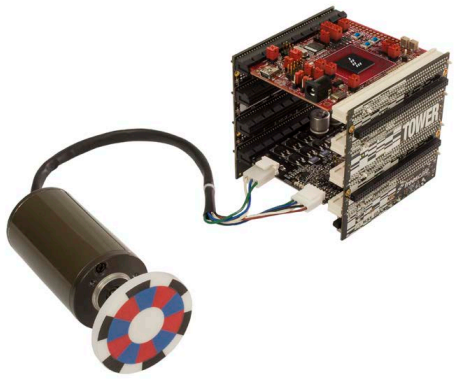
Complimentary Special Edition Eclipse-based CodeWarrior Development Studio for Microcontrollers V10.4 is a complete integrated development environment that provides a highly visual and automated framework to accelerate the development of the most complex embedded applications.

Processor Expert Software Modeling Tool

Complimentary rapid application design tool that combines easy-to-use, component-based application creation with an expert knowledge system, delivering source code for the MC56F827xx.

FreeMASTER

Complimentary user-friendly, real-time debug monitor and data visualization tool for application development and information management. Supporting nonintrusive variable monitoring on a running system, FreeMASTER allows the data from multiple variables to be viewed in an evolving oscilloscope-like display or in a common text format.



Learn more at freescale.com/MC56F827xx and freescale.com/TWR-56F8200

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