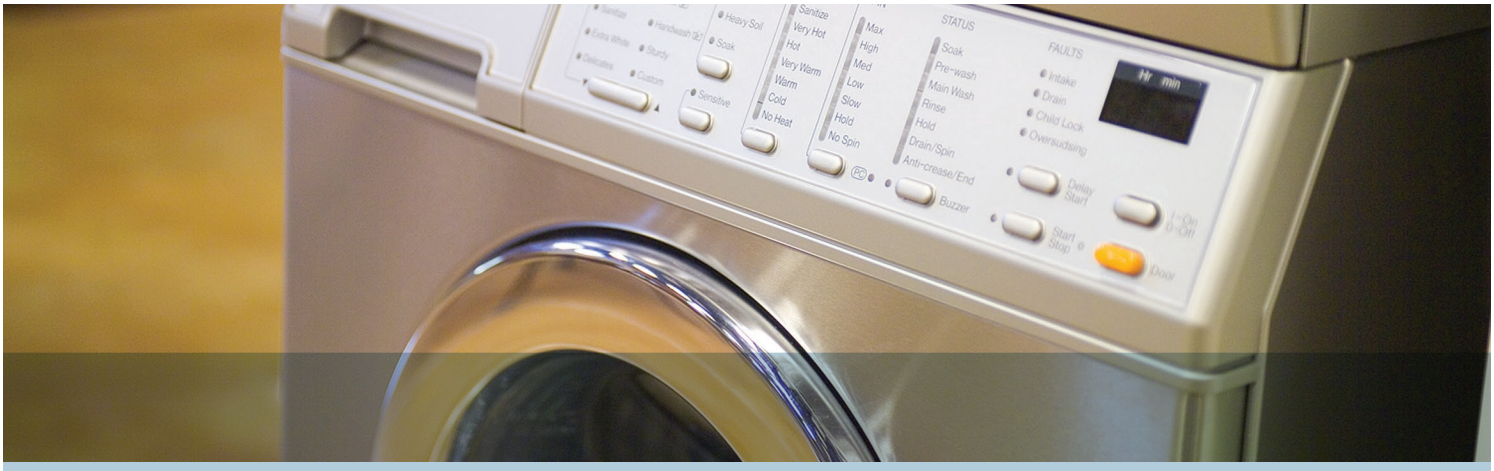


8-bit HCS08 Embedded Controllers

MC9S08SV16/8
8-bit microcontrollers

Target Applications

- Home appliances
  - Air conditioners
  - Microwave ovens
  - Washing machines
  - Dishwashers
  - Water heaters
  - Refrigerators
- UPS
- E-bikes
- Step machines
- Induction ovens
- Note counters
- Disinfectors

Overview

The 8-bit MC9S08SV16/8 (SV16/8) MCU family provides best-in-class performance, system reliability and design flexibility to meet the tough design requirements of industrial applications. The SV16/8 family offers an advanced peripheral set with high resolution 12-ch., 10-bit ADC, TPM and modulo timers and ACMP for precise and fast sensing and control. The family increases design flexibility with an industry-leading 30 GPIO pins. It also simplifies software design through an interrupt priority controller with nested interrupt capability. Enhanced EMC/EMI (5V) performance provides peace of mind when designing products for noisy environments.

Features	Benefits
8-bit HCS08 Central Processing Unit (CPU)	
• Up to 20 MHz internal bus (40 MHz HCS08 core) frequency with 2.7V to 5.5V operation across temperature range of -40°C to +85°C	• Offers reliable performance across the entire voltage range
On-Chip Memory	
• Up to 16K flash read/program/erase across entire operating voltage and temperature ranges	• Allows user to take full advantage of in-application re-programmability benefits in virtually any environment
• Up to 1024 bytes random access memory (RAM)	• Reduces development time by providing more RAM for programming
• Security circuitry	• Protects data/code in flash and RAM from unauthorized access
Power-Saving Modes	
• Two-low power stop modes, reduced-power wait mode	• Allows uninterrupted sampling application in a reduced-power state, which cuts overall system power consumption
Clock Source Options	
• Oscillator (XOSC) clock source options include oscillator, crystal or ceramic resonator • Up to 20 MHz internal clock source (ICS) module	• Optimizes power consumption and provides greater design flexibility • Provides accurate on-chip clock source and saves cost by eliminating the need for external components
Peripherals	
• Interrupt priority controller (IPC)	• Provides hardware-based nested interrupt capability to simplify software design
• Analog-to-digital converter (ADC)—12-channel, 10-bit resolution	• Provides fast and easy conversion of analog inputs • Featured integrated on-chip temperature sensor and bandgap
• Timer/pulse-width modulator module (TPM)—1 x 6-channel and 1 x 2-channel	• Flexible multiple time bases and channels provide system timing and functions
• MTIM16—One 16-bit modulo timer with optional prescaler	• Supports precise and fast sensing and control
• SCI module with optional 13-bit break, LIN extensions	• Provides UART communications

freescale semiconductor

Cost-Effective Development Tools
DEMO9S08SV16 ($49 USD*)

This demonstration kit comes with everything required to complete an entire project using the SV16/8 family. Complimentary** built-in OSBDM circuitry is available for debugging and programming. A getting-started DVD includes necessary software, documents and resources to jump start new product development.

CodeWarrior™ Development Studio for Microcontrollers 6.2

Special Edition (complimentary**) CodeWarrior Development Studio for Microcontrollers is an integrated tool suite that supports software development for Freescale's microcontrollers. Designers can further accelerate application development with the help of the award-winning Processor Expert™ tool in the CodeWarrior tool suite.

* Prices indicated are MSRP

** Subject to license agreement

Package Options

MC9S08SV16CBM

Temp Range: -40°C to +85°C

Package: 32 SDIP

MC9S08SV16CLC

Temp Range: -40°C to +85°C

Package: 32 LQFP

MC9S08SV8CBM

Temp Range: -40°C to +85°C

Package: 32 SDIP

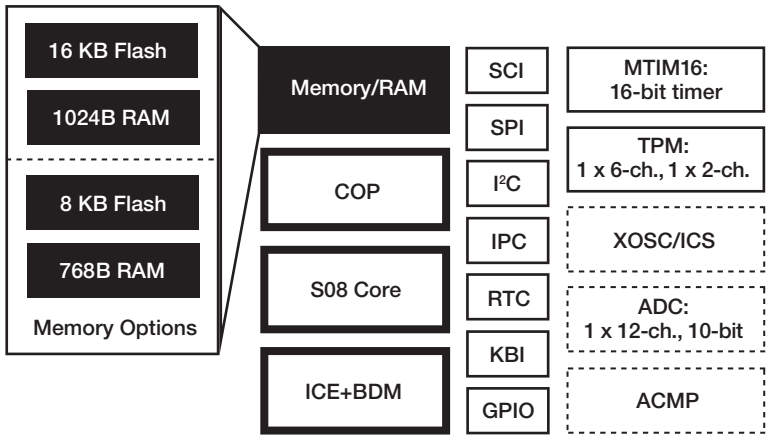
MC9S08SV8CLC

Temp Range: -40°C to +85°C

Package: 32 LQFP

Features (continued)	Benefits
• SPI module in 8-bit data length modes with a receive data buffer hardware match function	• Delivers fast communication to and from peripheral devices
• I²C module capable of up to 100 kbps operation with maximum bus loading	• Delivers fast communication to and from peripheral devices
• Analog comparator (ACMP) with option to compare to internal reference	• Fast and efficient response to analog signals
• Real time counter (RTC)	• Improves task-scheduling for applications requiring time-of-day calendar functions. Frees up timers for other activities.
Input/Output	
• 30 general purpose input/output (GPIO) pins including one input-only pin and one output-only pin	• Improves flexibility by allowing interfacing to a large number of pins that are capable of generating interrupts
• KBI—8-pin keyboard interrupt module	• Offers flexibility to generate interrupts
System Protection	
• Watchdog computer operating properly (COP) module can be reset with option to run from dedicated 1 kHz internal clock source or bus clock	• Provides system protection using backup oscillator by resetting the MCU to a known state
• Low-voltage detection with reset or interrupt, selectable trip points	• Built-in system protection to help secure data and warn of possible voltage loss conditions
• Illegal opcode detection with reset	• Allows the device to recognize erroneous code and to reset the processor to help avoid lock-up states
• Illegal address detection with reset	• Resets the MCU to a known state following inadvertent access
• Flash block protection	• Helps provide security by protecting code from unauthorized or unintentional access
Development Support	
• Single-wire background debug interface	• Allows developers to use the same interface for multiple platforms
• Breakpoint setting capability	• Allows single breakpoint setting during in-circuit debugging, helping simplify the software development and debugging
• On-chip in-circuit emulator (ICE) debug module containing two comparators and nine trigger points	• Reduces development time by enabling real-time, on-chip emulation without the added expense of traditional emulator hardware

MC9S08SV16/8 Block Diagram



Learn more: For more information about the SV16/8 family, please visit **www.freescale.com/8bit**.

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