

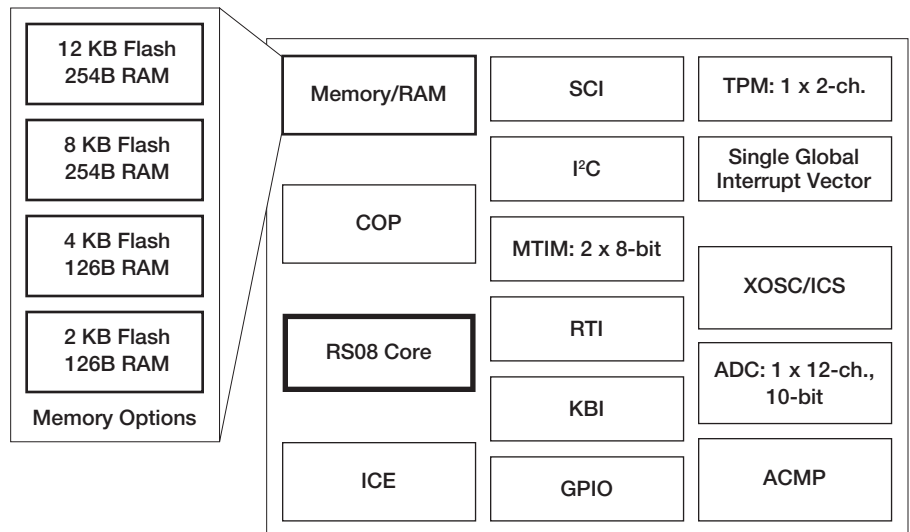
8-bit Microcontrollers

MC9RS08KB12/8/4/2

Target Applications

- Small appliances
 - Low-end microwave ovens
 - Electric fans
 - Toaster ovens
- Lighting control
 - High brightness LEDs
 - Lighting system controls
 - Light dimmers
 - Light switches
- Simple logic replacements
- Low-end remote controls
- Low-end thermal controlled BLDC fans
- Personal care devices
- Hand-held devices
- Garage door openers
- Battery chargers
- Smart batteries
- Toys

RS08KB Block Diagram



Overview

The MC9RS08KB12/8/4/2 (RS08KB) family includes ultra-low-cost, entry-level 8-bit MCUs that balance ease of use with design flexibility and performance.

The RS08KB family has an integrated peripheral set which includes a highly efficient

RS08 core that supports interrupt capability, helping to improve system performance and save additional components costs. The RS08KB family eases migration by offering multiple package and flash size options, along with pin compatibility with other 5V families as well as the CodeWarrior development tool

to support other 8-bit families. The family is available in 20, 16 or 8-pin packages, and features up to 12 KB flash and 254B RAM, high-resolution 12-ch., 10-bit ADC, TPM, modulo timers and ACMP to provide fast, precise sensing and control.

Features	Benefits
8-bit RS08 Central Processor Unit (CPU)	
<ul style="list-style-type: none"> Up to 10 MHz internal bus (20 MHz RS08 core) frequency with 1.8V to 5.5V operation across a temperature range of -40°C to +85°C 	<ul style="list-style-type: none"> The RS08-based core is optimized for small memory sizes to improve code density and can be easily migrated from S08 core Offers reliable performance throughout the entire voltage range
On-Chip Memory	
<ul style="list-style-type: none"> Up to 12 KB flash read/program/erase over entire operating voltage and temperature ranges Up to 254 bytes of RAM Security circuitry 	<ul style="list-style-type: none"> Reduces development time by providing more RAM for programming Protects data/code in flash and RAM from unauthorized access
Power-Saving Modes	
<ul style="list-style-type: none"> Low-power stop modes, reduced-power wait mode, wakeup from power-saving modes 	<ul style="list-style-type: none"> Allows uninterrupted sampling application in a reduced-power state, which reduces overall system power consumption
Clock Source Options	
<ul style="list-style-type: none"> Oscillator (XOSC) clock source options include oscillator, crystal or ceramic resonator Up to 20 MHz internal clock source (ICS) module 	<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Single global interrupt vector Analog-to-digital converter (ADC): 12-channel, 10-bit resolution, 2.5 us conversion time, 1.7 mV/°C temperature sensor Analog comparator (ACMP) with option to compare to internal reference Timer/pulse-width modulator module (TPM): 1 x 2-channel MTIM 8: Two 8-bit modulo timers with optional clock sources Real Time Interrupt (RTI) with optional clock sources SCI module with optional 13-bit break, LIN extensions I²C module capable of up to 100 kbps operation with maximum bus loading Up to eight ports keyboard interrupt (KBI) ports 	<ul style="list-style-type: none"> Handles and serves all interrupt resources to help improve system performance Provides fast and easy conversion of analog inputs Features integrated on-chip temperature sensor and bandgap Fast and efficient response to analog signals Flexible multiple time bases and channels provide system timing and functions Supports precise and fast sensing and control Improves task scheduling for applications requiring time-of-day calendar functions. Frees up timers for other activities Provides UART communications Delivers fast communication to and from peripheral devices Eases button design and provides more external pin interrupt sources
Input/Output	
<ul style="list-style-type: none"> Up to 18 general purpose input/output (GPIO) pins, including one input-only pin and one output-only pin 	<ul style="list-style-type: none"> Improves flexibility by allowing interfacing to a large number of pins
System Protection	
<ul style="list-style-type: none"> Watchdog computer operating properly (COP) module can be reset with option to run from dedicated 1 kHz internal clock source or bus clock Low-voltage detection with reset or interrupt, selectable trip points Illegal opcode detection with reset Illegal address detection with reset Flash block protection 	<ul style="list-style-type: none"> Provides system protection using backup oscillator by resetting the MCU to a known state Built-in system protection to help secure data and warn of possible voltage loss conditions Allows the device to recognize erroneous code and to reset the processor to help avoid lock-up states Resets the MCU to a known state following inadvertent access to unimplemented or reserved address space Helps provide security by protecting code from unauthorized reading and guards against unintentional write/erase of user-code/data
Development Support	
<ul style="list-style-type: none"> Single-wire background debug interface Breakpoint setting capability On-chip in-circuit emulator (ICE) debug module 	<ul style="list-style-type: none"> Allows developers to use the same interface for multiple platforms Allows single breakpoint setting during in-circuit debugging, helping simplify the software development and debugging Reduces development time by enabling real-time, on-chip emulation without the added expense of traditional emulator hardware

Development Tools

DEMO9RS08KB12 – \$59 USD*

This demonstration kit soldered with 20SOIC KB12 comes with everything required to complete an entire project. A getting-started DVD provides quick start guide, software, documentation and resources to jumpstart your development.

CodeWarrior Development Studio for Microcontrollers v6.3 – Special Edition (complimentary**)

CodeWarrior Development Studio is a complete Integrated Development Environment (IDE) that provides a highly visual and automated framework to accelerate the embedded development. 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		
Part Number	Temp Range	Package
MC9RS08KB12CWJ	-40°C to +85°C	20SOIC
MC9RS08KB12CSG	-40°C to +85°C	16SOICN
MC9RS08KB12CTG	-40°C to +85°C	16TSSOP
MC9RS08KB8CWJ	-40°C to +85°C	20SOIC
MC9RS08KB8CSG	-40°C to +85°C	16SOICN
MC9RS08KB8CTG	-40°C to +85°C	16TSSOP
MC9RS08KB4CWJ	-40°C to +85°C	20SOIC
MC9RS08KB4CSG	-40°C to +85°C	16SOICN
MC9RS08KB4CTG	-40°C to +85°C	16TSSOP
MC9RS08KB2CSC	-40°C to +85°C	8SOICN
MC9RS08KB2CDC	-40°C to +85°C	8DFN

Learn More:

For more information about the RS08KB family, please visit www.freescale.com/RS08KB.