

Need a highly integrated, high performance but low power 8-bit MCU?

MC9S08QG Family starts with the HCS08 core, adds a myriad of key features, like a 10-bit 8-channel ADC, multiple serial communications options, on-board reprogrammable flash and an on-chip in-circuit emulation module. All are available in packages as small as a 4mm x 4mm 8-pin DFN.

B Want an easy development experience?

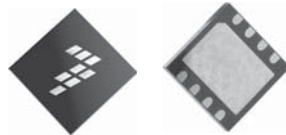
The MC9S08QG Family comes equipped with on-chip in-circuit emulation (ICE). This single wire debugging and emulation interface eliminates the need for expensive emulation tools.

Typical application areas:

- Wireless sensor applications including SMAC
- Watchdog coprocessors
- Small appliances
- Handheld devices
- Secure boot coprocessors
- Security systems

Package Options – RoHS Compliant		
Part Number	Package	Temp. Range
MC9S08QG4CPAE-ND	8-pin DIP	-40°C to 85°C
MC9S08QG4CDNE-ND	8-pin SOIC-NB	-40°C to 85°C
MC9S08QG4CFQE-ND	8-pin DFN	-40°C to 85°C
MC9S08QG4CDTE-ND	16-pin TSSOP	-40°C to 85°C
MC9S08QG4CFFE-ND	16-pin QFN	-40°C to 85°C
MC9S08QG8CDNE-ND	8-pin SOIC-NB	-40°C to 85°C
MC9S08QG8CFQE-ND	8-pin DFN	-40°C to 85°C
MC9S08QG8CPBE-ND	16-pin DIP	-40°C to 85°C
MC9S08QG8CFFE-ND	16-pin QFN	-40°C to 85°C
MC9S08QG8CDTE-ND	16-pin TSSOP	-40°C to 85°C

MC9S08QG8/4 — One Chip Does it All



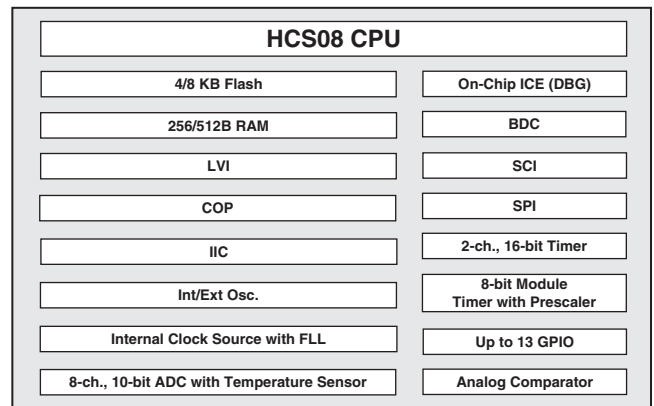
The MC9S08QG8/4 extends the advantages of Freescale Semiconductor's HCS08 core to low pin count, small-package 8-bit microcontrollers. QG devices are low voltage with on-chip Flash memory programmable down to 1.8V. It also offers standard features of all HCS08 MCUs including wait mode and multiple stop modes. The functionality is completed with strong analog capabilities, a complete set of serial modules, a temperature sensor and robust memory options.

- Object Code Compatible with 68HC08 and 68HC05 families
- Compact code optimized in C
- Up to 10MHz bus rate (100ns minimum instruction time) at >2.1V
- Support for up to 32 interrupt/reset sources

Features/Benefits:

- HC08 instruction set with added BGND instruction
- Embedded Flash that is in-application reprogrammable over the full operating voltage and temperature range with a single power supply
 - Does not require additional pin or power supply for Flash programming, simplifying the interface for in-line programming and allowing for more GPIO pins
- Up to 100K write/erase cycles at typical voltage and temp (10K minimum). 100 years typical data retention.
 - Allows EEPROM emulation, reducing system costs and board real estate
- Internal clock source module (ICS) containing a frequency-locked-loop (FLL) controlled by internal or external reference
- Internal reference can be trimmed from 31.25KHz to 39.065KHz, allowing for 8MHz to 10MHz FLL output
- Outputs 10mA each, 60mA max for package
 - High-current I/O allows direct drive of LED and other circuits to virtually eliminate external drivers and reduce system costs
- Software selectable pull-ups on ports when used as input; internal pull-up on RESET and IRQ pin
 - Reduces customer system cost by eliminating need for external resistors
- 8-channel, 10-bit analog-to-digital converter (ADC)
- Analog comparator module (ACMP)
- Programmable 16-bit timer/PWM module (TPM)
- 8-bit modulo timer module (MTIM) with 8-bit prescaler
- On-chip in-circuit emulation (ICE)
 - Provides circuit emulation without the need for additional, expensive development hardware
- SCI — Serial communications interface module with option for 13-bit break capabilities and double-buffered transmit and receive
- SPI — Serial peripheral interface module
- I²C — Inter-integrated circuit bus module

Block Diagram



Development Tools

DEMO9S08QG8-ND

Cost-effective demonstration board with potentiometer, LEDs, serial port and built in USB-BDM cable for debugging and programming.

M68CYCLONEPRO-ND

HC08/HCS08/HC12/HCS12 stand-alone Flash programmer or in-circuit emulator, debugger.

USBMULTILINKBDM-ND

Universal HC08 in-circuit debugger and Flash programmer; USB PC Interface.

CodeWarrior™ Development Studio

For HCS08 with Processor Expert™ autocode generator, full-chip simulation, assembler, linker and C Compiler. 16KB code limited version free of charge.

MC9S08QG8 Virtual Lab

Avoid the hassles of shipping, installation and configuration until you have evaluated the solution you really need. Run the available demos, go through tutorials, and try out your own code.

Virtual Labs can be used on demand when available or reserved for use at a specific time.

Find quick start guides, development board information, manuals, product information, product summary, schematics tools, demos, tools and software.

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