MC9S08SE8/4
Do more with less

Target Applications
• Personal care/handheld devices
• AC-powered consumer goods
• Power tools
• Security systems
• Lawnmowers
• Small appliances
• Treadmills
• Vacuum cleaners
• Industrial appliances/compressors
• DC computer cooling fans
• Power supplies
• AC voltage line monitors

Features Benefits
8-bit HCS08 Central Processor Unit (CPU)
• Up to 20 MHz HCS08 (10 MHz internal bus frequency) • Offers high performance up to 5V, ideal for industrial applications
• HC08 instruction set with added BGND instruction • Enables backward object-code compatibility with 68HC08 and 68HC05
• Supports up to 32 interrupt/reset sources • Enables software flexibility and optimization for real-time applications

Integrated Third-Generation Flash Memory and RAM
• Embedded flash that is in-application reprogrammable over the full operating voltage and temperature range with a single power supply • Provides users a single solution for multiple platforms or a single platform that is field reprogrammable in virtually any environment
• Extremely fast, byte-writable programming; as fast as 20 μs (burst mode) • Helps reduce production programming costs through ultra-fast programming, as well as lowering system power consumption due to shorter writes

Flexible Clock Options
• Internal clock source (ICS) module with a frequency-locked loop (FLL) controlled by internal or external reference • Eliminates the cost of utilizing external clock components, reducing board space and increasing system reliability
• Precision trimming of internal reference allows typical 0.2 percent resolution and 2 percent deviation over operating temperature and voltage • Provides one of the most accurate and cost-effective internal clock sources in the market
• Low-power oscillator module (XOSC) with software-selectable crystal or ceramic resonator range, 31.25 kHz to 38.4 kHz or 1 MHz to 16 MHz • Enables adjustment of bus clocks for optimal serial communication baud rates and/or timer intervals

S08 Core

24/14 GPIO
8x KBI
COP
2-ch., 16-bit
Timer
LVI
RTC
1-ch., 16-bit
Timer
SCI
10-ch., 10-bit
ADC
ICS
(0.2% resolution, 2% deviation)
8K/4K
Flash
512/256B
RAM
ICE + BDM

22 I/O Pins, One Input-Only Pin and One Output-Only Pin
• Outputs 10 mA each; 60 mA max for package • High-current I/O allows direct drive of LED and other circuits, virtually eliminating external drivers and reducing system costs
• Software-selectable pull-up/resistor when used as inputs; internal pull-up on reset and interrupt request (IRQ) pin • Reduces customer’s system cost by eliminating the need for external resistors
• Software-selectable slew rate control and drive strength on ports when used as output • Allows user to configure ports for slower slew rate and weaker drive to minimize noise emissions from the MCU
• 8-pin keyboard interrupt module with software-selectable polarity on edge or edge/level modes • Keyboard scan with programmable pull-ups/pull-downs virtually eliminates external glue logic when interfacing to simple keypads
Overview
The MC9S08SE8/4 strengthens Freescale's entry level 8-bit microcontroller portfolio by extending the advantages of the HCS08 core and peripherals to 5V. The highly integrated SE controllers give you the choice of cost-effective higher-pin-count devices, with 20 MHz CPU, for entry-level products. Functionality is enhanced with rich analog capabilities, a complete set of serial modules, a temperature sensor and robust memory options, which are ideal for general-purpose consumer and industrial applications in the 2.7V to 5.5V range.

Cost-Effective Development Tools

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>DEMO9S08SEB $75*</td>
<td>Cost-effective demonstration board with potentiometer, LEDs, serial port and built-in USB-BDM cable for debugging and programming</td>
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<tr>
<td>M68CYCLONEPRO $499*</td>
<td>HC08/HCS08/HC12/HCS12 stand-alone flash programmer or in-circuit emulator, debugger, flash programmer; USB, serial or Ethernet interface options</td>
</tr>
<tr>
<td>USBMULTILINKBDM $99*</td>
<td>Universal HC08 in-circuit debugger and flash programmer; USB PC interface</td>
</tr>
<tr>
<td>CWX-HXX-SE Free**</td>
<td>CodeWarrior™ Special Edition for Microcontrollers; includes integrated development environment (IDE), linker, debugger, unlimited assembler, Processor Expert™ auto-code generator, full-chip simulation and 32 KB C compiler limitation</td>
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