icrocontrollers

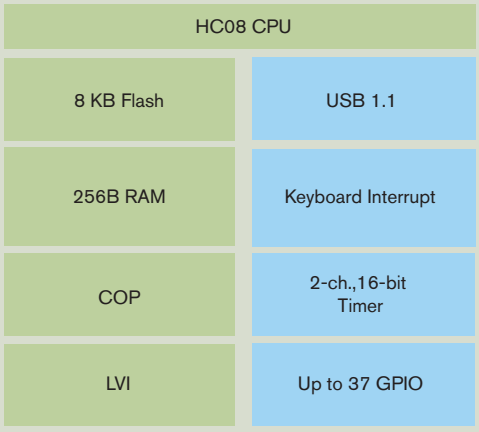
MC68HC908JB8

Target Applications

- > PC peripherals (keyboard, mouse, joystick)
- > RF wireless receivers
- > USB converters
- > USB security keys for e-commerce
- > Game pads
- > Set-top box peripherals

Overview

This 8-bit MC68HC908JB8 is an upwardly compatible, versatile migration from Freescale Semiconductor's groundbreaking 68HC05 Universal Serial Bus (USB) Family. The innovative design features an on-chip USB module for faster, more reliable PC peripheral applications. An energy-saving, low-power solution, the MC68HC908JB8 is embedded with Freescale's second-generation embedded Flash technology to enable in-system programmability.



Features	Benefits
High-Performance 68HC08 CPU Core	
> 3 MHz bus operation at 3V for 333 ns minimum instruction cycle time	> Object code compatible with the 68HC05
> Efficient instruction set, including multiply and divide	> Easy to learn and use architecture
> 16 flexible addressing modes, including stack relative with 16-bit stack pointer	> C-optimized architecture provides compact code
> Fully static, low-voltage, low-power design with wait and stop modes	
Integrated Second-Generation Flash Memory	
> In-application reprogrammable	> Cost-effective programming changes and field software upgrades via in-application programmability and reprogrammability
> Extremely fast programming, encoding 64B in as fast as 2 ms	> Reduces production programming costs through ultra-fast programming
> Flash programming across the 68HC08's full operating supply voltage with no extra programming voltage	> Allows reprogrammable battery-powered applications
> 10K write/erase cycles minimum over temperature	> Byte-writable for data as well as program memory
> 100K write/erase cycles typical	> Protects code from unauthorized reading and guards against unintentional writing/erasing of user-programmable segments of code
> Flexible block protection and security	
Full USB 1.1 Specification Low-Speed Functions	
> 1.5 Mbps data rate	> Designed to serve as a low-speed (LS) USB device, in accordance with the Universal Serial Bus Specification Rev. 1.1
> On-chip 3.3V regulator	> Integrated 3.3V regulator reduces system cost
> Endpoint 0 with 8B transmit buffer and 8B receive buffer	
> Endpoint 1 with 8B transmit buffer	
> Endpoint 2 with 8B transmit buffer and 8B receive buffer	
Multiple Clock Options	
> Crystal oscillator	> Flexible clock options optimize timing accuracy with system cost
> Ceramic oscillator	
> External clock	
> RC oscillator	
Two Programmable 16-bit Timer Channels	
> 333 ns resolution at 3 MHz bus	> Each channel independently programmable for input capture, output compare or unbuffered pulse-width modulation (PWM)
> Free-running counter or modulo up-counter	> Pairing timer channels provides a buffered PWM function

freescale™ semiconductor

Features	Benefits
Computer Operating Properly (COP) Watchdog Timer	
	> Provides system protection in the event of runaway code by resetting the microcontroller (MCU) to a known state
Low-Voltage Inhibit (LVI)	
	> Improves reliability by resetting the MCU when voltage drops below trip point
	> Integration reduces system cost
Up to 37 Bidirectional Input/Output (I/O) Lines	
> High sink/source capability on all I/O pins	> High-current capable I/O allows direct drive of LED and other circuits to eliminate external drivers and reduce system costs
> 25 mA sink capability on two I/O pins	
> Keyboard scan with selectable interrupts on four I/O pins	> Keyboard scan with programmable pull-ups eliminates external glue logic when interfacing to simple keypads

Application Notes

AN1831	Using MC68HC908 On-Chip Programming Routines
AN2093	Creating Efficient C Code for the MC68HC08
AN1219	M68HC08 Integer Math Routines
AN1218	HC05 to HC08 Optimization
AN1837	Non-Volatile Memory Technology Overview
AN1752	Data Structures for 8-bit MCUs
AN1259	System Design and Layout Techniques for Noise Reduction in MCU-Based Systems
AN1263	Designing for Electromagnetic Compatibility with Single-Chip Microcontrollers
AN1050	Designing for Electromagnetic Compatibility (EMC) with HCMOS Microcontrollers
AN1705	Noise Reduction Techniques for Microcontroller-Based Systems

And many more—see our Web site at **www.freescale.com/mcu**.

Cost-Effective Development Tools

For more information on development tools, please refer to the Freescale Development Tool Selector Guide (SG1011).

FSICEKITJB8 ***$1,895***	Complete FSICE high-performance emulator kit; includes emulator module, cables, head adapters and programming adapters
M68EM08JB8 ***$495***	Emulation module for FSICE system
M68CYCLONEPRO ***$499***	HC08/HCS08/HC12/HCS12 stand-alone Flash programmer or in-circuit emulator, debugger, Flash programmer; USB, serial or Ethernet interface options
USBMULTILINK08 ***$99***	Universal HC08 in-circuit debugger and Flash programmer; USB PC interface
M68CPA08QF324448 ***$199***	Programming adapter for MON08 cables and single MCU: 32-pin 0.8 mm QFP packages, 44-pin 0.8 mm QFP packages and 48-pin 0.5 mm QFP packages
M68CPA08W1628T20 ***$149***	Programming adapter for MON08 cables and single MCU: 7.5 mm SOIC packages up to 28 pins, 5.3 mm SOIC packages up to 16 pins and TSSOP packages up to 20 pins
M68CPA08P40B56 ***$99***	Programming adapter for MON08 cables and single MCU: DIP packages up to 40 pins and SDIP packages up to 56 pins
CWX-H08-SE ***Free***	CodeWarrior™ Special Edition for HC(S)08 MCUs; includes integrated development environment (IDE), linker, debugger, unlimited assembler, Processor Expert™ auto-code generator, full-chip simulation and 16 KB C compiler

Package Options

Part Number	Package	Temp. Range
MC68HC908JB8JP	20 DIP	0°C to +70°C
MC68HC908JB8ADW	28 SOIC	0°C to +70°C
MC68HC908JB8FB	44 QFP	0°C to +70°C
MC68HC908JB8JDW	20 SOIC	0°C to +70°C

20-Pin Plastic DIP

20-Lead SOIC

28-Lead SOIC

44-Lead QFP

Learn More: For more information about Freescale's products, please visit **www.freescale.com**.

Document Number: 68HC908JB8FS
REV 0

freescale™ semiconductor