A FLASH MCU SOLUTION

68HC908JB8

8-bit Microcontroller

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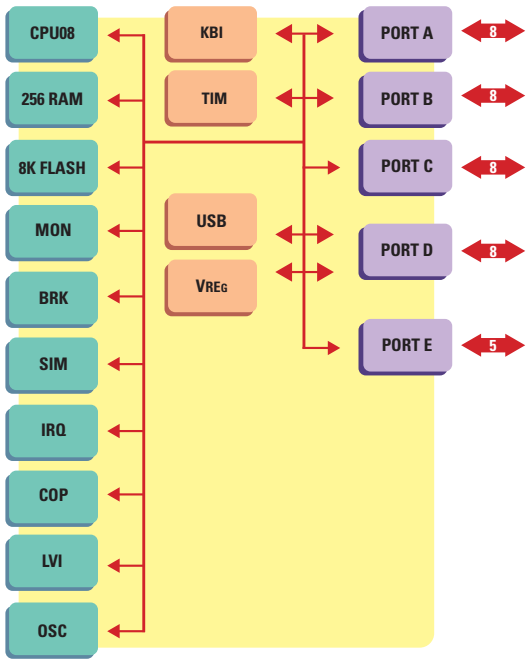
TARGET APPLICATIONS

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

This 8-bit 68HC908JB8 is an upwardly compatible, versatile migration from Motorola'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 68HC908JB8 is embedded with Motorola'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 nsec minimum instruction cycle time
- Efficient instruction set including multiply and divide
- 16 flexible addressing modes including stack relative with 16-bit stack pointer
- Fully static low-voltage, low-power design with wait and stop modes
- Object code compatible with the 68HC05
- Easy to learn and use architecture
- C optimized architecture provides compact code

INTEGRATED SECOND GENERATION FLASH MEMORY

- In-application re-programmable
- Extremely fast programming, encoding 64 bytes in as fast as 2 msec
- FLASH programming across the 68HC08's full operating supply voltage with no extra programming voltage
- 10K write/erase cycles minimum over temperature
- Flexible block protection and security
- Cost-effective programming changes and field software upgrades via in-application programmability and re-programmability
- Reduces production programming costs through ultra-fast programming
- Allows re-programmable battery-powered applications
- Byte-writable for data as well as program memory
- Protects code from unauthorized reading and to guard against unintentional erasing/writing of user-programmable segments of code

FULL USB 1.1 SPECIFICATION LOW-SPEED FUNCTIONS

- 1.5 Mbps data rate
- On-chip 3.3V regulator
- Endpoint 0 with 8-byte transmit buffer and 8-byte receive buffer
- Endpoint 1 with 8-byte transmit buffer
- Endpoint 2 with 8-byte transmit buffer and 8-byte receive buffer
- Designed to serve as a low-speed (LS) USB device, in accordance with the Universal Serial Bus Specification Rev. 1.1
- Integrated 3.3V regulator reduces system cost

MULTIPLE CLOCK OPTIONS

- Crystal oscillator
- Ceramic oscillator
- External clock
- RC oscillator
- Flexible clock options optimize timing accuracy with system cost

Freescale Semiconductor, Inc.

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PART NUMBER	DESCRIPTION	RESALE*
EASY-TO-ORDER DEVELOPMENT TOOL KITS		
M68ICS08JB	68HC908JB8 Programmer/in-circuit debug kit	$295
KITMMEVS08JB	Cost-effective real-time in-circuit emulator	$1450
KITMMDS08JB	High-performance real-time in-circuit emulator kit	$3950
INDIVIDUAL DEVELOPMENT TOOL COMPONENTS		
M68MMDS0508	High-performance emulator	$2950
M68MMPFB0508	MMEVS platform board	$395
M68EM08JB8	Emulation module daughter board	$495
M68CBL05C	Low-noise flex cable	$120
M68CBL05B	Low-noise flex cable	$120
M68TC08JB8P20	20-pin DIP target head adapter	$100
M68TC08JB8FB44	44-pin QFP target head adapter	$250
M68DIP20SOIC	20-pin SOIC-DW target head adapter	$50
M68DIP28SOIC	28-pin SOIC-DW target head adapter	$50
M68TQS044SAG1	44-pin TQ socket with guides	$50
M68TQP044SAM01	44-pin TQPACK	$70

FEATURES	BENEFITS
TWO PROGRAMMABLE 16-BIT TIMER CHANNELS	
• 333 nsec resolution at 3 MHz bus • Free-running counter or modulo up-counter	• Each channel independently programmable for input capture, output compare or unbuffered PWM • Pairing timer channels provides a buffered PWM function
COMPUTER OPERATING PROPERLY WATCHDOG TIMER	
	• Provides system protection in the event of runaway code by resetting the MCU to a known state
LOW-VOLTAGE INHIBIT	
	• 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 • 25 mA sink capability on two I/O pins • Keyboard scan with selectable interrupts on eight I/O pins	• High-current capable I/O allows direct drive of LED and other circuits to eliminate external drivers and reduce system costs • Keyboard scan with programmable pullups eliminate external glue logic when interfacing to simple keypads

APPLICATION NOTES

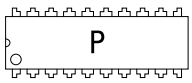
- AN1831/D Using MC68HC908 On-Chip Programming Routines
- AN2093/D Creating Efficient C Code for the MC68HC08
- AN1219/D M68HC08 Integer Math Routines
- AN1218/D HC05 to HC08 Optimization
- AN1837/D Non-Volatile Memory Technology Review
- AN1752/D Data Structures for 8-bit MCUs
- AN1705/D Noise Reduction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

And many more—see our Web site at http://www.motorola.com/mcu

PACKAGE OPTIONS

PART NUMBER	PACKAGE	TEMPERATURE RANGE
MC68HC908JB8JP	20 DIP	0 to 70°C
MC68HC908JB8ADW	28 SOIC	0 to 70°C
MC68HC908JB8FB	44 QFP	0 to 70°C
MC68HC908JB8JDW	20 SOIC	0 to 70°C
SAMPLE PACKS	**PACKAGE**	**TEMPERATURE RANGE**
KMC908JB8ADW	28 SOIC	0 to 70°C
KMC908JB8FB	44 QFP	0 to 70°C

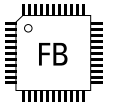
20-Pin Plastic DIP



28-Lead SOIC

20-Lead SOIC

44-Lead QFP



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