A FLASH MCU SOLUTION

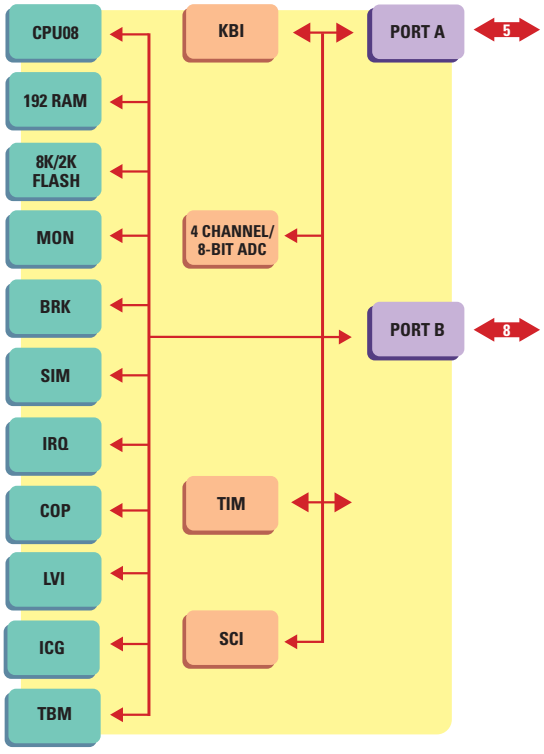
68HC908KX8/KX2

8-bit Microcontroller

TARGET APPLICATIONS

- Networked and control systems
- Home and industrial security systems
- Building control systems
- Interconnected home appliances
- Fluorescent light ballasts

The 68HC908KX8 and the 68HC908KX2 maximize efficiency and reduce system costs with an internal clock generator which eliminates the need for an external clock source. Other valuable features include a serial communications interface (SCI) enabling high-speed communication, an analog-to-digital converter (ADC) and a timebase module (TBM) for more cost-effective processing.



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FEATURES	BENEFITS

HIGH-PERFORMANCE 68HC08 CPU CORE

- 8 MHz bus operation at 5V operation for 125 nsec minimum instruction cycle time
- 4 MHz bus operation at 3V for 250 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

INTERNAL CLOCK GENERATOR

- Software-selectable bus frequencies
- 2% accurate with trim capability
- Clock monitor
- Option to allow use of external clock source or external crystal/ceramic resonator

- Eliminates the need and cost for an external clock source
- Improved accuracy across temperature and voltage

8-BIT ANALOG-TO-DIGITAL CONVERTER

- 4 channels
- Single conversion in 17 µsec

- Fast, easy conversion from analog inputs like temperature, pressure and fluid levels to digital values for CPU processing

TWO PROGRAMMABLE 16-BIT TIMER CHANNELS

- 125 nsec resolution at 8 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

SERIAL COMMUNICATIONS INTERFACE

- UART asynchronous communications system
- Flexible baud rate generator
- Double buffered transmit and receive
- Optional hardware parity checking and generation

- Asynchronous communication between the MCU and a terminal, computer or a network of microcontrollers

A FLASH MCU SOLUTION

68HC908KX8/KX2

PART NUMBER	DESCRIPTION	RESALE*
EASY-TO-ORDER DEVELOPMENT TOOL KITS		
M68ICS08KX	68HC908KXx Programmer/ in-circuit debug kit	$295
KITMMEVS08KX	Cost-effective real-time in-circuit emulator kit	$1450
KITMMDS08KX	High-performance real-time in-circuit emulator kit	$3950
INDIVIDUAL DEVELOPMENT TOOL COMPONENTS		
M68MMDS0508	High-performance emulator	$2950
M68MMPFB0508	MMEVS platform board	$395
M68EML08KX	Emulation module daughter board	$495
M68CBL05A	Low-noise flex cable	$120
M68TA08KX6P16	16-pin target head adapter	$100
M68DIP16SOIC	16-pin SOIC target head adapter	$35

FEATURES	BENEFITS
COMPUTER OPERATING PROPERLY WATCHDOG TIMER	
	• Provides system protection in the event of runaway code by resetting the MCU to a known state
SELECTABLE TRIP POINT LOW-VOLTAGE INHIBIT	
	• Improves reliability by resetting the MCU when voltage drops below the trip point • Two trip points allow optimum operation in both 5V and 3V nominal systems • Integration reduces system cost
UP TO 13 BIDIRECTIONAL INPUT/OUTPUT (I/O) LINES	
• 10 mA sink/source capability on all I/O pins • 15 mA sink capability on five I/O pins • Keyboard scan with selectable interrupts on five I/O pins • Software programmable pullups on five I/O pins	• High-current I/O allows direct drive of LED and other circuits to eliminate external drivers and reduce system costs • Keyboard scan with programmable pullups eliminates external glue logic when interfacing to simple keypads

APPLICATION NOTES

- EB369/D In-circuit Programming of 68HC908KX FLASH Memory
- AN1853/D Embedding Microcontrollers in Domestic Refrigeration Appliances
- AN1831/D Using MC68HC908 On-Chip FLASH Programming Routines
- AN1843/D Vacuum Cleaner Reference Platform
- 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

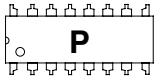
And many more—see our Web site at http://www.motorola.com/mcu

PACKAGE OPTIONS

PART NUMBER	PACKAGE	FLASH SIZE	TEMPERATURE RANGE
MC68HC908KX8CP	16 DIP	8K	-40 to 85ºC
MC68HC908KX8CDW	16 SOIC	8K	-40 to 85ºC
MC68HC908KX2CP	16 DIP	2K	-40 to 85ºC
MC68HC908KX2CDW	16 SOIC	2K	-40 to 85ºC
MC68HC908KX8VP	16 DIP	8K	-40 to 105ºC
MC68HC908KX8VDW	16 SOIC	8K	-40 to 105ºC
MC68HC908KX2VP	16 DIP	2K	-40 to 105ºC
MC68HC908KX2VDW	16 SOIC	2K	-40 to 105ºC
MC68HC908KX8MP	16 DIP	8K	-40 to 125ºC
MC68HC908KX8MDW	16 SOIC	8K	-40 to 125ºC
MC68HC908KX2MP	16 DIP	2K	-40 to 125ºC
MC68HC908KX2MDW	16 SOIC	2K	-40 to 125ºC
SAMPLE PACK	**PACKAGE**	**FLASH SIZE**	**TEMPERATURE RANGE**
KMC908KX8CDW	16 SOIC	8K	-40 to 85ºC
KMC908KX8CP	16 DIP	8K	-40 to 85ºC
KMC908KX2CDW	16 SOIC	2K	-40 to 85ºC
KMC908KX2CP	16 DIP	2K	-40 to 85ºC

* All prices are manufacturer's suggested resale for North America.

16-Pin Plastic DIP



16-Lead SOIC

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68HC908KXPB/D
Rev.1