A FLASH MCU SOLUTION

68HC908AB32

8-bit Microcontroller

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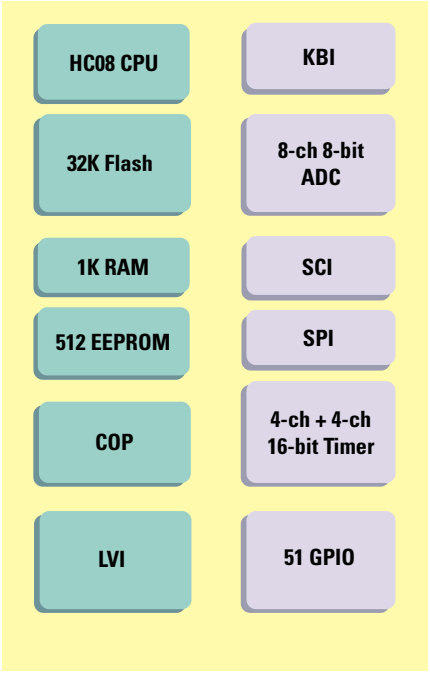
TARGET APPLICATIONS

- Appliances
- Data loggers
- Industrial equipment
- Automotive body electronics

The 68HC908AB32 FLASH microcontroller utilizes Motorola's highly successful 68HC08 architecture and is code compatible with 68HC05 microcontrollers providing an efficient migration path to higher performance FLASH MCUs. With 32,256 bytes of in-system, programmable FLASH memory and in-circuit programming capability, the 68HC908AB32 delivers high-performance while lowering costs. The 68HC908AB32 provides security and reliability with innovative features like a computer operating properly (COP) watchdog, selectable FLASH security, memory-mapped input/output registers, low-voltage inhibit (LVI) and stop and wait modes.



FEATURES	BENEFITS

HIGH-PERFORMANCE 68HC08 CPU CORE

- 8 MHz bus operation at 5V operation for 125 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

INTEGRATED EEPROM

- Byte erasable

8-BIT ANALOG-TO-DIGITAL CONVERTER

- 8 channels
- Single conversion in 17 µsec
- Fast, easy conversion from analog inputs like temperature, pressure, and fluid levels to digital values for CPU processing

CLOCK GENERATION MODULE WITH PLL

- Programmable clock frequency in integer multiples of external crystal reference
- Crystal reference of 1 MHz to 8 MHz
- External clock option with or without PLL
- Provides high performance using low-cost, low-frequency reference crystals
- Reduces generated noise while still providing high performance (up to 32 MHz internal clock)

8 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

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PART NUMBER	DESCRIPTION	RESALE
EASY-TO-ORDER DEVELOPMENT TOOL KITS		
M68ICS08AB	68HC908AB32 Programmer/in-circuit debug kit	$295
KITMMEVS08AB32	Cost-effective real-time in-circuit emulator kit	$1450
KITMMDS08AB32	High-performance real-time in-circuit emulator kit	$3950
INDIVIDUAL DEVELOPMENT TOOL COMPONENTS		
M68MMDS0508	High-performance emulator	$2950
M68MMPFB0508	MMEVS platform board	$395
M68EML08AB32	Emulation module daughter board	$495
M68CBL05C	Low-noise flex cable	$120
M68TC08AB32FU64	64-pin QFP target head adapter	$300
M68TQS064SAG1	64-pin TQ socket with guides	$50
M68TQP064SA1	64-pin TQPACK	$70

APPLICATION NOTES

- 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: 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 http://www.motorola.com/mcu

FEATURES	BENEFITS
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
SERIAL PERIPHERAL INTERFACE	
• Full-duplex 3-wire synchronous transfers • Maximum master bit rate of 4 MHz for 8 MHz system clock	• High-speed synchronous communication between multiple MCUs or between MCU and serial peripherals • Cost-effective serial peripheral expansion to EEPROM, high-precision A/D and D/A converters, real-time clocks, etc.
PERIODIC INTERRUPT TIMER	
	• Provides periodic interrupts
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 51 BIDIRECTIONAL INPUT/OUTPUT (I/O) LINES	
• 10 mA sink/source capability on all I/O pins • 15 mA sink capability on eight I/O pins • Keyboard scan with selectable interrupts on five I/O pins • Software programmable pullups on 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

PACKAGE OPTIONS

PART NUMBER	PACKAGE	TEMPERATURE RANGE
MC68HC908AB32CFU	64 QFP	-40 to 85°C
MC68HC908AB32VFU	64 QFP	-40 to 105°C
MC68HC908AB32MFU	64 QFP	-40 to 125°C
SAMPLE PACKS	**PACKAGE**	**TEMPERATURE RANGE**
KMC908AB32CFU	64 QFP	-40 to 85°C
KMC908AB32VFU	64 QFP	-40 to 105°C
KMC908AB32MFU	64 QFP	-40 to 125°C

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

68HC908AB32PB/D
REV 2
ATX46453-1 Printed in USA 05/03 Imperial Litho 56466 5,000 LITCSG1