8-bit Flash Microcontrollers

# 68HC908JK8/JL8

Target Applications

> Appliances

> Security systems

> Microwave applications

> Satellite receivers

> Automotive body electronics

> Sensors and flow
  measurement devices

> Industrial compressor (HVAC)

> Instrument control panels

> HVAC blowers and fans

The 68HC908JL8 and the 68HC908JK8
use a 68HC08 CPU core and provide
cost-effective, reprogrammable Flash
with an integrated analog-to-digital converter
(ADC). This family also includes multiple clock
options, two 16-bit timer channels, low-voltage
inhibit (LVI) and a watchdog timer.

HC08 CPU	
8 KB Flash	KBI
256 RAM	13-ch., 8-bit ADC
SCI	2-ch., 16-bit Timer
COP	
LVI	Up to 26 GPIO
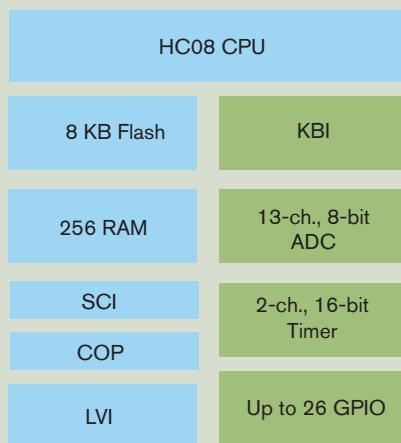
Features	Benefits
High-Performance 68HC08 CPU Core	
> 8 MHz bus operation at 5V operation for 125 nsec minimum instruction cycle time	> Object code compatible with the 68HC05
> 4 MHz bus operation at 3V for 250 nsec minimum instruction cycle time	> Easy to learn and use architecture
> Efficient instruction set including multiply and divide	> C-optimized architecture provides compact code
> 16 flexible addressing modes including stack relative with 16-bit stack pointer	
> 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 64 bytes in as fast as 2 msec	> 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
> Flexible block protection and security	> Protects code from unauthorized reading and guards against unintentional erasing/writing of user-programmable segments of code
8-bit Analog-to-Digital Converter	
> Up to 13 channels	> Fast, easy conversion from analog inputs, such as temperature, pressure and fluid levels to digital values for CPU processing
> Single conversion in 17 μsec	
Multiple Clock Options	
> Crystal, ceramic or RC oscillator	> Flexible clock options optimize timing accuracy with system cost
> External clock	
Two Programmable 16-bit Timer Channels	
> 125 nsec resolution at 8 MHz bus	> Each channel independently programmable for input capture, output compare or unbuffered PWM
> Free-running counter or modular arithmetic up-counter	> Pairing timer channels provides a buffered PWM function
Computer Operating Properly (COP) Watchdog Timer	
	> Provides system protection
Serial Communications Interface	
> UART asynchronous communications system	> Asynchronous communication between the MCU and a terminal, computer or a network of microcontrollers
> Flexible baud rate generator	
> Double buffered transmit and receive	
> Optional hardware parity checking and generation	

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Features	Benefits
Selectable Trip Point Low-Voltage Inhibit	
	> Improves reliability by resetting the MCU when voltage drops below trip point
	> Two trip points allow optimum operation in both 5V and 3V nominal systems
	> Integration reduces system cost
Up to 26 Bidirectional Input/Output (I/O) Lines	
> 25 mA sink capability on two 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 selectable interrupts on seven I/O pins	
> Software programmable pullups on nine I/O pins	> Keyboard scan with programmable pullups eliminate external glue logic when interfacing to simple keypads

| Part Number	Descriptiion
Easy-to-Order Development Tool Kits	
M68ICS08JLJK	JL and JK programmer/in-circuit debug kit
KITMMEVS08JL	Cost-effective real-time in-circuit emulator kit
KITMMDS08JL	High-performance real-time in-circuit emulator kit
M68EML08JKJL	Emulation module for the JL and JK HC08 Family
USBMULTILINK08	Universal HC08 in-circuit Flash programmer and debugger, USB host interface
M68CYCLONEPRO	HC08/HCS08/HC12/HCS12 stand-alone Flash programmer or in-circuit emulator, debugger, Flash programmer; USB, serial or Ethernet interface options
CDCWHC08/D	CodeWarrior™ Development Studio for HC08 v3—IDE with Processor Expert™ auto-code generator, full-chip simulation, assembler, linker and C compiler (code size limited, compiler upgrades available)

Application Notes and Engineering Bulletins

> EB367/D In-Circuit Programming of 68HC908JL/JK

> AN1218/D 68HC05 to 68HC08 Optimization

> AN1831/D Using MC68HC908 On-Chip Flash Programming Routines

> AN1837/D Nonvolatile Memory Technology Review

> AN2093/D Creating Efficient C Code for the MC68HC08

> AN1752/D Data Structures for 8-bit MCUs

> AN1219/D M68HC08 Integer Math Routines

> 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

> AN2158/D Designing with the MC68HC908JL/JK Microcontroller Family

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

PACKAGE OPTIONS

| Part Number	Package	OCS	Temperature Range
MC68HC908JL8CP	28 DIP	XTAL	-40°C to +85°C
MC68HC908JL8CDW	28 SOIC	XTAL	-40°C to +85°C
MC68HC908JL8CFA	32 LQFP	XTAL	-40°C to +85°C
MC68HC908JL8MP	28 DIP	XTAL	-40°C to +125°C
MC68HC908JL8MDW	28 SOIC	XTAL	-40°C to +125°C
MC68HC908JL8MFA	32 LQFP	XTAL	-40°C to +125°C
MC68HRC908JL8CP	28 DIP	RC	-40°C to +85°C
MC68HRC908JL8CDW	28 SOIC	RC	-40°C to +85°C
MC68HRC908JL8CFA	32 LQFP	RC	-40°C to +85°C
MC68HRC908JL8MP	28 DIP	RC	-40°C to +125°C
MC68HRC908JL8MDW	28 SOIC	RC	-40°C to +125°C
MC68HRC908JL8MFA	32 LQFP	RC	-40°C to +125°C
MC68HC908JK8CP	20 DIP	XTAL	-40°C to +85°C
MC68HC908JK8CDW	20 SOIC	XTAL	-40°C to +85°C
MC68HC908JK8MP	20 DIP	XTAL	-40°C to +125°C
MC68HC908JK8MDW	20 SOIC	XTAL	-40°C to +125°C
MC68HRC908JK8CP	20 DIP	RC	-40°C to +85°C
MC68HRC908JK8CDW	20 SOIC	RC	-40°C to +85°C
MC68HRC908JK8MP	20 DIP	RC	-40°C to +125°C
MC68HRC908JK8MDW	20 SOIC	RC	-40°C to +125°C

28-Pin DIP

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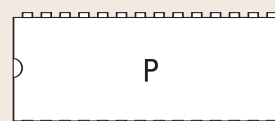
28-Lead SOIC

28-Pin Plastic DIP

32-Lead LQFP

FA

20-Lead SOIC

DW
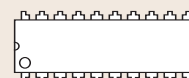
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