A FLASH MCU SOLUTION

68HC908RK2
8-bit Microcontroller

MOTOROLA *intelligence everywhere*™

digital dna

## TARGET APPLICATIONS

- Remote keyless entry
- Hand held battery operated devices

The 68HC908RK2 is optimized for low-power operation down to 1.8V. The 68HC908RK2 is a flexible, functional solution that reduces operating costs with on-chip features like an internal oscillator that requires no external components. The 68HC908RK2 also includes multiple system protection features and timers.
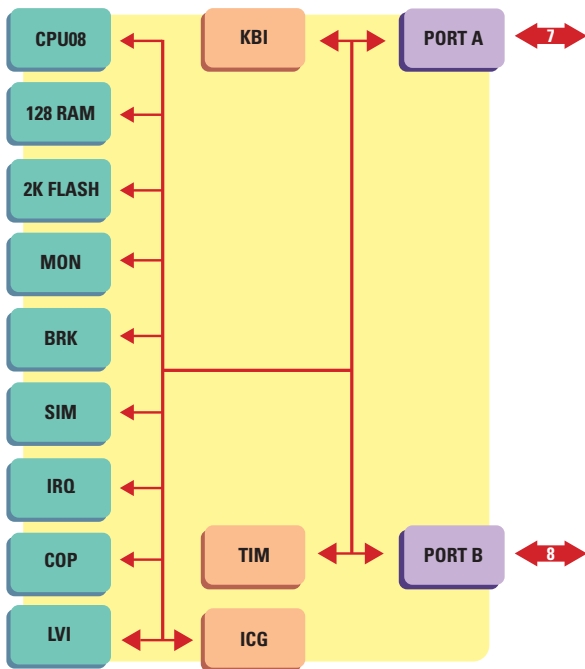
FEATURES	BENEFITS

HIGH-PERFORMANCE 68HC08 CPU CORE

- 4 MHz bus operation at 3V operation for 250 nsec minimum instruction cycle time
- 2 MHz bus operation at 1.8V for 500 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 FIRST GENERATION FLASH MEMORY

- In-application re-programmable
- FLASH programming across the 68HC08's full operating supply voltage with no extra programming voltage
- Flexible block protection and security

- Cost-effective programming changes and field software upgrades via in-application programmability and re-programmability
- Allows re-programmable battery powered applications
- 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% accuracy with trim capability
- Clock monitor
- Option to use external clock source or external crystal/ceramic oscillator

- Programmable internal clock eliminates the need and cost of an external clock source
- Accurate across temperature and voltage

TWO PROGRAMMABLE 16-BIT TIMER CHANNELS

- 250 nsec resolution at 4 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

Block diagram:

CPU08 — KBI — PORT A [7]
128 RAM
2K FLASH
MON
BRK
SIM
IRQ
COP — TIM — PORT B [8]
LVI — ICG

Freescale Semiconductor, Inc.

Freescale Semiconductor, Inc.

CU SOLUTION

68HC908RK2

PART NUMBER	DESCRIPTION	RESALE*
EASY-TO-ORDER DEVELOPMENT TOOL KITS		
M68ICS08RK2	68HC908RK2 programmer/ in-circuit debug kit	$295
KITMMEVS08RK2	Cost-effective real-time in-circuit emulator kit	$1450
KITMMDS08RK2	High-performance real-time in-circuit emulator kit	$3950
INDIVIDUAL DEVELOPMENT TOOL COMPONENTS		
M68MMDS0508	High-performance emulator	$2950
M68MMPFB0508	MMEVS platform board	$395
M68EML08RK2	Emulation module daughter board	$495
M68CBL05A	Low-noise flex cable	$120
M68TA08RK2P20	20-pin DIP target head adapter	$100
M68DIP20SS0P	20-pin SSOP surface mount 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

LOW-VOLTAGE INHIBIT

- Detects two levels of low-voltage operation—low-voltage detection and low-voltage reset

- Improves reliability by resetting the MCU when voltage drops below trip point
- Integration reduces system cost
- Low voltage detection allows battery-powered applications to monitor for low battery

FOURTEEN BIDIRECTIONAL INPUT/OUTPUT (I/O) LINES

- High-current sink/source capability on all I/O
- Keyboard scan with selectable interrupts on six pins
- Software programmable pullups on six pins

- High-current I/O allows direct drive of LED and other circuits to eliminate external drivers and reduce systems costs
- Keyboard scan with programmable pullups eliminates external glue logic when interfacing to simple keypads

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/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
MC68HC908RK2CSD	20 SSOP	-40 to 85ºC
SAMPLE PACKS	**PACKAGE**	**TEMPERATURE RANGE**
KMC908RK2CSD	20 SSOP	-40 to 85ºC

20-Lead SSOP

SD

MOTOROLA

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

**For More Information On This Product,
Go to: www.freescale.com**