

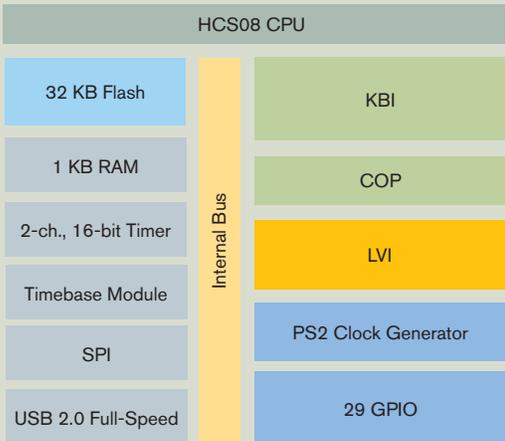
MC68HC908JW32

Target Applications

- > PC peripherals (keyboard, mouse)
- > USB security keys for e-commerce
- > USB converters
- > Set-top box peripherals

Overview

The 68HC908JW32 is a member of the family of USB microcontrollers from Freescale Semiconductor. The innovative design features an on-chip, full-speed USB 2.0 module for fast human interface device (HID) applications. An energy-saving, low-power solution, the 68HC908JW32 is embedded with 32 KB of Freescale's second-generation Flash technology to enable system programmability.



Features

High-Performance 68HC08 CPU Core

- > 8 MHz bus operation from 3.5V to 5V operation for 125 ns minimum instruction cycle time
- > Efficient instruction set, including multiply and divide
- > 16 flexible addressing modes, including multiply and divide
- > Fully static, low-voltage, low-power design with wait and stop modes

Benefits

- > 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 reprogrammable
- > Extremely fast programming, encoding 64B in as fast as 2 ms
- > Flash programming across the 68HC08's full operating supply voltage with no extra programming voltage
- > 10K write/erase cycles minimum over temperature
- > 100K write/erase typical
- > Flexible block protection and security
- > Pre-installed in-circuit programming and emulated EEPROM software routines in ROM

- > Cost-effective programming changes and field software upgrades via in-application programmability and reprogrammability
- > Reduces production programming costs through ultra-fast programming
- > Allows reprogrammable battery-powered applications
- > Byte-writable for data, as well as program memory
- > Protects code from unauthorized reading and guards against unintentional writing/erasing of user-programmable segments of code
- > Pre-installed programming routines simplify user codes

USB 2.0 Specification Full-Speed Functions

- > 12 Mbps data rate
- > On-chip 3.3V regulator
- > Endpoint 0 with 8B transmit buffer and 8B receive buffer
- > 64B endpoint buffer to share among endpoints 1-4
- > Designed to serve as full-speed (FS) USB device, in accordance with Universal Serial Bus Specification Rev. 2.0 Full-Speed Functions
- > Integrated 3.3V regulator helps to reduce system cost

Two-Channel, 16-bit Programmable Timer

- > 125 ns resolution at 8 MHz bus
- > Free-running counter or module up-counter
- > Each channel independently programmable for input capture, output compare, unbuffered PWM
- > Pairing timer channels provides a buffered PWM function



Features

Benefits

PS2 Clock Generator

- > 12.5 kHz PS2 output clock
- > Integration reduces system cost

Timebase Module

- > Eight user-selectable periodic real-time interrupts
- > Optionally operates in low-power stop mode
- > Provides autowake-up from low-power stop mode to maintain real-time clock or check external device status, such as sensors

Computer Operating Properly (COP)

- > Provides system protection

Low-Voltage Inhibit (LVI)

- > Improves reliability by resetting the MCU when voltage drops below trip point
- > Integration reduces system cost

Serial Peripheral Interface (SPI)

- > Full-duplex, three-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 analog-to-digital and digital-to-analog converters, etc.

Up to 29 Bidirectional Input/Output (I/O) Lines

- > 10 mA direct drive capability on three I/O pins
- > 10 mA high current drive for PS2 connection on two pins (with USB module disabled)
- > Keyboard scan with selectable interrupts on eight I/O pins
- > Software programmable pull-ups on six 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 pull-ups eliminate external glue logic when interfacing to simple keypads

Application Notes

AN1218	68HC05 to 68HC08 Optimization
AN1831	Using the MC68HC908 On-Chip Flash Programming Routines
AN1837	Non-Volatile Memory Technology Overview
AN2093	Creating Efficient C Code for the MC68HC08
AN1752	Data Structures for 8-bit MCUs
AN1219	M68HC08 Integer Math Routines
AN1705	Noise Reduction Techniques for Microcontroller-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
AN2321	Designing for Board Level Electromagnetic Compatibility

Learn More: For more information about Freescale's products, please visit www.freescale.com.

Cost-Effective Development Tools

For more information on development tools, please refer to the Freescale Development Tool Selector Guide (SG1011).

FSICEKITJW32 \$1,495	Complete FSICE high-performance emulator kit; includes emulator module, cables, head adapters and programming adapters
M68EM08JW32 \$495	Emulation module for FSICE system
M68CYCLONEPRO \$499	HC08/HCS08/HC12/HCS12 stand-alone Flash programmer or in-circuit emulator, debugger, Flash programmer; USB, serial or Ethernet interface options
USBMULTILINK08 \$99	Universal HC08 in-circuit debugger and Flash programmer; USB PC interface
CWX-H08-SE Free	CodeWarrior™ Special Edition for HC(S)08 MCUs; includes IDE, linker, debugger, unlimited assembler, Processor Expert™ auto-code generator, full-chip simulation and 16 KB C compiler

Data Sheet

MC68HC908JW32

Package Options

Part Number	Package	Temp. Range
MC68HC908JW32FC	48 QFN	0 to +70°C

48-Pin QFN
50 mil/1.27 mm Pitch
7 mm x 7 mm Body

