MOTOROLA
Semiconductor Products Sector

M68EVB912B32/D
Rev. 1

M68EVB912B32 Evaluation Board

Overview

The M68EVB912B32 evaluation board (EVB) is an economical tool for designing and debugging code for and evaluating the operation of the MC68HC912B32 MCU. By providing the essential MCU timing and input/output (I/O) circuitry, the EVB simplifies user evaluation of prototype hardware and software.

The EVB features a prototype area, which allows custom interfacing with the MCU's I/O and bus lines. These connections are broken out via on-board headers immediately adjacent to the MCU.

Figure 1 shows the EVB's layout and locations of the major components as viewed from the component side of the board.

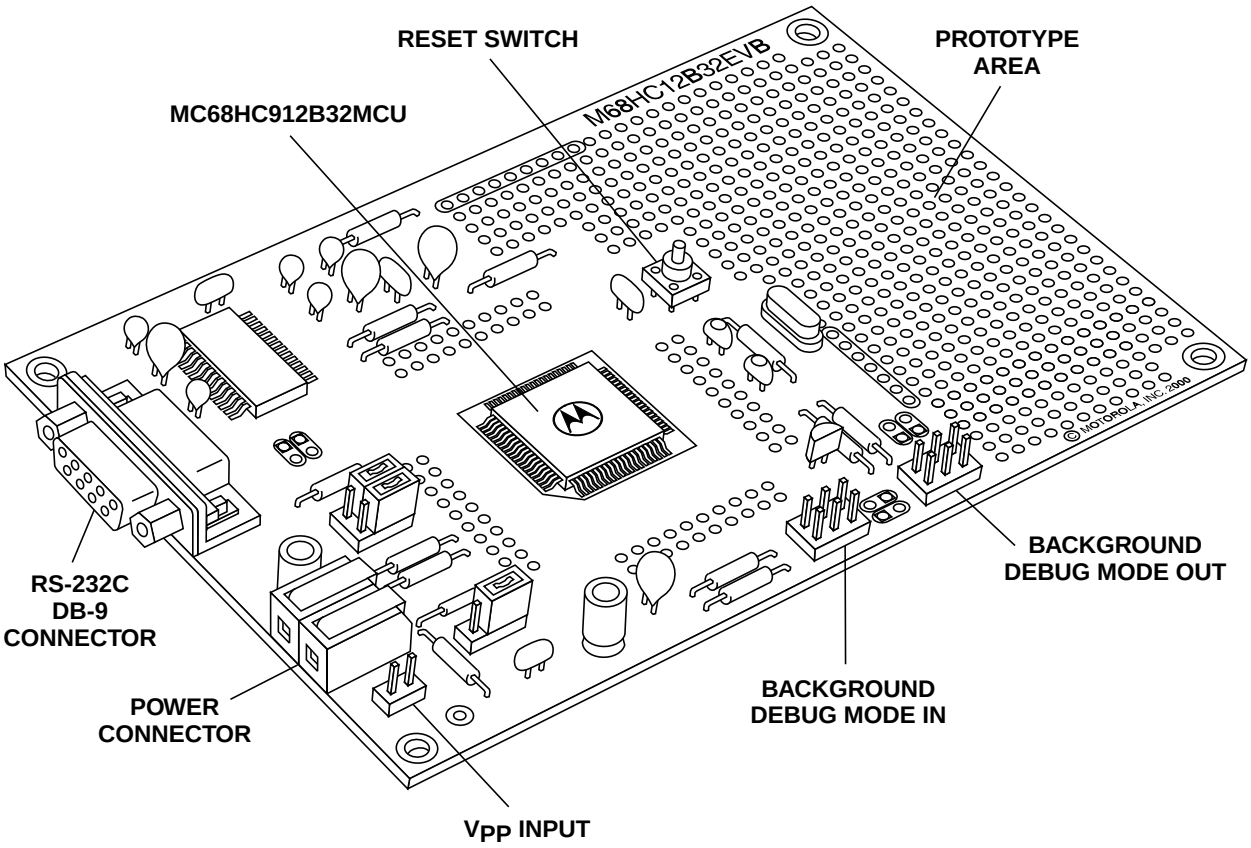


Figure 1. Evaluation Board Layout

© Motorola, Inc., 1999

Freescale Semiconductor, Inc.

Features

- +4.5 to +5.5 Vdc operation
- RS-232C interface
- 32 Kbytes of MCU internal FLASH EEPROM with resident D-Bug12 monitor/debugger program
- Four operational modes:
  - EVB
  - Jump-to-EEPROM
  - BDM pod (background debug mode)
  - Bootload
- Header connectors for access to the MCU's I/O and bus lines
- On-board prototype area for customized interfacing with the MCU
- Low-voltage inhibit protection
- Full support for either dumb terminal or host computer terminal interface
- IASM12 assembly language development toolkit
- File transfer capability from a host computer, allowing off-board code generation

Components

The EVB is composed of three components:

1. Hardware — The board is a 5.15-inch x 3.4-inch (13.08-cm x 8.63-cm) multilayer printed circuit board (PCB) that provides the platform for interface and power connections to the MC68HC912B32 MCU. The MCU is surface mounted to the PCB.
2. Firmware — D-Bug12, the EVB's firmware-resident monitor program, provides a self-contained operating environment that allows writing, evaluating, and debugging user programs.

   The hardware is factory configured to execute D-Bug12 without further configuration by the user. It is ready for writing and debugging user code with an RS-232C terminal.

   Commands are typed on the terminal's D-Bug12 prompt line and executed when the carriage return (ENTER) key is pressed. D-Bug12 then displays either the appropriate response to the command or an error indication.
3. Software — The ISAM12 assembly language toolset provides an integrated development environment which includes a project manager, relocatable macro-assembler, linker, librarian, Motorola S-record generator, and a variety of other tools.

Freescale Semiconductor, Inc.

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

User Code Generation

EVB user code can be generated by two methods:

1. For small programs or subroutines, D-Bug12's single-line assembler/disassembler may be used to place object code directly into the EVB's memory.
2. For larger programs, the IASM12 assembler may be used on a host computer to generate S-record object files, which then can be loaded into the EVB's memory using D-Bug12's FLOAD or LOAD command.

If the M68HC912B32's BDM interface serves as the user interface, the SCI (serial communication interface) port becomes available for user applications. This mode requires a background debug development tool, such as Motorola's SDI™ interface, and a host computer with the appropriate interface software or another B32EVB.

At reset, the EVB can begin operation in either of four jumper-selectable modes:

1. In EVB mode, D-Bug12 immediately issues its command prompt on the terminal display and waits for a user entry.
2. In the jump-to-EEPROM mode, execution begins directly with the user code in on-chip EEPROM.
3. In BDM pod mode, D-Bug12 serves as a probe interface between a target system and the user via the BDM out connector.
4. In bootload mode, a user program may be loaded into the host EVB's byte-erasable or FLASH EEPROM memory.

EVB Specifications and PC Requirements

Information in these tables summarizes EVB specifications and minimum host PC requirements.

Table 1. EVB Specifications

Characteristic	Specification
MCU	MC68HC912B32
MCU I/O ports	HCMOS compatible
FLASH	32 Kbytes
EEPROM	768 bytes
Communications ports	2 RS-232C DCE ports
Board dimensions	5.15 inches x 3.4 inches; 13.08 cm x 8.63 cm
SRAM	1 Kbyte

Freescale Semiconductor, Inc.

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

Table 2. Host PC Minimum Requirements

Characteristic	Specification
Terminal	RS-232C compatible terminal
Host PC, optional	386-based PC or higher with an RS-232C serial port; requires a user-supplied communications program capable of emulating a dumb terminal
Input/output	Serial communication port
Cable	RS232C compatible, 6-pin BDM target cable
External power supply	+4.5 to +5.5 Vdc @ 100 mA maximum

Ordering Information

Refer to **Table 3** for ordering information.

Table 3. Ordering Information

Evaluated MCU	EVB Part Number	Software
MC68HC912B32FU8	M68EVB912B32	IASM12, included with EVB

For a list of the Motorola sales offices and distributors, visit http://www.mcu.motsps.com/sale_off.html.

Warranty

Motorola provides a 1-year limited warranty.

SDI is a trademark of Motorola, Inc.

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and Ⓜ are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution, P.O. Box 5405, Denver, Colorado 80217, 1-303-675-2140 or 1-800-441-2447. Customer Focus Center, 1-800-521-6274

JAPAN: Motorola Japan Ltd.; SPS, Technical Information Center, 3-20-1, Minami-Azabu, Minato-ku, Tokyo, 106-8573 Japan. 81-3-3440-8573

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre, 2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong. 852-26668334

Mfax™, Motorola Fax Back System: RMFAX0@email.sps.mot.com; http://sps.motorola.com/mfax/; TOUCHTONE, 1-602-244-6609; US and Canada ONLY, 1-800-774-1848

HOME PAGE: http://motorola.com/sps/

Mfax is a trademark of Motorola, Inc.

© Motorola, Inc., 1999

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

Freescale Semiconductor, Inc.