

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.

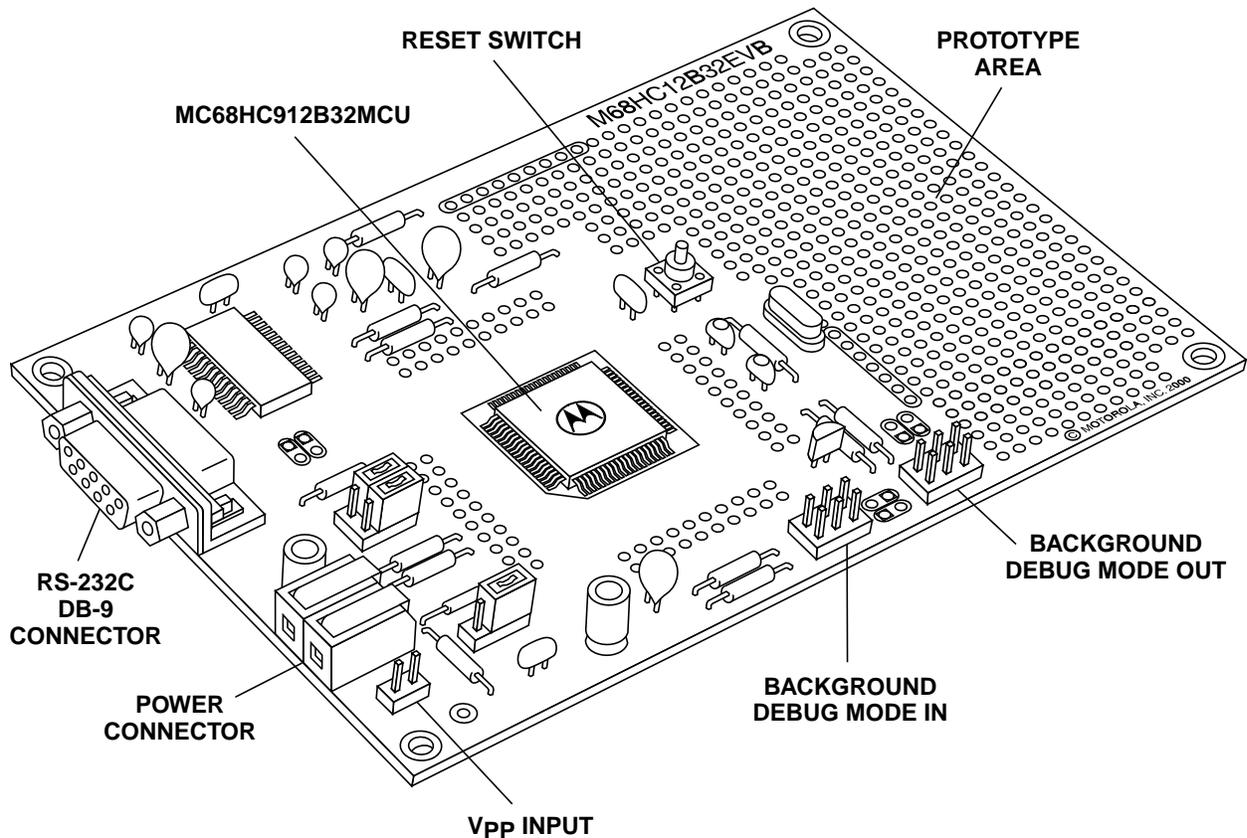


Figure 1. Evaluation Board Layout



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.

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 |

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.

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