IDB-HC08GZ64
Evaluation Board
For Freescale MC68HC908GZ

User's Manual (Rev. 2.0)

1. Introduction

Overview

The IDB-HC08GZ64 Evaluation Board demonstrates the capabilities of the 64-pin MC68HC908GZ devices. The IDB-HC08GZ64 Evaluation Board can be used as a standalone application or with an emulator system, such as inDART-HC08, through a MON08-compatible connection.

Board Features

The IDB-HC08GZ64 Evaluation Board has the following hardware features:

1. An MC68HC908GZ60 microcontroller (in QFP64 package, already programmed with a demo application—in addition, you can also use any of the pin-to-pin-compatible MC68HC908GZ family devices);
2. ZIF socket for the microcontroller;
3. A standard MON08 connector;
4. Eight jumpers to connect/disconnect each of the eight DIP-switches to/from their respective Port A/D/E pins;

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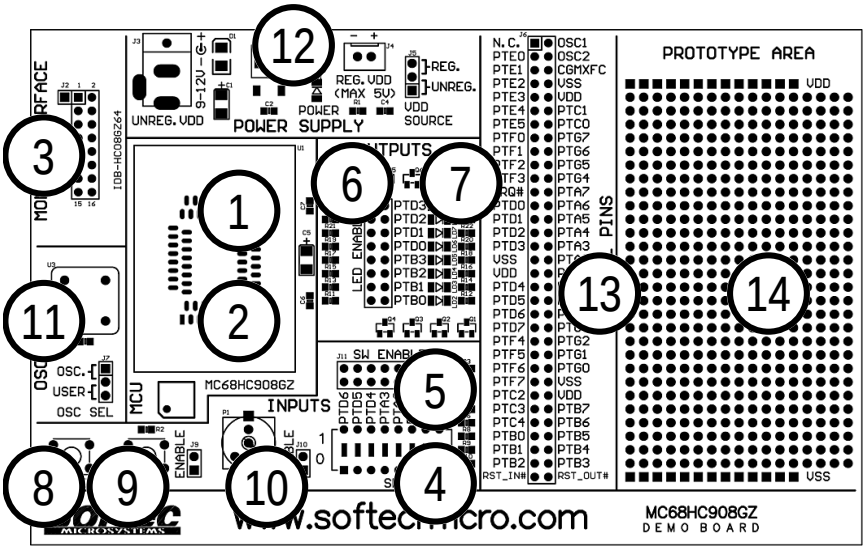
5. Eight general-purpose DIP-switched connected to Port A/D/E;
6. Eight jumpers to connect/disconnect each of the eight LEDs to/from their respective Port B and Port D pins;
7. Eight high-efficiency (low-current) LEDs connected to Port B and Port D;
8. A push-button switch connected to RESET;
9. A push-button switch, together with a jumper to connect/disconnect it to/from PTB4;
10. A potentiometer, together with a jumper to connect/disconnect it to/from PTB5;
11. A 16-MHz oscillator, together with a jumper to connect/disconnect it from the microcontroller's OSC1 pin;
12. A connector for a 9-12 V, 200 mA (unregulated) power supply and an auxiliary connector for a 5 V (max., regulated) power supply, together with a jumper to select the power supply source;
13. A connector area to access the I/O pins of the microcontroller for expansion prototyping;
14. A prototyping area.



The IDB-HC08GZ64 Demo Board

Supported Devices

The IDB-HC08GZ64 Evaluation Board supports the following devices:

- MC68HC908GZ32;
- MC68HC908GZ48;
- MC68HC908GZ60;
- And any future MC68HC908GZ family pin-to-pin compatible device.

Recommended Reading

Freescale MCU CD-ROM or individual datasheet;

Freescale CPU08 Central Processor Unit Reference Manual;

inDART-HC08 User's Manual.

2. Getting Started

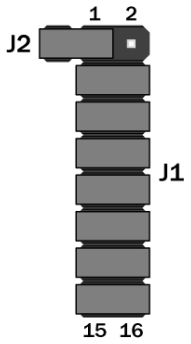
Overview

The IDB-HC08GZ64 Evaluation Board may be used as a standalone application or with a MON08-based emulator/programmer (host mode).

Standalone Mode

The IDB-HC08GZ64 Evaluation Board comes with the microcontroller pre-programmed with a sample application. When working in standalone mode, the sample application configures the A/D peripheral to convert on the A/D channel connected to the potentiometer and displays the results on the LEDs. By pressing the PTB4 push button, the DIP-switches status is displayed on the LEDs instead.

In order for the IDB-HC08GZ64 Evaluation Board to work in standalone mode, the MON08 connector's pins must be jumpered as show below (factory setting).



MON08 Connector Jumpered for Standalone Mode Operation

Additionally, you must verify that the board's other jumpers are set correctly.

- Make sure that the "OSC SEL" (J7) jumper selects the "OSC" position. This is needed to enable the on-board 16 MHz oscillator.
- Make sure that all of the "LED ENABLE" jumpers (J8) and the "POTENTIOMETER ENABLE" jumper (J10) are inserted.
- Make sure that the pre-programmed sample device is in the appropriate socket on the board. Finally, power up the board. The IDB-HC08GZ64 Evaluation Board can be powered either via the "UNREG. VDD" connector (J3) or the "REG. VDD" connector (J4).

The "UNREG. VDD" connector accepts a 9-12 V DC, 200 mA wall plug-in power supply with a 2.1 mm pin and sleeve plug with positive in the center and sleeve as ground. When powering the board through this connector, make sure the "VDD SOURCE" connector (J5) selects the "UNREG." Position. The "UNREG. VDD" voltage is internally regulated to 5 V DC.

The "REG. VDD" connector accepts a 5 V DC (max.) power supply. When powering the board through this connector, make sure the "VDD SOURCE" connector (J5) selects the "REG." position. The "REG. VDD" voltage directly powers the microcontroller and the rest of the board.

Upon powering up the board, the green “POWER” LED turns on. By rotating the potentiometer, you affect the results of the A/D conversion, and the value of each conversion is displayed on the LEDs.

Host Mode

The IDB-HC08GZ64 Evaluation Board can be used in conjunction with a MON08-based emulator/programmer, such a SofTec Microsystems’ inDART-HC08 In-Circuit Debugger/Programmer or a Freescale development tool.

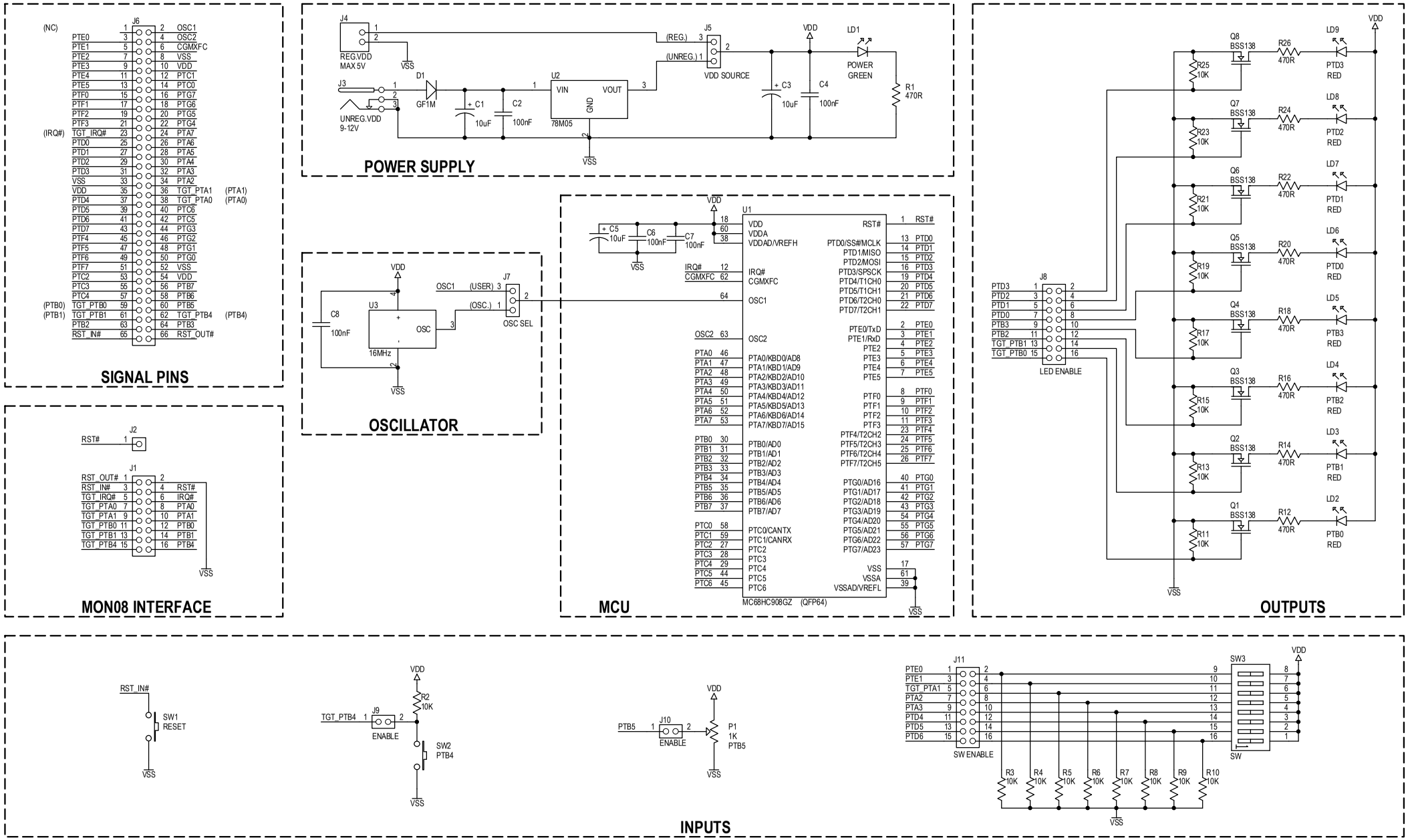
If you use the evaluation board with SofTec Microsystems’ inDART-HC08, a sample application similar to that described in the previous section can be executed in “Host” mode, where the program execution is controlled by the host PC. You can use the PC, additionally, to debug the application by, for example, execute the program step by step and watching how the microcontroller registers vary, by using the Metrowerks’ CodeWarrior HC08 IDE provided with inDART-HC08. The example is available both in Assembly and in C language. Please refer to the inDART-HC08 user’s manual for a step-by-step tutorial.

In order to work with an emulator/programmer, the jumpers in the MON08 connector must be removed, and the MON08 cable of the emulator/programmer must be connected to the evaluation board’s MON08 connector (J1) connector, taking care of the proper polarity. The J2 connector is not used in this mode.

3. MON08 Connections (J1 Connector)

Pin #	Pin Name	Description
1	RST_OUT#	Reset signal to target system: GND or open drain output reflecting the state of the MCU RST# and RST_IN# signals.
2	GND	System ground.
3	RST_IN#	Reset signal from target system: GND to V_{DD} input to control the state of the MCU RST# and RST_OUT# signals.
4	RST#	MCU reset; held at V_{PP} out of reset. No other target-system logic should be tied to this signal.
5	TGT_IRQ#	Interrupt signal from target system: GND to V_{DD} input to control the state of the MCU IRQ# signal.
6	IRQ#	MCU interrupt; held at V_{PP} when the TGT_IRQ# signal is not asserted.
7	TGT_PTA0	Port A, bit 0; reserved MCU connection (unavailable to application).
8	PTA0	Port A, bit 0; MON08 single-wire communication.
9	TGT_PTA1	Port A, bit 1.
10	PTA1	Port A, bit 1; grounded during reset.
11	TGT_PTB0	Port B, bit 0.
12	PTB0	Port B, bit 0; held at V_{DD} during reset.
13	TGT_PTB1	Port B, bit 1.
14	PTB1	Port B, bit 1; grounded during reset.
15	TGT_PTB4	Port B, bit 4.
16	PTB4	Port B, bit 4; held at ground or V_{DD} during reset, depending on the “Frequency Divider” parameter (see inDART-HC08 User’s Manual).

MON08 Signals



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