



EVQ6610-S-00B

30V, Half-Bridge Power Driver Evaluation Board

DESCRIPTION

The EVQ6610-S-00B is an evaluation board for the MPQ6610, a half-bridge power driver.

The EVQ6610-S-00B is designed to drive solenoid load. It operates from a supply voltage of up to 30V with programmable pull-in current and hold current. The input control signal for the MPQ6610 can be set by SW1 or applied through the connector P2 on the board.

ELECTRICAL SPECIFICATION

| Parameter | Symbol | Value | Units |
|---------------|----------|--------|-------|
| Input Voltage | V_{IN} | 5 - 30 | V |

FEATURES

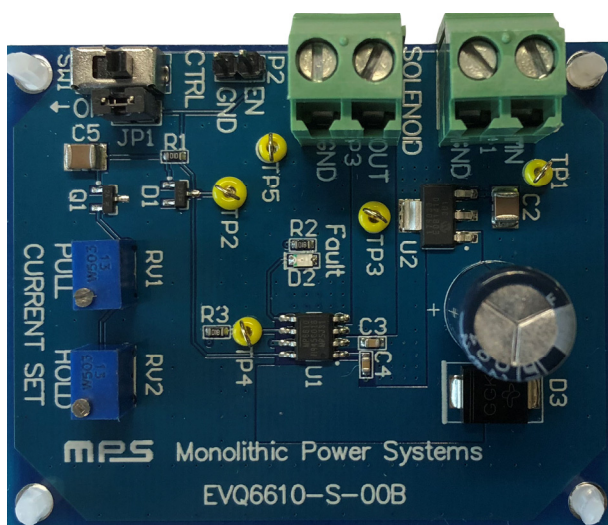
- Wide 5V to 30V Input Voltage Range
- Programmable Pull-in Current and Hold Current
- Internal Current Sense
- OCP, OVP, OTP
- Fault Indication Output

APPLICATIONS

- Solenoid Drivers

All MPS parts are lead-free, halogen-free, and adhere to the RoHS directive. For MPS green status, please visit the MPS website under Quality Assurance. "MPS" and "The Future of Analog IC Technology" are registered trademarks of Monolithic Power Systems, Inc.

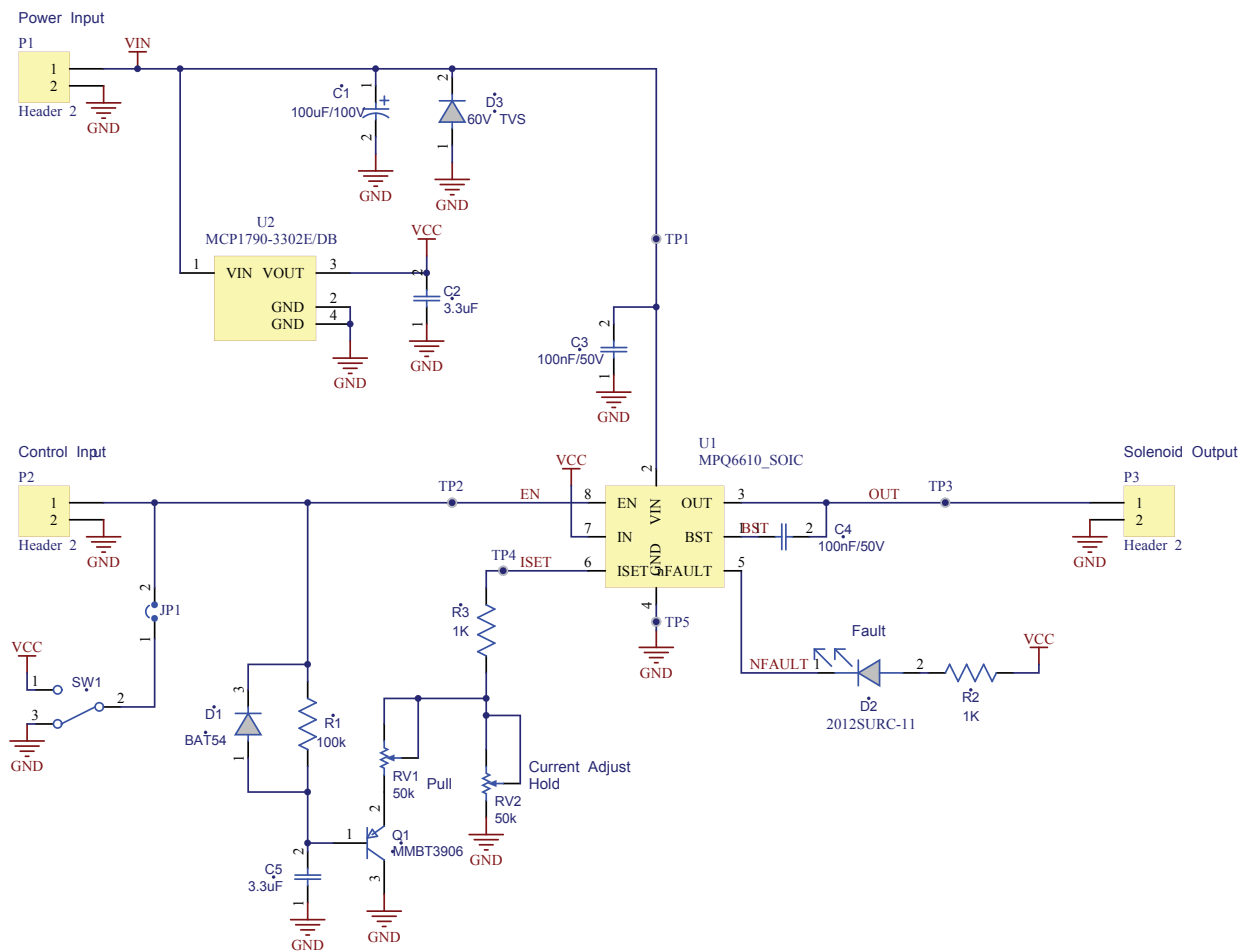
EVQ6610-S-00B EVALUATION BOARD



(L x W x H) 6.35cm x 5.08cm x 1cm

| Board Number | MPS IC Number |
|---------------|---------------|
| EVQ6610-S-00B | MPQ6610GS |

EVALUATION BOARD SCHEMATIC



EVQ6610-S-00B BILL OF MATERIALS

| Qty | RefDes | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|-------------------------|-------------|-----------------------------------|-----------|------------------|---------------------|
| 1 | C1 | 100 μ F | Electrolytic Cap. 100V | DIP | 江海 | CD263-100V100 |
| 2 | C2, C5 | 3.3 μ F | Ceramic Cap. 50V, X7R | 1210 | muRata | GRM32DR71H335K A88L |
| 2 | C3, C4 | 100nF | Ceramic Cap. 50V, X7R | 0603 | Würth | 885012206095 |
| 1 | R1 | 100K | Film Resistor, 1% | 0603 | Yageo | RC0603FR-07100KL |
| 2 | R2, R3 | 1K | Film Resistor, 1% | 0603 | Yageo | RC0603FR-071KL |
| 2 | RV1, RV2 | 50K | Adjustable Resistor | DIP | BOURNS | 3266W-1-503LF |
| 1 | D1 | | Schottky Diode, 30V/200mA | SOT-23 | Diodes | BAT54 |
| 1 | D2 | | LED, Red | 0805 | 佰鴻 | 2012SURC-11 |
| 1 | D3 | | TVS, 60V | DO-214AB | VISHAY | SMCJ60A |
| 1 | Q1 | | PNP Transistor, -40V/-0.2A | SOT-23 | ON Semiconductor | MMBT3906LT1 |
| 1 | U1 | | 55V, 3A, Half-bridge Driver | SOIC-8 | MPS | MPQ6610GS-AEC1 |
| 1 | U2 | | 30V, 70mA, High Voltage Regulator | SOT-223-3 | Microchip | MCP1790-3302E/DB |
| 1 | SW1 | | Button | DIP | | SS-12D01EG4 |
| 2 | JP1, P2 | | 2PIN, 2.54MM Connector | | | 61304011121 |
| 1 | JP1 | | 2.54MM Short Jumper | | | 60900213421 |
| 1 | P1, P3 | | Header, 2-Pin | DIP | Würth | 691236510002 |
| 5 | TP1, TP2, TP3, TP4, TP5 | | Test Point | | | |

PRINTED CIRCUIT BOARD LAYOUT

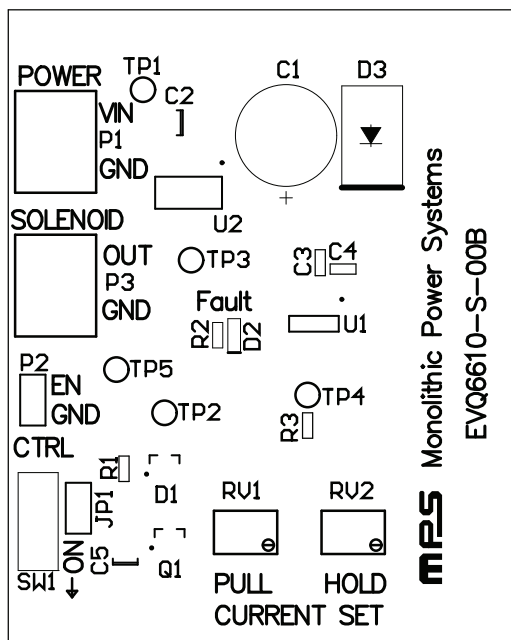


Figure 1: Top Silk

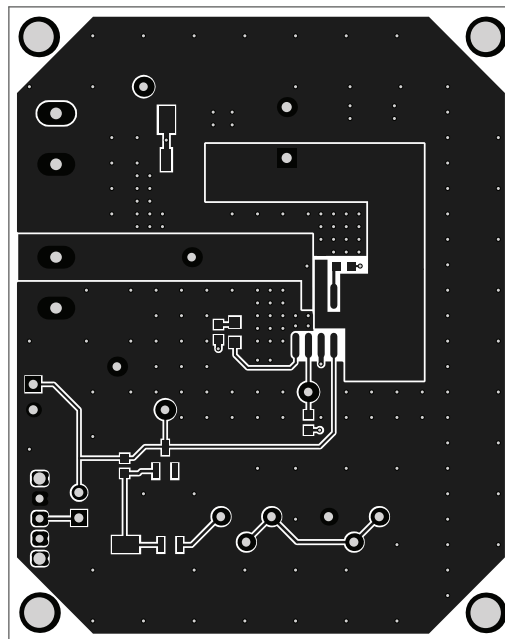


Figure 2: Top Layer

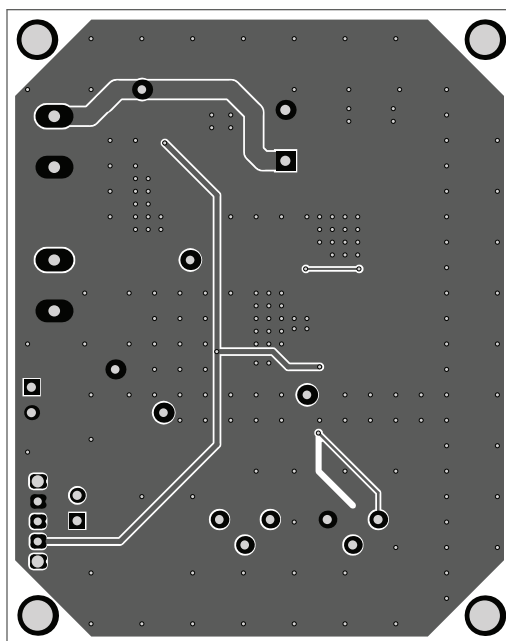


Figure 3: Bottom Layer

QUICK START GUIDE

To use the board, the power supply input is connected to connector P1. Voltages from 5V to 30V is supported. The solenoid is connected to connector P3. The “OUT” pin will be driven to VIN to actuate the solenoid.

To use the internal slide switch to enable and disable the solenoid, leave jumper JP1 in place. A small 3.3V LDO regulator is present on the PCB to provide the logic level to enable the MPQ6610. If you want to control the circuit using an external logic signal, remove JP1 and apply the control signal to connector P2. The control signal can be any logic level from 2.5V to 5V, but keep in mind that the voltage will affect the time delays.

Two potentiometers are used to control the pull-in and hold current. RV1 in parallel with RV2 sets the maximum pull-in current, and RV2 sets the hold current. The hold current will always be less than the pull-in current. If you turn the pull-in current all the way up, then the pull-in current will not be limited. At the lowest setting of RV2, the hold current will be limited to approximately 300mA.

Note that the MPQ6610 has an over-current protection circuit that will activate between 3A and 6A. If the solenoid draws more than this current, the MPQ6610 will disable the output for about 1.6mS, then will re-enable it.