



EV6501A-F-00A

2.5A, 35V, Bipolar Stepper Motor Driver Evaluation Board

DESCRIPTION

The EV6501A-F-00A is an evaluation board for the MP6501AGF, a stepper motor driver with a built-in microstepping translator.

The board operates from a 8V to 35V supply voltage range, and can deliver a motor current up to 2.5A. It can drive a bipolar stepper motor in full- half-, quarter-, and eighth-step modes by setting MS3, MS2, or MS1. The input control signals and reference voltage for the MP6501A are applied through the connector, or generated on the board.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|------------------------|-----------------|---------|-------|
| Input voltage | V_{IN} | 8 to 35 | V |
| Maximum output current | I_{OUT-L} | 2.5 | A |
| Decay mode | Automatic decay | | |

FEATURES

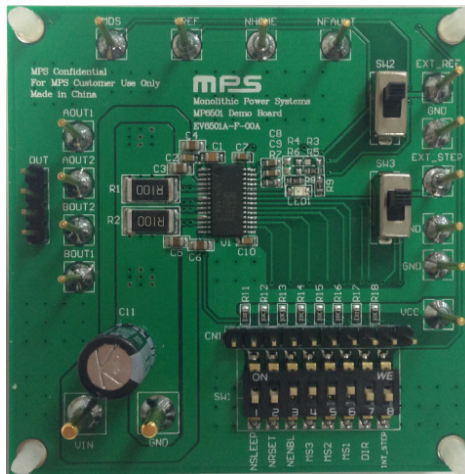
- Wide 8V to 35V Input Voltage Range
- Up to 2.5A Configurable Output Current
- Full-, Half-, Quarter-, and Eighth-Step Modes
- Adjustable Mixed Decay Ratio or Automatic Decay
- OCP, OVP, and OTP
- Fault Indication Output

APPLICATIONS

- Printers
- General Bipolar Stepper Drivers

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EV6501A-F-00A EVALUATION BOARD



(LxWxH) 6.35cmx6.35cmx1cm

| Board Number | MPS IC Number |
|---------------|---------------|
| EV6501A-F-00A | MP6501AGF |



QUICK START GUIDE

1. Attach the input voltage ($8V \leq V_{IN} \leq 35V$) to the VIN connector, and attach the input ground to the GND connector.
2. To enable the external reference voltage input from the EXT_REF connector, switch SW2 and SW3 to position 3 (top side), then enable the step signal input from the STEP connector.
3. Attach the reference voltage ($0V \leq V_{REF} \leq 1.25V$) to the EXT_REF connector to set the output current.
4. Attach the step signal to the EXT_STEP connector.
5. The input control and logic signal can be set either through the CN1 connector via the external MCU, or through the SW1 via manual action. Manual action requires an external, 5V VCC voltage to be used as a pull-up power supply.

EVALUATION BOARD SCHEMATIC

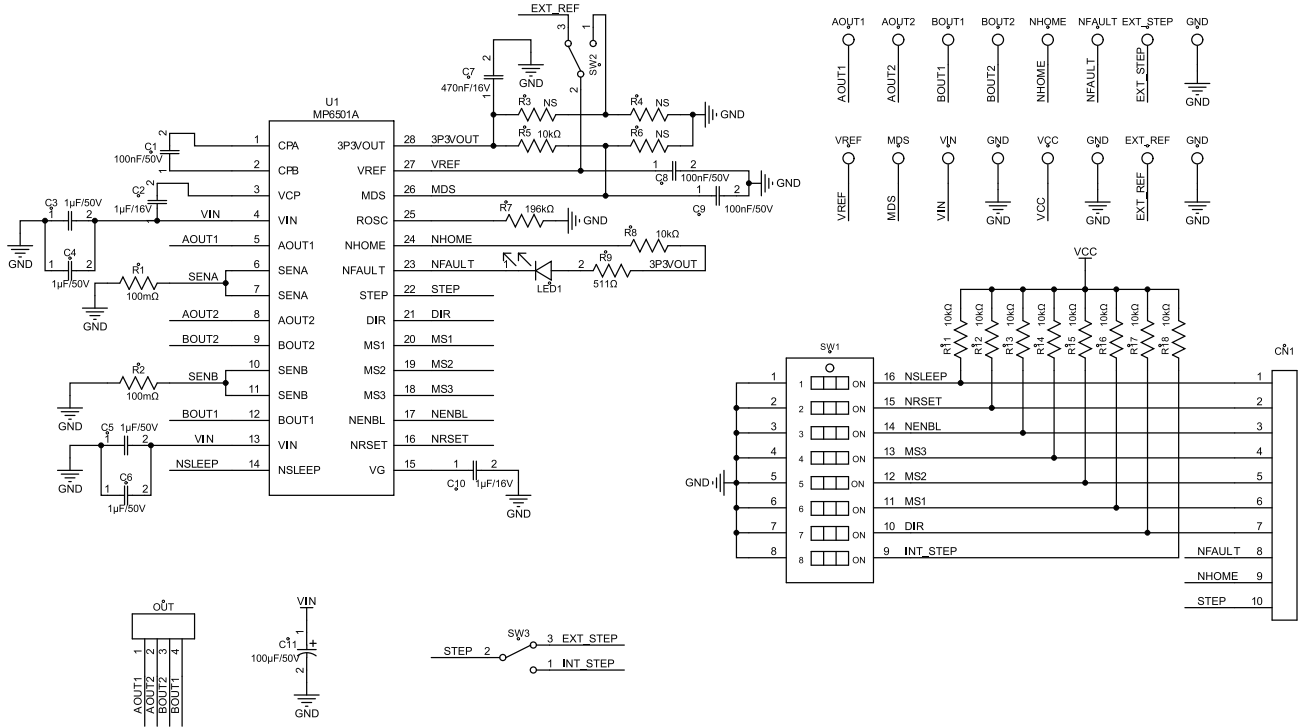


Figure 1: Evaluation Board Schematic

EV6501A-F-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|--|---------------------|--------------------------------|----------------|--------------|--------------------|
| 1 | C1 | 100nF/ 50V | Ceramic capacitor, 50V, X7R | 0805 | Murata | GRM21BR71H104KA01D |
| 2 | C2, C10 | 1 μ F/16V | Ceramic capacitor, 16V, X7R | 0603 | Murata | GRM188R71C105KA12D |
| 4 | C3, C4, C5, C6 | 1 μ F/50V | Ceramic capacitor, 50V, X7R | 0805 | Murata | GRM21BR71H105KA12L |
| 1 | C7 | 470nF/ 16V | Ceramic capacitor, 16V, X7R | 0603 | Murata | GRM188R71C474KA88D |
| 2 | C8, C9 | 100nF/ 50V | Ceramic capacitor, 50V, X7R | 0603 | Murata | GRM188R71H104KA93D |
| 1 | C11 | 100 μ F/ 50V | Electrolytic capacitor, 50V | DIP | Rubycon | 50YXF100MEFC |
| 2 | R1, R2 | 100m Ω | Sense resistor, 1% | 2512 | Cyntec | RL-3264-9-R100-FN |
| 3 | R3, R4, R6 | NS | | 0603 | | |
| 10 | R5, R8, R11, R12, R13, R14, R15, R16, R17, R18 | 10k Ω | Film resistor, 1% | 0603 | Yageo | RC0603FR-0710KL |
| 1 | R7 | 196k Ω | Film resistor, 1% | 0603 | Yageo | RC0603FR-07196KL |
| 1 | R9 | 511 Ω | Film resistor, 1% | 0603 | Yageo | RC0603FR-07511RL |
| 1 | LED1 | Red | LED | 0805 | Bright LED | BL-HUF35A-TRB |
| 1 | SW1 | 8-bits | Button | SMD | Würth | 418121270808 |
| 2 | SW2, SW3 | SPDT | Button | DIP | Any | |
| 1 | U1 | 35V, 2.5A | Stepper motor driver | TSSOP- 28EP | MPS | MP6501AGF |
| 1 | CN1 | 10-bits/ 2.54mm | Connector | DIP | Any | |
| 1 | OUT | 4-bits/ 2.54mm | Connector | DIP | Any | |
| 2 | VIN, GND | Φ = 2mm | Connector | DIP | Any | |
| 14 | VCC, GND, EXT_STEP, GND, EXT_REF, GND, MDS, VREF, NHOME, NFAULT, AOUT1, AOUT2, BOUT1, BOUT2, | Φ = 1mm | Connector | DIP | Any | |

PCB LAYOUT

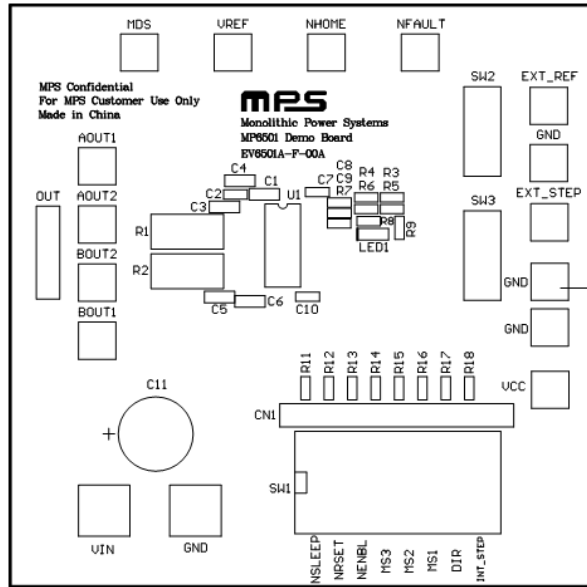


Figure 2: Top Silk Layer

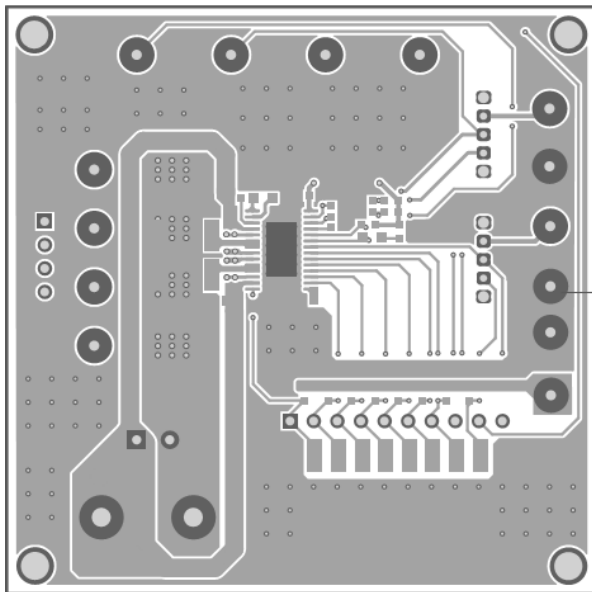


Figure 3: Top Layer

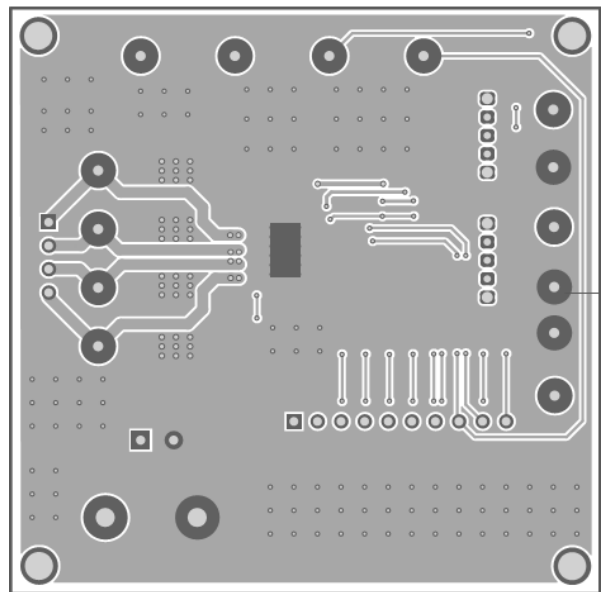


Figure 4: Bottom Layer

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