



# EV6520-V-00A

## 32V, 1.5A, Bipolar Stepper Motor Driver Evaluation Board

### DESCRIPTION

The EV6520-V-00A is an evaluation board for the MP6520GV, a stepper motor driver with a built-in microstepping translator.

The EV6520-V-00A operates from a supply voltage range of 8V to 32V, and can deliver motor current up to 1.5A. It can drive a bipolar stepper motor in full-, half-, quarter-, and eighth-step modes by setting MS2, MS1. The input control signals and reference voltage for the MP6520GV are applied through the connector or generated on board.

### ELECTRICAL SPECIFICATION

| Parameter             | Symbol          | Value     | Units |
|-----------------------|-----------------|-----------|-------|
| Input voltage         | $V_{IN}$        | 8 to 32   | V     |
| External VREF voltage | $V_{EXT\_REF}$  | 0 to 0.75 | V     |
| VCC voltage           | $V_{CC}$        | 3.3 or 5  | V     |
| Decay mode            | Automatic decay |           |       |

### FEATURES

- Wide 8V to 32V Input Voltage Range
- Up to 1.5A 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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### EV6520-V-00A EVALUATION BOARD



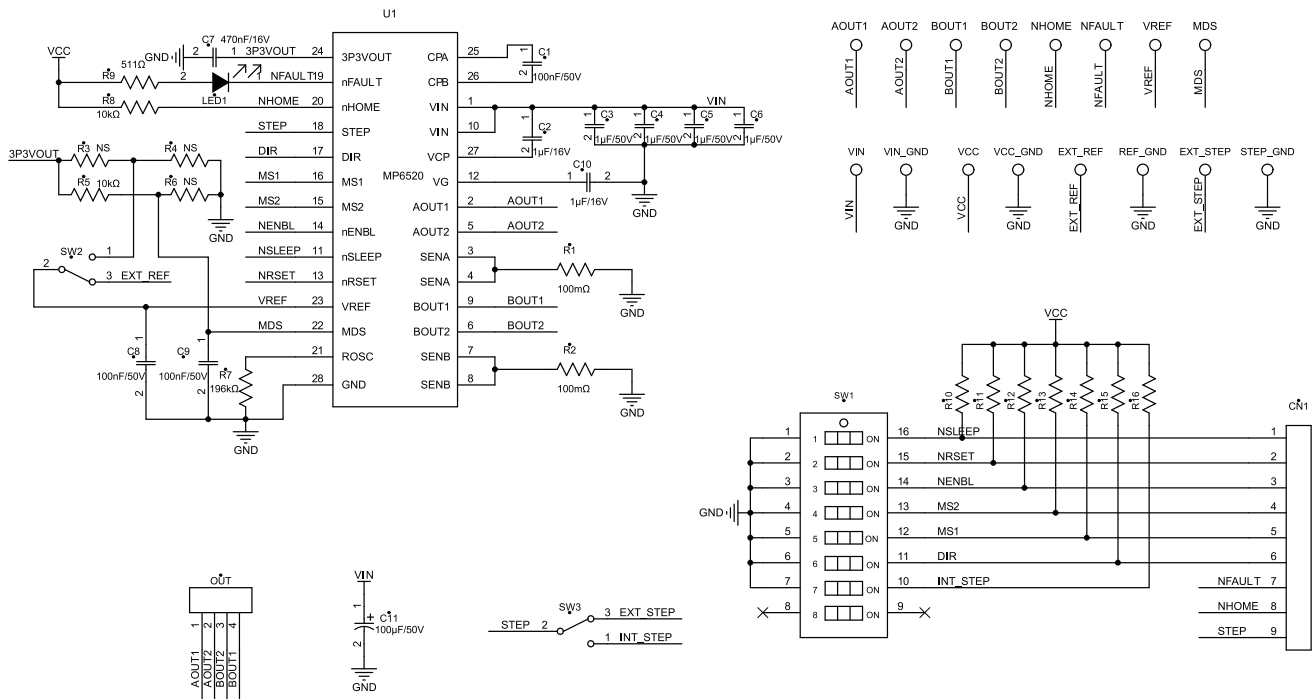
(LxW) (6.35cmx6.35cm)

| Board Number | MPS IC Number |
|--------------|---------------|
| EV6520-V-00A | MP6520GV      |

## QUICK START GUIDE

1. Attach the input voltage ( $8V \leq V_{IN} \leq 32V$ ) to the VIN connector, and attach the input ground to the GND connector.
2. Switch SW2 and SW3 to position 3 (top side). This enables the external reference voltage input from the EXT\_REF connector, as well as the step signal input from the EXT\_STEP connector.
3. Attach the reference voltage ( $0V \leq V_{EXT\_REF} \leq 0.75V$ ) 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 SW1 via manual action. Manual action requires an external 3.3V or 5V VCC voltage for a pull-up power supply.

## EVALUATION BOARD SCHEMATIC



**EV6520-V-00A BILL OF MATERIALS**

| Qty | Ref                                                                            | Value          | Description                 | Package          | Manufacturer      | Part Number        |
|-----|--------------------------------------------------------------------------------|----------------|-----------------------------|------------------|-------------------|--------------------|
| 3   | C1, C8, C9                                                                     | 100nF/50V      | Ceramic capacitor, 50V, X7R | 0603             | muRata            | GRM188R71H104KA93D |
| 2   | C2, C10                                                                        | 1μF/16V        | Ceramic capacitor, 16V, X7R | 0603             | muRata            | GRM188R71C105KA12D |
| 4   | C3, C4, C5, C6                                                                 | 1μF/50V        | Ceramic capacitor, 50V, X7R | 0805             | muRata            | GRM21BR71H105KA12L |
| 1   | C7                                                                             | 470nF/16V      | Ceramic capacitor, 16V, X7R | 0603             | LION              | 0603B474K160T      |
| 1   | C11                                                                            | 100μF/50V      | Electrolytic capacitor, 50V | DIP              | Rubycon           | 50YXF100MEFC       |
| 2   | R1, R2                                                                         | 100mΩ          | Sense resistor, 1%          | 2512             | CYNTEC            | RL3264-9-R100-FN   |
| 3   | R3, R4, R6                                                                     | NS             |                             |                  |                   |                    |
| 9   | R5, R8, R10, R11, R12, R13, R14, R15, R16                                      | 10kΩ           | Film resistor, 1%           | 0603             | Yageo             | RC0603FR-0710KL    |
| 1   | R7                                                                             | 196kΩ          | Film resistor, 1%           | 0603             | Yageo             | RC0603FR-07196KL   |
| 1   | R9                                                                             | 511Ω           | Film resistor, 1%           | 0603             | Yageo             | RC0603FR-07511RL   |
| 1   | LED1                                                                           | Red            | LED                         | 0805             | Bai Hong          | 2012SURC-11        |
| 1   | SW1                                                                            | 8-bits         | Button                      | SMD              | Wurth             | 418121270808       |
| 2   | SW2, SW3                                                                       | SPDT           | Button                      | DIP              | Electrical Market | SS-12D01EG4        |
| 2   | VIN, GND                                                                       | Φ=2mm          | Connector                   | DIP              | Electrical Market | Φ=2mm Needle       |
| 10  | VCC, VCC_GND, EXT_REF, REF_GND, EXT_STEP, STEP_GND, AOUT1, AOUT2, BOUT1, BOUT2 | Φ=1mm          | Connector                   | DIP              | Electrical Market | Φ=1mm Needle       |
| 4   | NHOME, NFAULT, VREF, MDS                                                       | Yellow         | Test point                  | DIP              | Electrical Market | Test point         |
| 1   | CN1                                                                            | 9-bits/ 2.54mm | Connector                   | DIP              | Electrical Market | 61304011121        |
| 1   | OUT                                                                            | 4-bits/ 2.54mm | Connector                   | DIP              | Electrical Market | 61304011121        |
| 1   | U1                                                                             | 32V, 1.5A      | Stepper motor driver        | QFN-28 (4mmx5mm) | MPS               | MP6520GV           |

## PCB LAYOUT

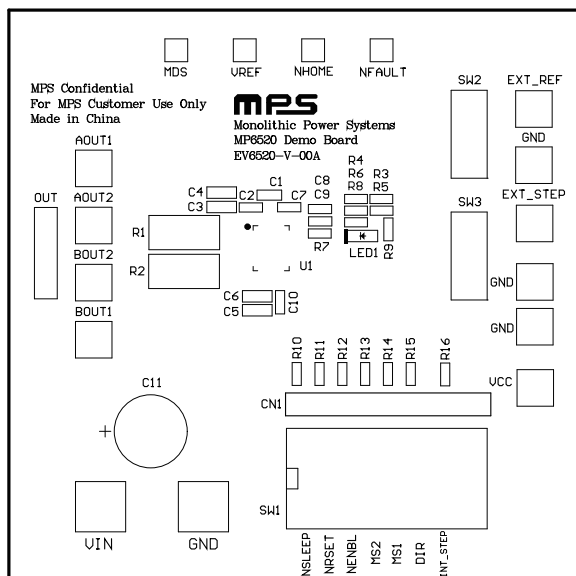


Figure 1: Top Silk Layer

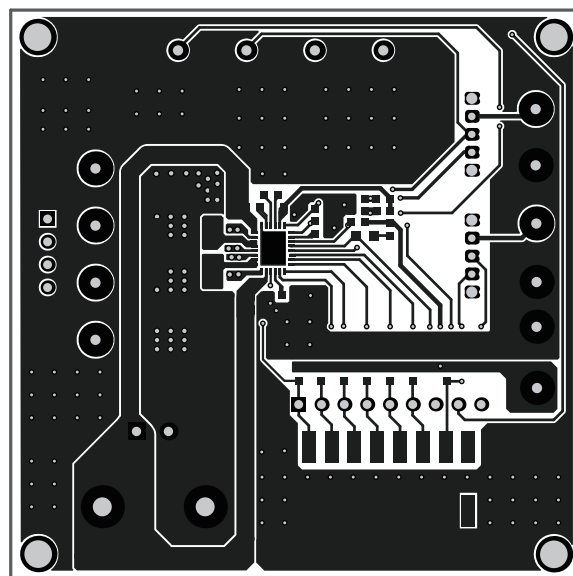


Figure 2: Top Layer

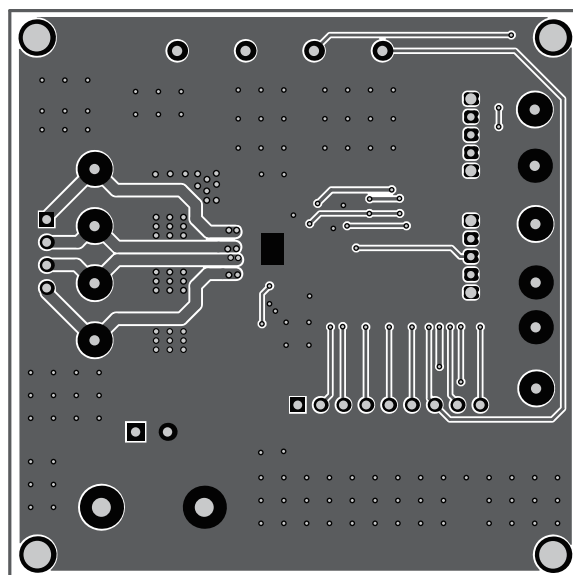


Figure 3: Bottom Layer

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