



# EV6500-F-01A

## 35V, 2.5A, Bipolar Stepper Motor Driver with a Microstepping Translator Evaluation Board

### DESCRIPTION

The EV6500-F-01A is an evaluation board designed to demonstrate the capabilities of the MP6500, a stepper motor driver with a built-in, microstepping translator.

The MP6500 operates from a supply voltage of up to 35V, and can deliver a motor current up to 2.5A. It can operate a bipolar stepper motor in full-, half-, quarter-, and eighth-step modes by

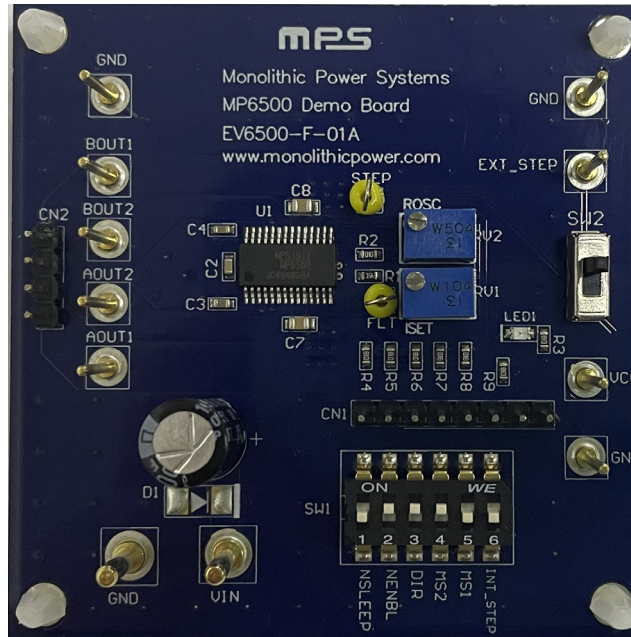
setting MS2 and MS1. The input control signals for the MP6500 are applied through the connector or generated on the board.

The MP6500 is available in a TSSOP-28EP package. It is recommended to read the MP6500 datasheet prior to making any changes to the EV6500-F-01A.

### PERFORMANCE SUMMARY

Parameters	Conditions	Value
Input voltage ( $V_{IN}$ ) range		4.5V to 35V
Maximum output current ( $I_{OUT\_MAX}$ )		2.5A
VCC voltage ( $V_{CC}$ )		3.3V or 5V

### EVALUATION BOARD



**LxW (6.35cmx6.35cm)**

Board Number	MPS IC Number
EV6500-F-01A	MP6500GF

## QUICK START GUIDE

1. Connect the input voltage ( $4.5V \leq V_{IN} \leq 35V$ ) and input ground to the VIN and GND connectors, respectively.
2. Switch SW2 to the top side (Terminal 3 in Figure 1 on page 3) to enable the external step signal input from the EXT\_STEP connector.
3. Connect the step signal to the EXT\_STEP connector.
4. Set the input control and logic signal through the CN1 connector via the external MCU or manually through SW1. Manual action requires an external 3.3V or 5V  $V_{CC}$  as a pull-up power supply.

# EVALUATION BOARD SCHEMATIC

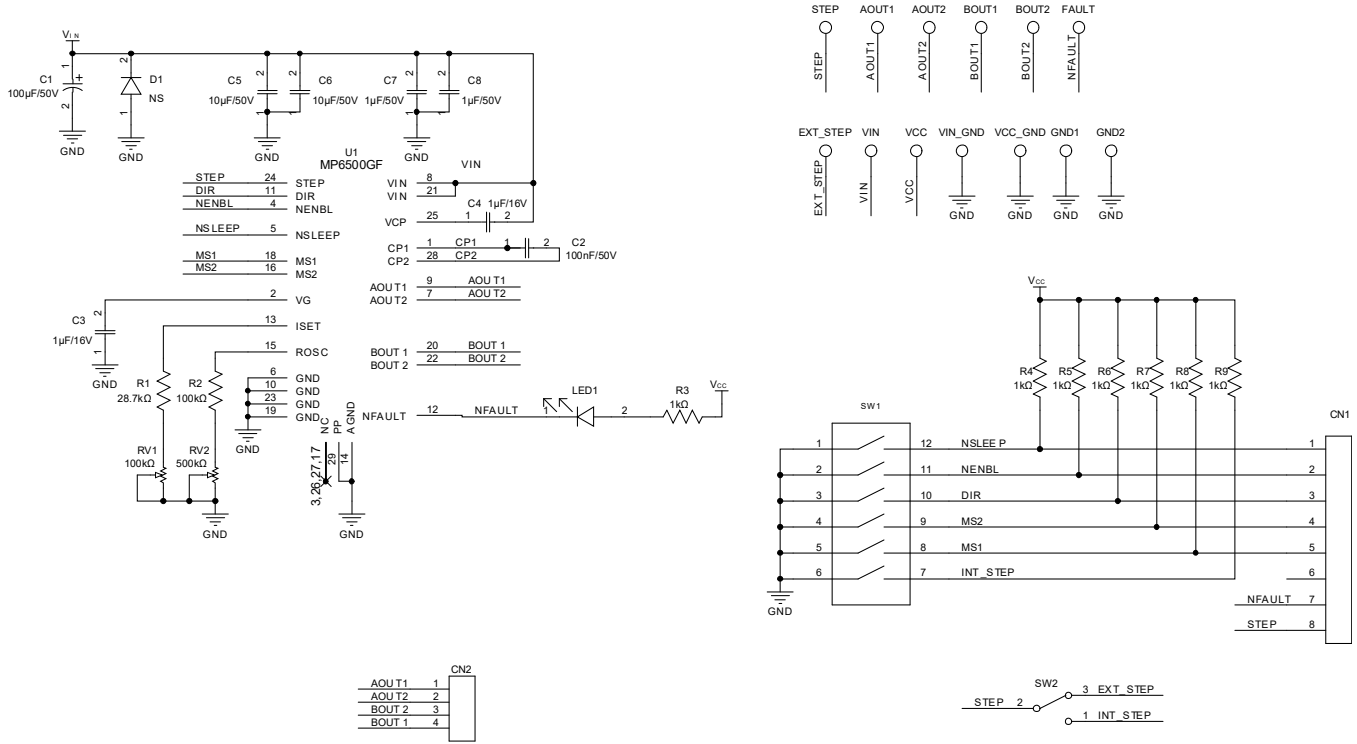


Figure 1: Evaluation Board Schematic

**EV6500-F-01A BILL OF MATERIALS**

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
1	C1	100µF	Electrolytic capacitor, 50V	DIP	Rubycon	50YXF100MEPA
1	C2	100nF	Ceramic capacitor, 50V, X7R	0603	Murata	GRM188R71H104KA93D
2	C3, C4	1µF	Ceramic capacitor, 16V, X7R	0603	Murata	GRM188R71C105KA12D
2	C5, C6	10µF	Ceramic capacitor, 50V, X7R	1210	Murata	GRM32ER71H106KA12L
2	C7, C8	1µF	Ceramic capacitor, 50V, X7R	0805	Würth	885012207103
7	R3, R4, R5, R6, R7, R8, R9	1kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-071KL
1	R1	28.7kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-0728K7L
1	R2	100kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-07100KL
1	RV1	100kΩ	Square trimming potentiometer	DIP	Bourns	3266W-1-104F
1	RV2	500kΩ	Square trimming potentiometer	DIP	Bourns	3266W-1-504LF
1	LED1	50mW	Red LED	0805	Baihong	BL-HUE35A-AV-TRB
1	SW1	25mA	6-bit dial switch	SMD	Würth	418121270806
1	SW2	500mA	Switch slide SPDT, 12V	DIP	Würth	450301014042
1	CN1	2.54mm	8-bit connector	DIP	Any	
1	CN2	2.54mm	4-bit connector	DIP	Any	
1	D1	NS				
2	STEP, FLT	Yellow	Test point	DIP	Any	
2	VIN, VIN_GND	2mm	Connector, φ = 2mm	DIP	Any	
9	VCC, EXT_STEP, AOUT1, AOUT2, BOUT1, BOUT2, GND, GND, GND	1mm	Connector, φ = 1mm	DIP	Any	
1	U1	MP6500	35V, 2.5A, stepper motor driver	TSSOP-28EP	MPS	MP6500GF

### PCB LAYOUT

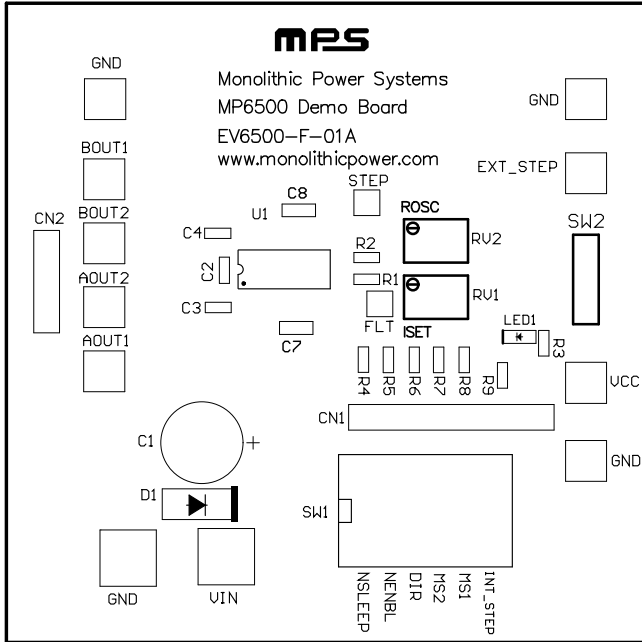


Figure 2: Top Silk

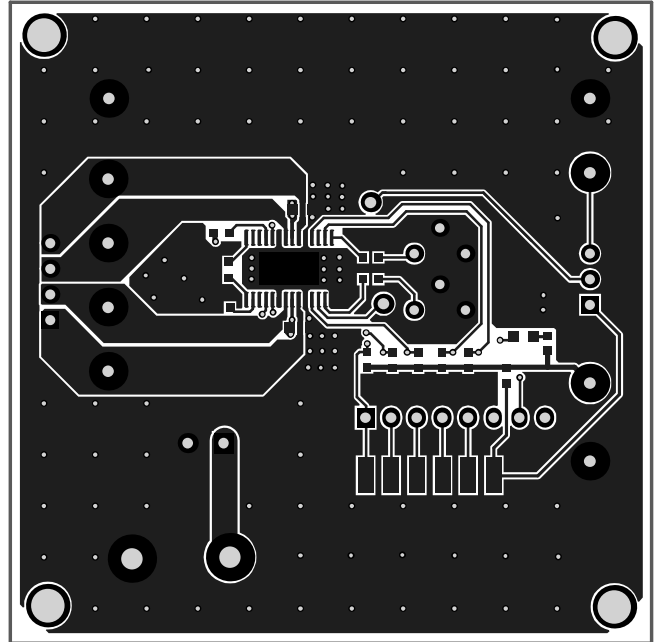


Figure 3: Top Layer

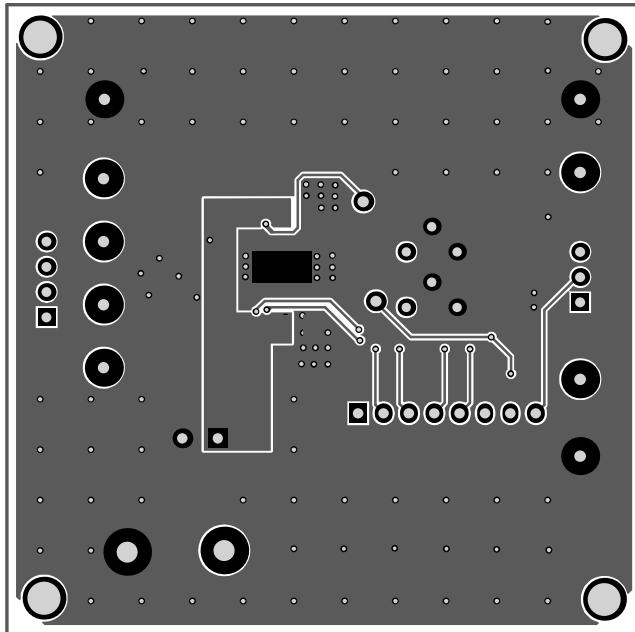


Figure 4: Bottom Layer

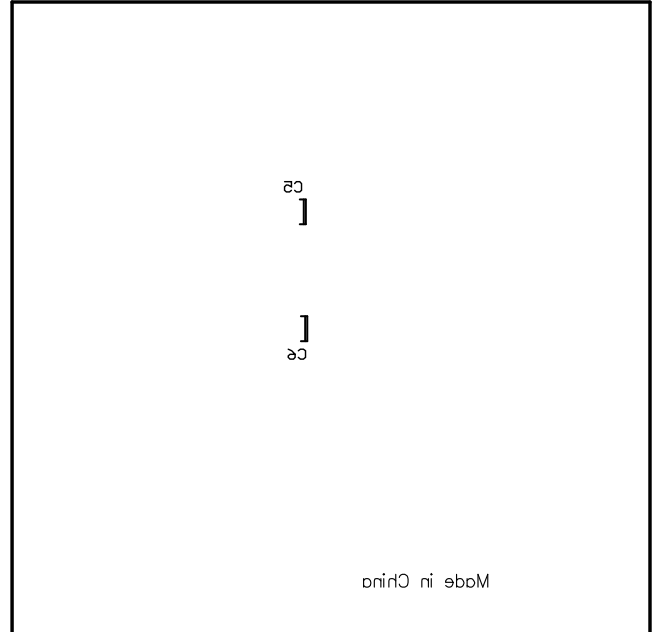


Figure 5: Bottom Silk



## REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	1/24/2022	Initial Release	-

**Notice:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third-party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.