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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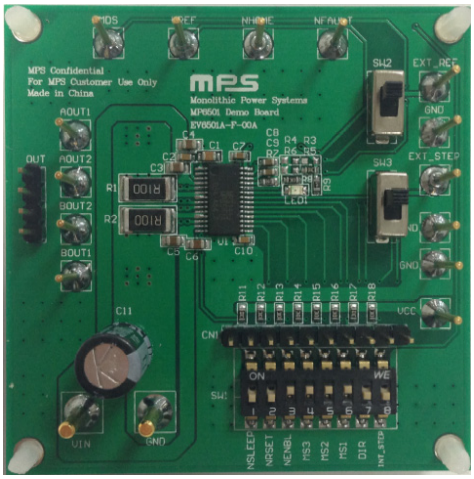
EV6501A-F-00A EVALUATION BOARD



(LxWxH) 6.35cmx6.35cmx1cm

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

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QUICK START GUIDE

1. Attach the input voltage (8V ≤ V_{IN} ≤ 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 ≤ V_{REF} ≤ 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.

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EVALUATION BOARD SCHEMATIC

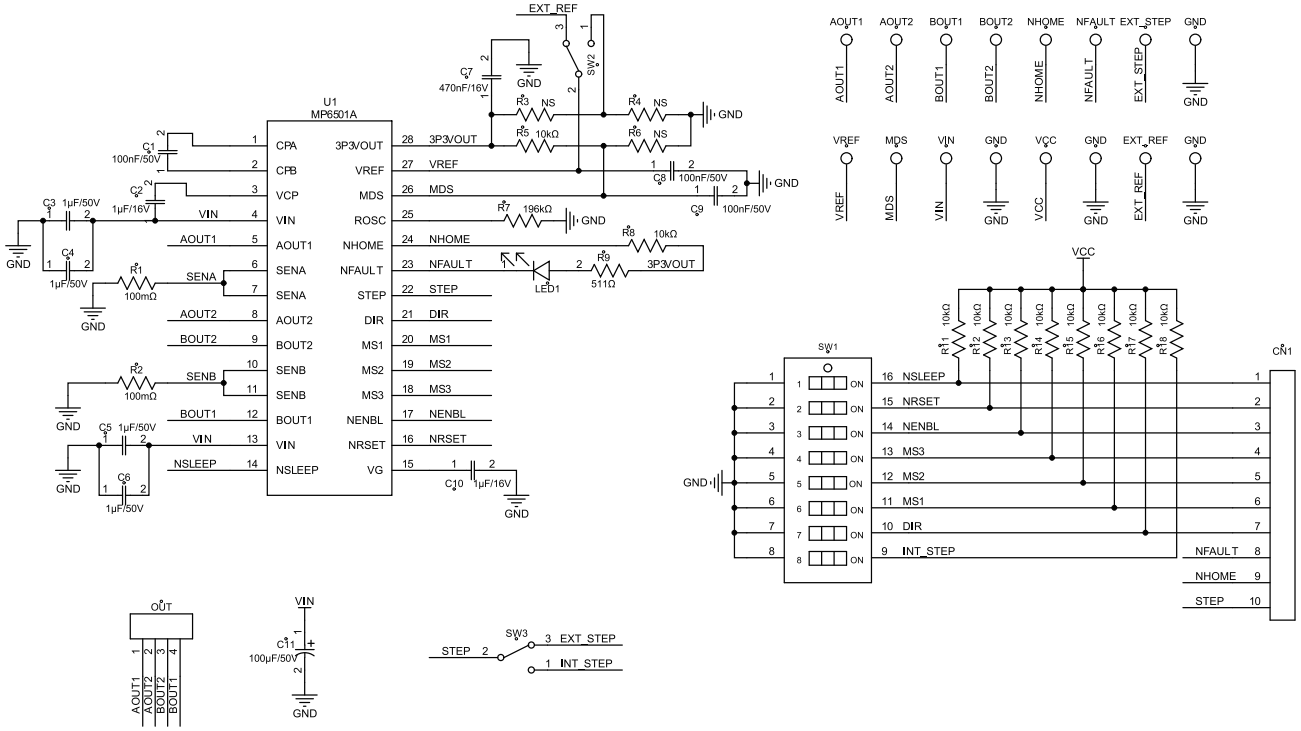

Figure 1: Evaluation Board Schematic

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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	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	Murata	GRM188R71C474KA88D
2	C8, C9	100nF/ 50V	Ceramic capacitor, 50V, X7R	0603	Murata	GRM188R71H104KA93D
1	C11	100μF/ 50V	Electrolytic capacitor, 50V	DIP	Rubycon	50YXF100MEFC
2	R1, R2	100mΩ	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	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	Bright LED	BL-HUF35A-TRB
1	SW1	8-bits	Button	SMD	Wurth	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	

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PCB LAYOUT

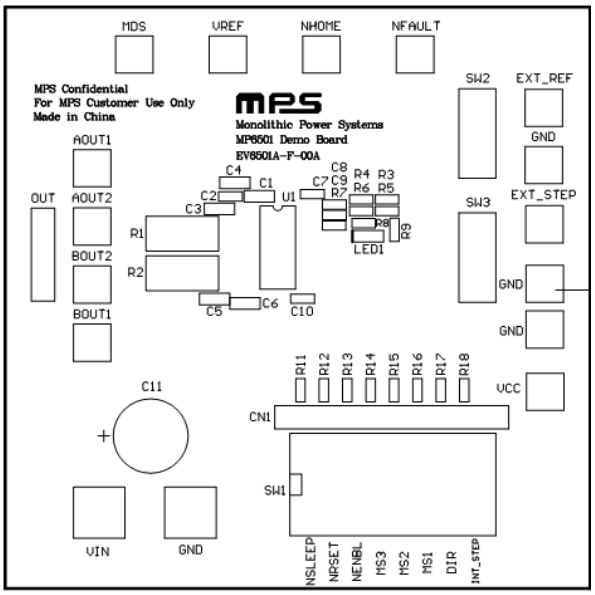

Figure 2: Top Silk Layer

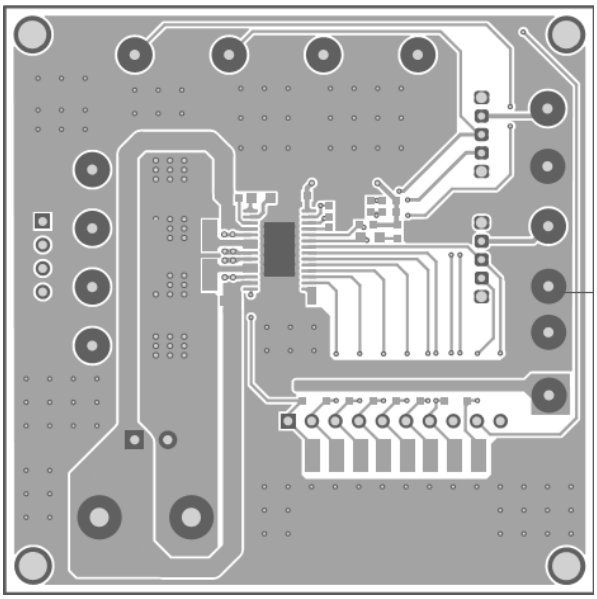

Figure 3: Top Layer

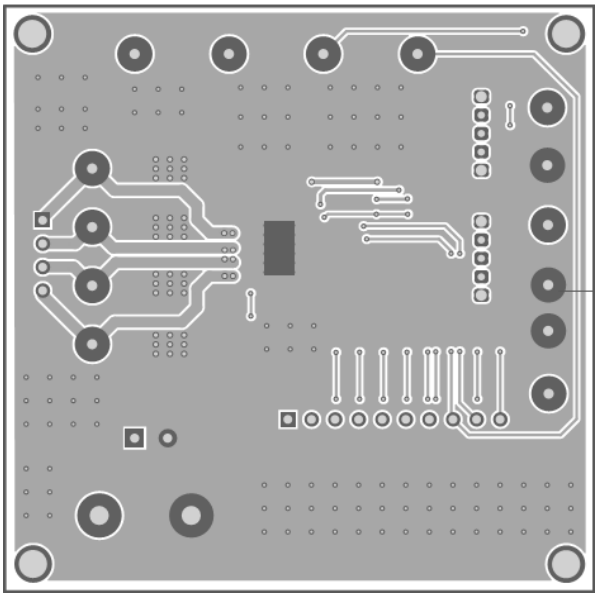

Figure 4: Bottom Layer

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