



EV6540A-U-00A

5.5V to 35V, Three-Phase Brushless DC Motor Driver Evaluation Board

DESCRIPTION

The EV6540A-U-00A is an evaluation board for the MP6540A, a three-phase BLDC motor driver.

It operates from a supply voltage of up to 35V. It integrates 3 half bridges consisting of 6 N-channel Power MOSFETs. The rotor position information is provided by the Hall sensors assembled in the motor and the driving control signals are generated by the external controller, such as MCU, FPGA, etc.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	VIN	5.5 - 35	V
VREF Voltage	VREF	3.3 or 5	V

FEATURES

- Wide 5.5V to 35V Input Voltage Range
- Low On-Resistance
- Integrated Bi-directional Current Sense Amplifiers
- Support 100% Duty Cycle Operation
- HS/LS Logic Input
- OCP, OTP
- Fault Indication Output

APPLICATIONS

- 3-Phase Brushless DC Motors and Permanent Magnet Synchronous Motors
- Power Drills
- Impact Drivers

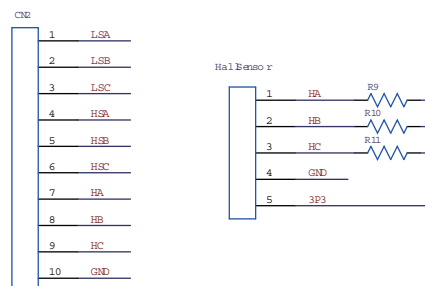
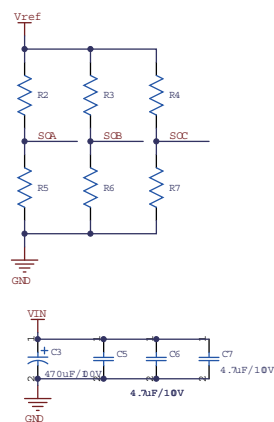
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EV6540A-U-00A EVALUATION BOARD



(L x W x H) 2" x 2" x 0.4"
(5cm x 5cm x 1cm)

Board Number	MPS IC Number
EV6540A-U-00A	MP6540AGU



EV6540A-U-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
1	R1	499	Film Resistor; 1%	0603	Yageo	RC0603FR-07499RL
6	R2, R3, R4, R5, R6, R7	4.99K	Film Resistor; 1%	0603	Yageo	RC0603FR-074K99L
3	R9, R10, R11	1K	Film Resistor; 1%	0603	Yageo	RC0603FR-071KL
1	C1	470nF/100V	Ceramic Capacitor; 100V; X7R;	0805	muRata	GRM21BR72A474KA73L
1	C2	1μF/25V	Ceramic Capacitor; 25V; X7R	0603	muRata	GRM188R71E105KA12D
1	C3	470uF/100V	Electrolytic Capacitor; 100V;	DIP	江海	CD263-100V470
1	C4	4.7μF/25V	Ceramic Capacitor; 25V; X6S	0603	muRata	GRM188C81E475KE11D
3	C5, C6, C7	4.7μF/100V	Ceramic Capacitor; 100V; X7S	1210	muRata	GRJ32DC72A475KE11L
2	C8, C9	100nF/50V	Ceramic Capacitor; 50V; X7R	0603	Murata	GCJ188R71H104KA12D
1	LED	BL- HUE35A- AV-TRB	LED;红光;	0805	Bai Hong	2012SURC-11
2	CN1, CP1, CP2, VCP		CONN/3PIN/2.54M M			
1	CN2		CONN/10PIN/2.54M M			
1	Hall Sensor		CONN/5PIN/2.54M M			
1	SW		Button	DIP		SS-12D01EG4
1	JP1		CONN/2PIN/2MM			
1	JP1		2mm Short Jumper			
6	NFAULT, NSLEEP, SOA, SOB, SOC, VG		Test Point			
2	VIN, VIN_GND		2.0 公针			
7	3P3, 3P3_GND , SA, SB, SC, Vref, Vref_GND		1.0 公针			
1	D1	NS				
1	U1	MP6540A	Three-phase BLDC Motor Driver	QFN26 (5x5mm)	MPS	MP6540AGU

The schematic diagram illustrates the layout of the MPS6540A U-00A board. Key components and their connections are as follows:

- Power and Ground:** VIN is connected to a network of capacitors (C3, C4, C5, C6, C7, C8, C9) and resistors (R1, R2, R3, R4, R5, R9, R10). GND is connected to various points on the board, including a large circular pad and a rectangular pad.
- Control and Status:** The board features a large circular pad labeled "Hall Sensor" and a rectangular pad labeled "SW". It also includes a "FAULT" pin, a "NSLEEP" pin, and a "LED" indicator.
- Connectors:** The board has two main connectors: CN1 (a large circular connector) and CN2 (a rectangular connector).
- Other Components:** The board includes a "JP1" pin header, a "SC" (Serial Connector), and a "SA" (Status Indicator).
- Manufacturer Information:** The board is manufactured by Monolithic Power Systems (MPS) and is labeled "MPS6540A Demo Board EV6540A-U-00A".

Figure 1—Top Silk Layer

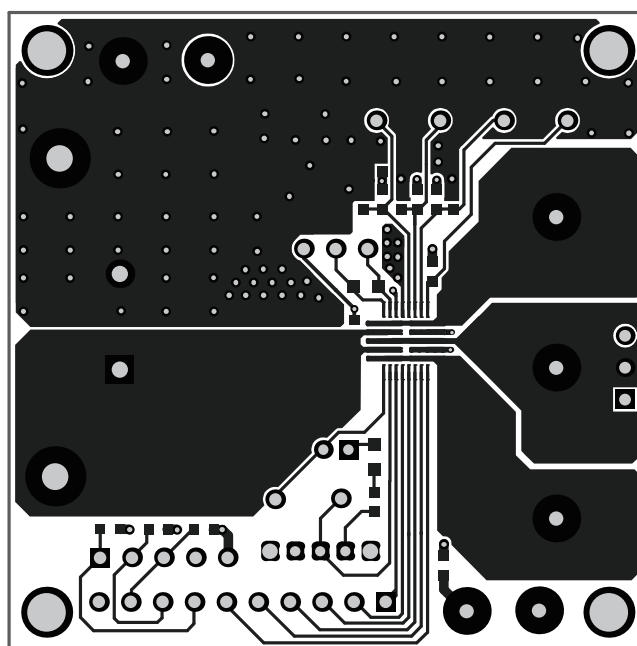


Figure 2—Top Layer

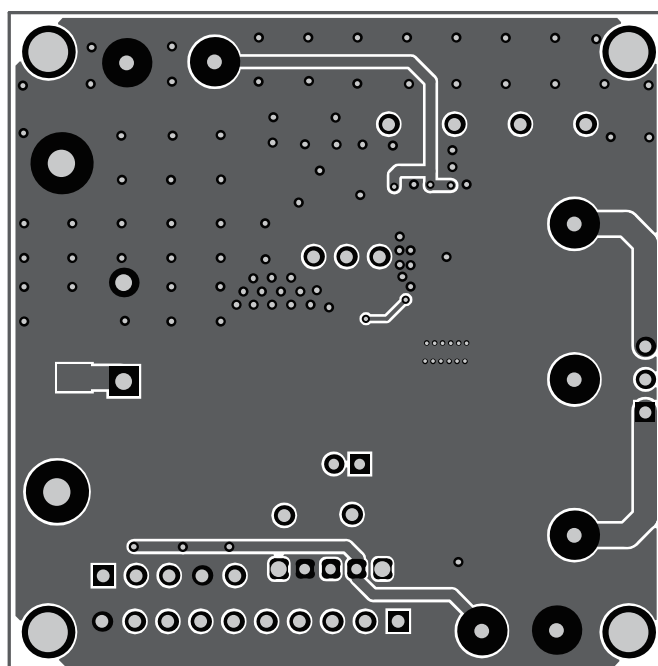


Figure 3—Bottom Layer

QUICK START GUIDE

1. Attach the input voltage ($5.5V \leq V_{IN} \leq 35V$) and input ground to the VIN and GND connectors respectively.
2. Attach a 3.3V or 5V constant voltage to the 3P3 connector and switch the SW1 to the position 1(right side) to enable the chip.
3. Attach a 3.3V or 5V constant voltage to the VREF connector to set the current sense output reference voltage.
4. Attach the hall signals coming from the motor to the Hall Sensor connector.
5. Attach the driving control signals generated by the external controller to the CN2 connector.

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