

DESCRIPTION

The EV6532-F-00A is an evaluation board for the MP6532, a three-phase brushless DC motor pre-driver.

The MP6532 operates from a supply voltage of up to 60V. It is configured to drive three half-bridges consisting of six 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 an external controller, such as an MCU, or FPGA.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input voltage	V _{IN}	5 to 60	V
OC_REF	OC_REF	0.1 to 2.4	V
Hall voltage	V _H	3.3 or 5	V

FEATURES

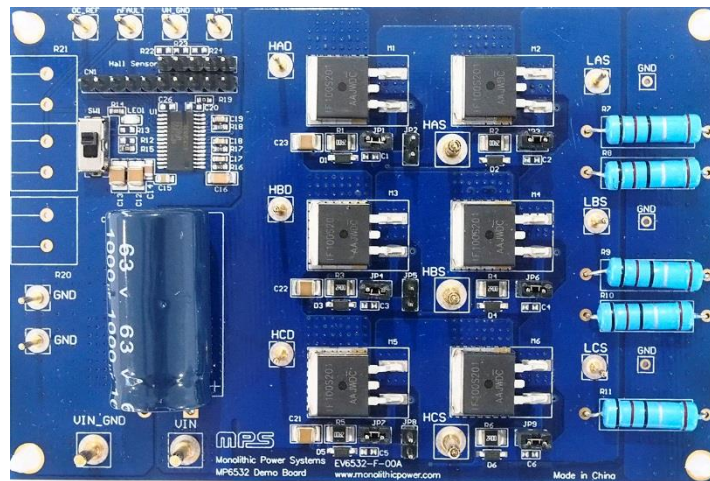
- Wide 5V to 60V Input Voltage Range
- Configurable OCP Threshold
- Supports 100% Duty Cycle Operation
- OCP and OTP
- Fault Indication Output

APPLICATIONS

- Three-Phase Brushless DC Motors and Permanent Magnet Synchronous Motors (PMSMs)
- Power Drills
- Impact Drivers
- E-Bikes

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EV6532-F-00A EVALUATION BOARD



(LxWxH) 11.7cmx7.8cmx1cm

Board Number	MPS IC Number
EV6532-F-00A	MP6532GF

QUICK START GUIDE

1. Attach the input voltage ($5V \leq V_{IN} \leq 60V$) to the VIN connector, and attach the input ground to the GND connector.
2. To enable the chip, attach a 3.3V or 5V constant voltage to the VH connector, then switch SW1 to position 1 (top side).
3. To set the OCP threshold, attach the over-current protection (OCP) reference voltage ($0.1V \leq V_{OC_REF} \leq 2.4V$) to the OC_REF connector.
4. Attach the Hall signals coming from the motor to the CN1 connector. Attach the Hall sensor power supply to the Hall sensor connector.
5. Attach the driving control signals generated by the external controller to the CN1 connector.

EVALUATION BOARD SCHEMATIC

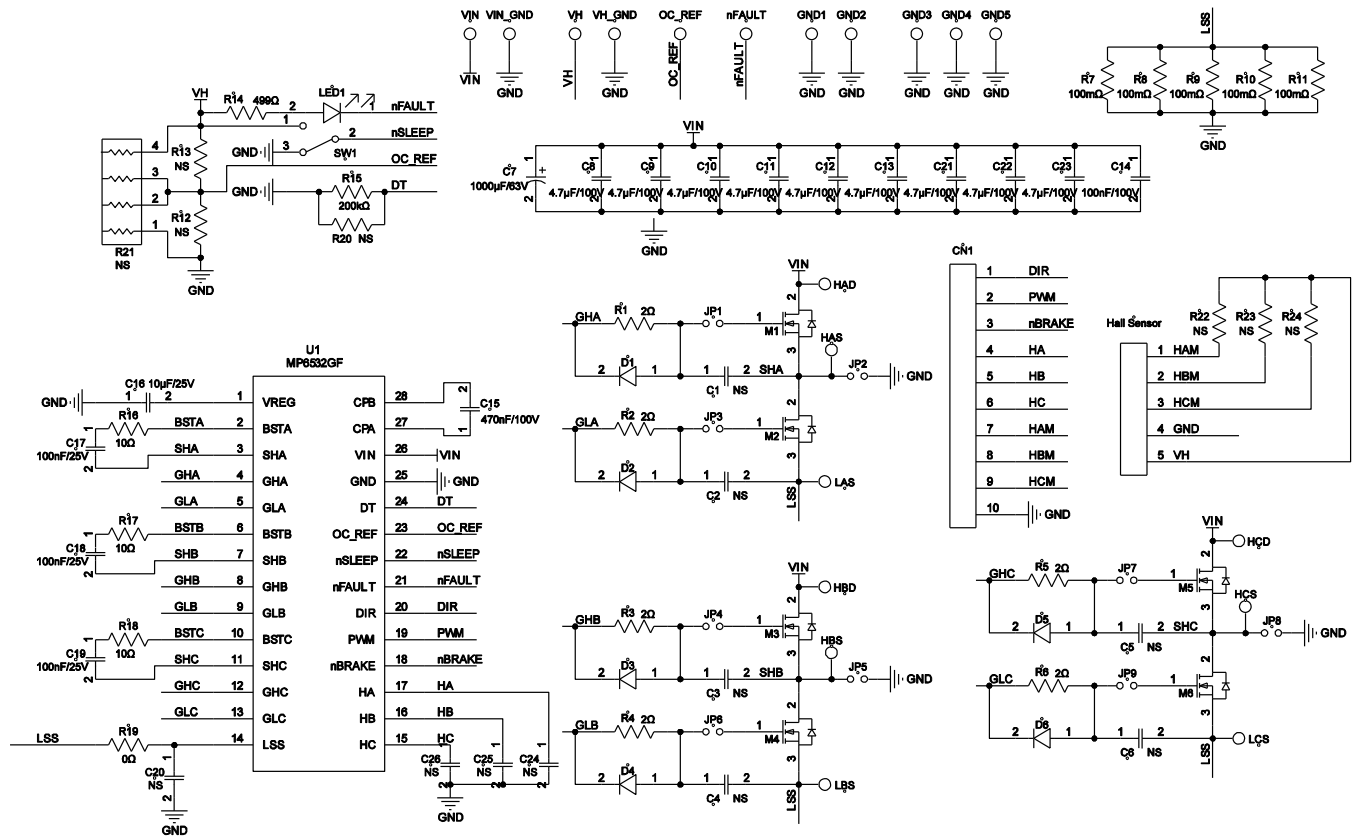


Figure 1: Evaluation Board Schematic

EV6532-F-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
17	C1, C2, C3, C4, C5, C6, C20, C24, C25, C26, R12, R13, R20, R21, R22, R23, R24	NS				
1	C7	1000 μ F	Electrolytic capacitor, 63V	DIP	Jianghai	CD263-63V1000
9	C8, C9, C10, C11, C12, C13, C21, C22, C23	4.7 μ F	Ceramic capacitor, 100V, X7S	1210	TDK	C3225X7S2A475K
1	C14	100nF	Ceramic capacitor, 100V, X7R	0805	TDK	CGA4J2X7R2A104K
1	C15	470nF	Ceramic capacitor, 100V, X7R	0805	Murata	GRM21BR72A474KA73L
1	C16	10 μ F	Ceramic capacitor, 25V, X5R	1206	Murata	GRM31CR61E106KA12L
3	C17, C18, C19	100nF	Ceramic capacitor, 25V, X7R	0603	Murata	GRM188R71E104KA01D
6	R1, R2, R3, R4, R5, R6	2 Ω	Film resistor, 1%	1210	Yageo	RC1210FR-072RL
5	R7, R8, R9, R10, R11	100m Ω	Resistor	DIP	Minda	100m Ω /2W
1	R14	499 Ω	Film resistor, 1%	0603	Yageo	RC0603FR-07499RL
1	R15	200k Ω	Film resistor, 1%	0603	Yageo	RC0603FR-07200KL
3	R16, R17, R18	10 Ω	Film resistor, 1%	0603	Yageo	RC0603FR-0710RL
1	R19	0 Ω	Film resistor, 1%	0603	Yageo	RC0603FR-070RL
6	D1, D2, D3, D4, D5, D6	30V, 1A	Schottky diode	SOD-123	Diodes	B130LAW
6	M1, M2, M3, M4, M5, M6	100V	N-channel MOSFET, 100V, 57A, I _D = 28A Q _G = 130nC, 23m Ω when V _{GS} = 10V	TO-263	IR	IRF3710S
1	LED1	Red	LED	0805	Bright LED	BL-HUF35A-TRB
1	SW1	SPDT	Button	DIP	Any	
9	JP1, JP2, JP3, JP4, JP5, JP6, JP7, JP8, JP9	2-bits/ 2.54mm	Connector	DIP	Any	
6	JP1, JP3, JP4, JP6, JP7, JP9	2.54mm	Short jumper	DIP	Any	
1	CN1	10-bits/ 2.54mm	Connector	DIP	Any	

EV6532-F-00A BILL OF MATERIALS (continued)

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	Hall sensor	5-bits/ 2.54mm	Connector	DIP	Any	
5	VIN, VIN_GND, HAS, HBS, HCS	$\Phi =$ 2mm	Connector	DIP	Any	
12	OC_REF, nFAULT, VH, VH_GND, HAD, HBD, HCD, LAS, LBS, LCS, GND, GND	$\Phi =$ 1mm	Connector	DIP	Any	
1	U1	60V	3-phase BLDC motor pre-driver	TSSOP-28EP (9.7mmx6.4mm)	MPS	MP6532GF

PCB LAYOUT

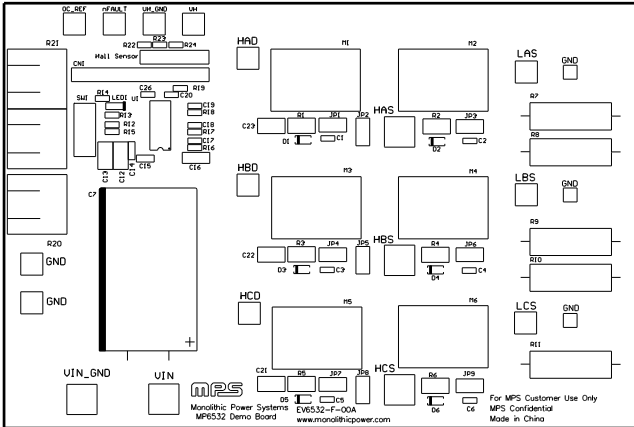


Figure 2: Top Silk

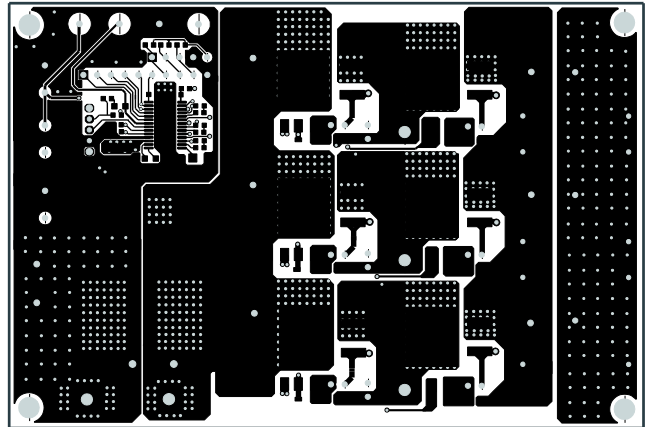


Figure 3: Top Layer

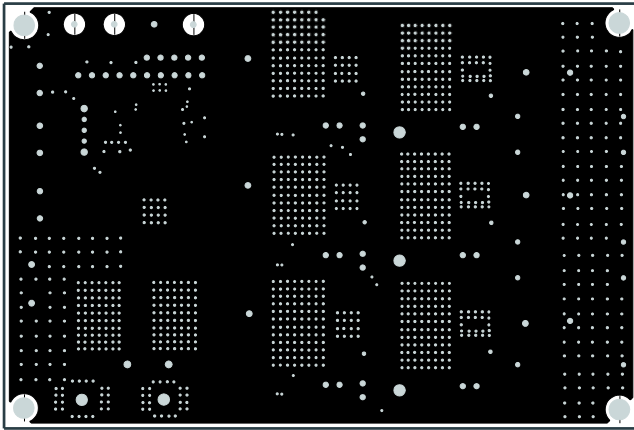


Figure 4: Inner Layer 1

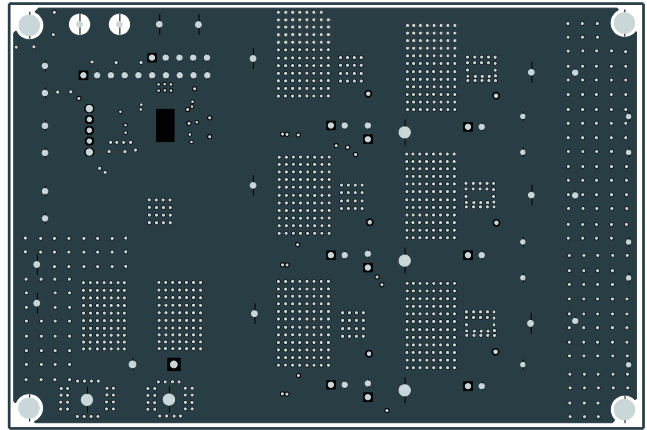


Figure 5: Inner Layer 2

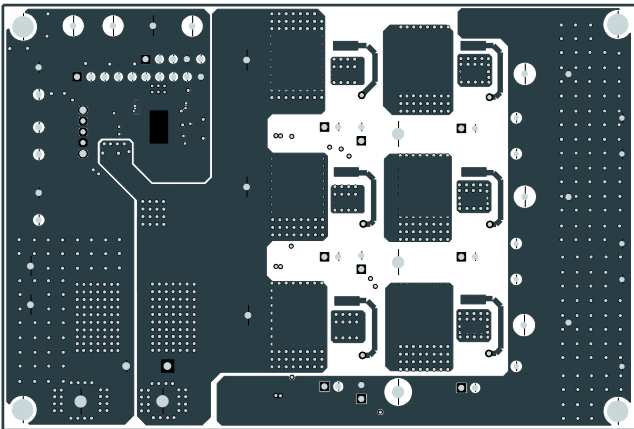


Figure 6: Bottom Layer

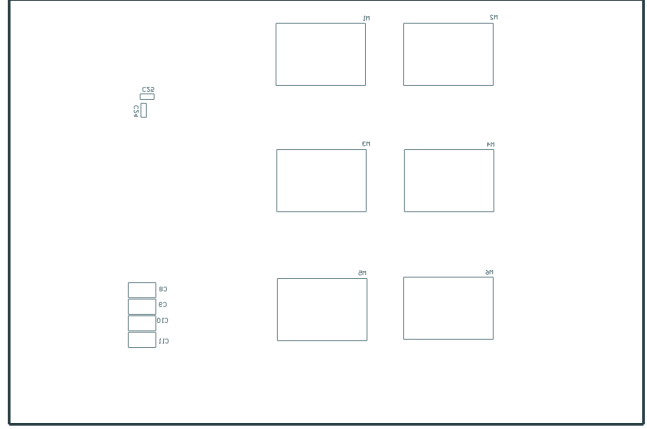


Figure 7: Bottom Silk

Revision History

Revision #	Revision Date	Description	Pages Updated
1.0	08/10/2020	Initial Release	-

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