EV6982-J-00A

Fast Turn-Off, Intelligent Rectifier with No Auxiliary Winding Requirement Evaluation Board

DESCRIPTION

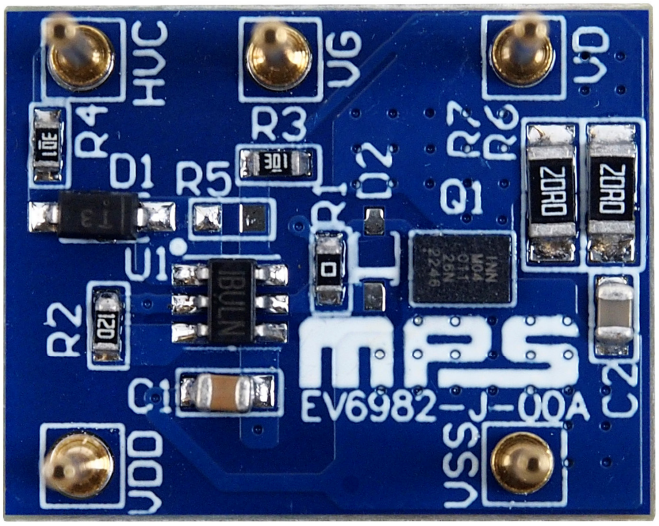
The EV6982-J-00A is an evaluation board designed to demonstrate the capabilities of the MP6982, a fast turn-off, intelligent rectifier for GaN HEMT applications.

The MP6982 can replace a Schottky diode for higher efficiency. The device regulates the external synchronous rectification (SR) GaN HEMT's forward voltage drop ($V_{FORWARD}$) to about 40mV and turns off before the drain-to-source voltage (V_{DS}) reverses.

The MP6982 can generate its own supply voltage without the need for auxiliary winding, which makes it suitable for charger applications with a low output voltage (V_{OUT}), or for high-side (HS) SR configurations. The configurable ringing detection circuitry prevents the MP6982 from falsely turning on during discontinuous conduction mode (DCM) and quasi-resonant (QR) operations.

The MP6982 is available in a TSOT23-6 package.

EVALUATION BOARD



LxW (2.2cmx1.75cm)

Board Number	MPS IC Number
EV6982-J-00A	MP6982GJ

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QUICK START GUIDE

The EV6982-J-00A evaluation board can be used to evaluate the MP6982's performance. For proper measurement equipment set-up (high-side rectification), refer to Figure 1 and follow the steps below:

1. Connect the VSS and VD terminals to the flyback circuit. This replaces the freewheel diode.
2. Connect the HVC pin to a high-voltage node (either DC or AC). For high-side rectification, HVC pin can be connected to VD via an external resistance, or to the secondary ground via an external diode. The VDD voltage (V_{DD}) should automatically be charged to 5.4V.
3. Turn on the power supply. The IC should start up automatically and work as a freewheel diode.

   (For low-side rectification connection and more details, please refer to MP6982's datasheet.)

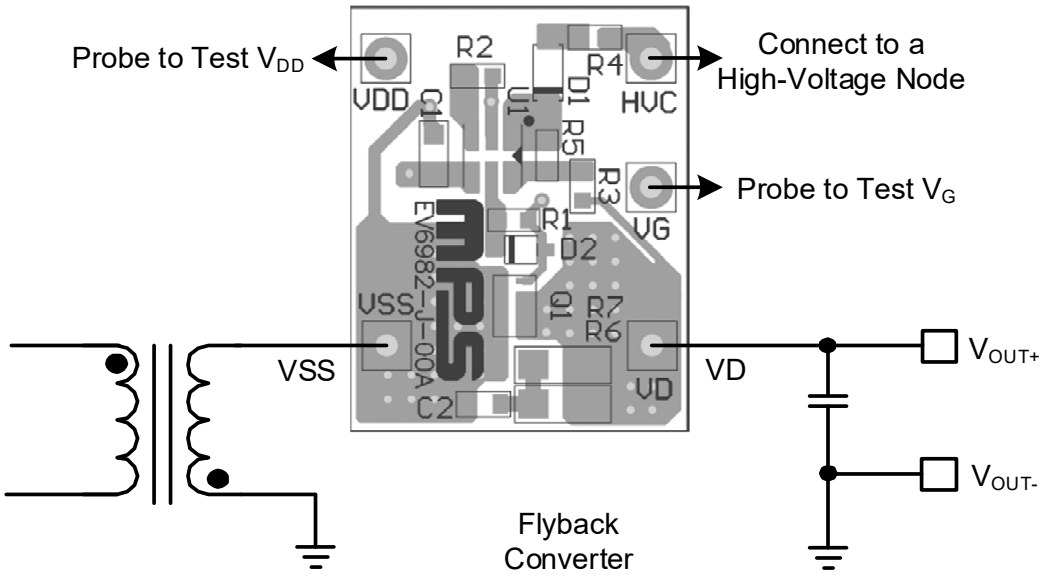

Figure 1: Measurement Equipment Set-Up

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EVALUATION BOARD SCHEMATIC

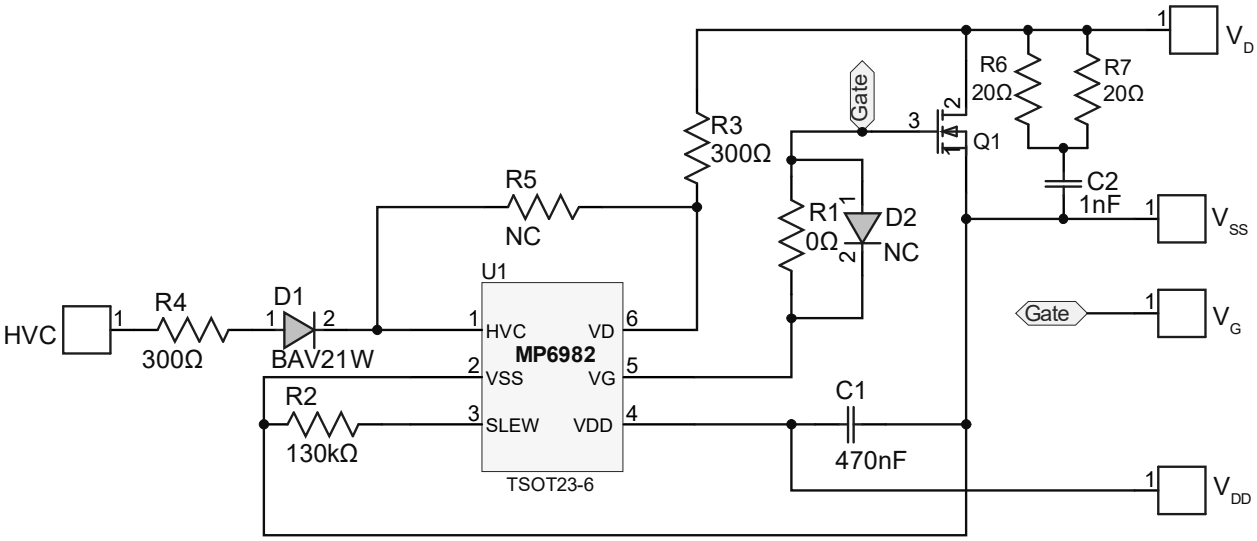

Figure 2: Evaluation Board Schematic

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EV6982-J-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
1	C1	470nF	Ceramic capacitor, 25V, X7R	0805	Wurth	885012207076
1	C2	1nF	Ceramic capacitor, 250V, U2J	0805	Murata	GRM21A7U2E102JW31D
1	R1	0Ω	Film resistor, 1%	0603	Yageo	RC0603FR-070RL
2	R3, R4	300Ω	Film resistor, 1%	0603	Yageo	RC0603FR-07300RL
2	R6, R7	20Ω	Film resistor, 1%	1206	Yageo	RC1206FR-0720RL
1	R2	130kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-07100KL
1	D1	200V	Diode, 200V	SOD-123	Diodes, Inc.	BAV21W-7-F
1	Q1	150V	GaN HEMT	FCLGA (3.2x2.2)	Innoscience	INN150LA070A
3	D2, R5	NC				
5	VG, HVC, VDD, VSS, VD	1mm	Connector	1mm	Any	
1	U1	MP6982	Intelligent flyback synchronous rectifier	TSOT23-6	MPS	MP6982GJ

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PCB LAYOUT

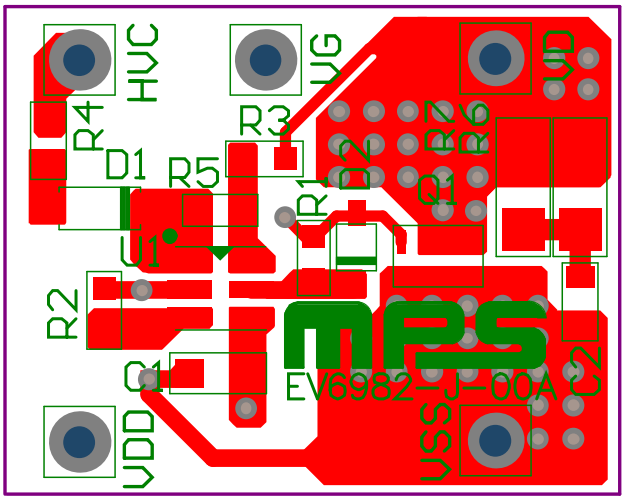

Figure 3: Top Layer

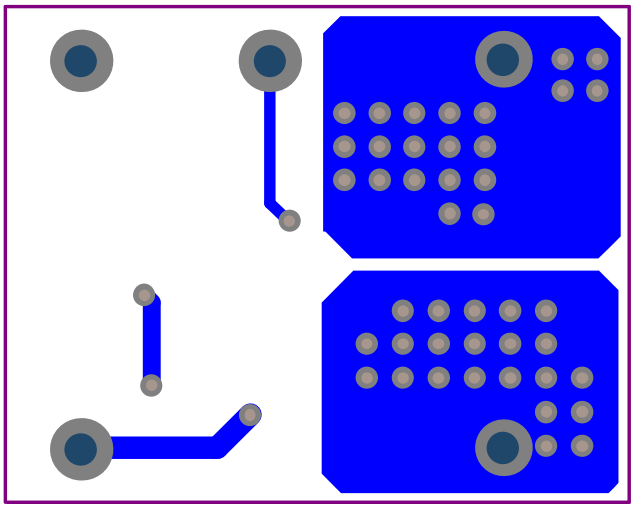

Figure 4: Bottom Layer

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REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	2/12/2024	Initial Release	-

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