

## DESCRIPTION

The MP6909 is a low-drop diode emulator IC that, when combined with an external switch, replaces Schottky diodes in high-efficiency flyback converters. The MP6909 regulates the forward drop of an external synchronous rectifier (SR) MOSFET to about 40mV, which switches off once the voltage becomes negative.

The MP6909 can generate its own supply voltage by internal linear regulator. Programmable ringing detection circuitry prevents the MP6909 from turning on falsely at  $V_{DS}$  oscillations during discontinuous conduction mode (DCM) and quasi-resonant operation.

EV6909-S-00A is the evaluation board for MP6909.

## FEATURES

- Supplied Voltage Internal Regulated
- Ringing Detection Prevents False Turn-on during DCM and Quasi-Resonant Operations
- Works with Standard and Logic Level SR MOSFETs
- Compatible with Energy Star
- ~30ns Fast Turn-off and Turn-on Delay
- ~100uA Quiescent Current
- Supports DCM, Quasi-Resonant and CCM Operations
- Supports both High-side and Low-side Rectification

## APPLICATIONS

- USB PD Quick Chargers
- Adaptors
- Flyback Converters

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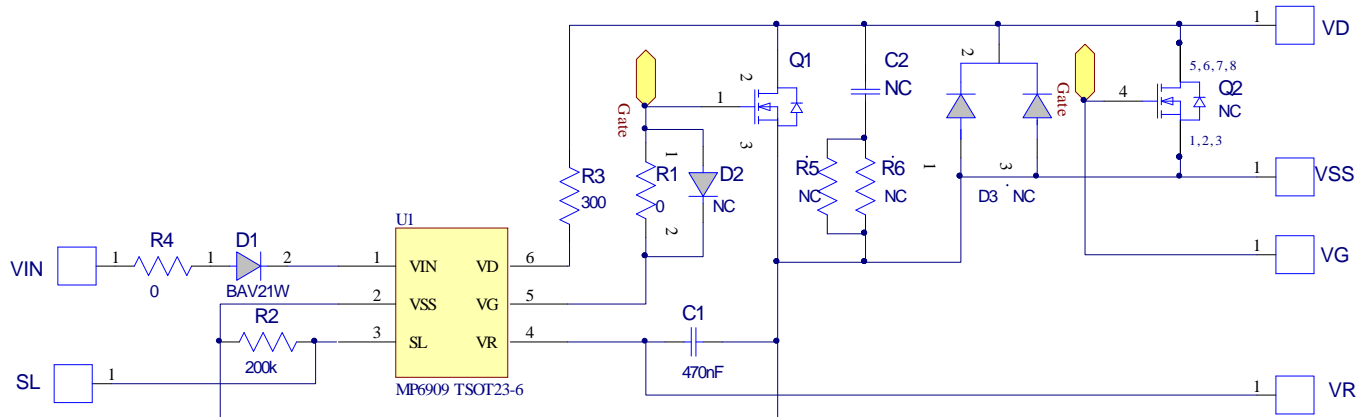
## EV6909-S-00A EVALUATION BOARD



(L x W) 2.9cm x2.9cm

Board Number	MPS IC Number
EV6909-S-00A	MP6909GJ

## EVALUATION BOARD SCHEMATIC



## BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	470nF	Ceramic Capacitor;25V;X7R	0805	TDK	C2012X7R1E474K
0	C2	NC	Snubber Capacitor	0805		
2	R1 ,R4	0	Film Resistor;1%	0603	Yageo	RC0603FR-070RL
1	R2	200k	Film Resistor;1%	0603	Yageo	RC0603FR-07200KL
1	R3	300	Film Resistor;1%	0603	Yageo	RC0603FR-07300RL
0	R5,R6	NC	Snubber Resistor	1206		
1	D1	BAV21W	Diode,200V	SOD-123	Diodes	BAV21W-7-F
1	U1	MP6909	Smart Synchronous Rectifier	TSOT23-6	MPS	MP6909GJ-Z
1	Q1	FDPF045N10A	MOSFET;100V,67A	TO220-3	Fairchild	FDPF045N10A
0	D2,D3, Q2,SL	NC				
3	VG,VIN, VR	1mm Connector Pin				
2	VD,VSS	2mm Connector Pin				

### PRINTED CIRCUIT BOARD LAYOUT

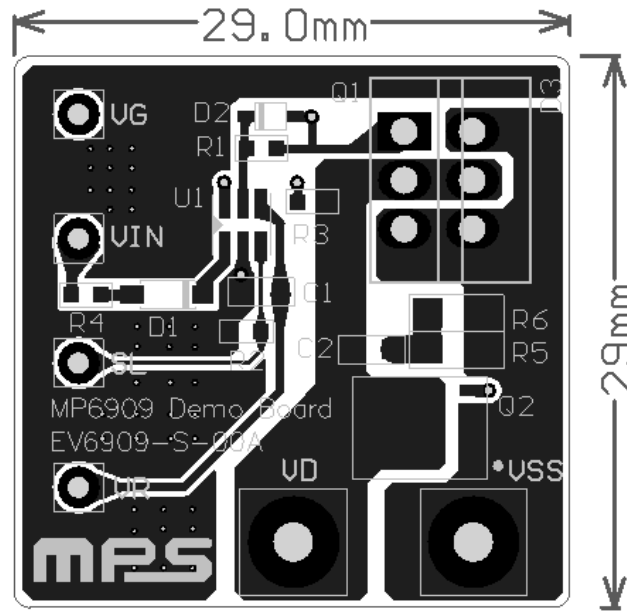


Figure 1: Top Layer

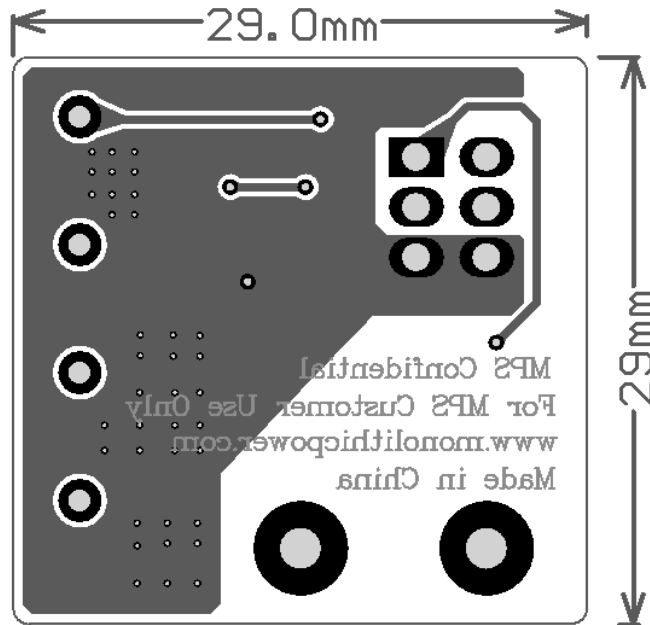


Figure 2: Bottom Layer

## QUICK START GUIDE

1. Connect the VSS and VD pin into the flyback circuit to replace the freewheel diode.
2. Connect VIN to a position which can supply a direct voltage (5V to 40V).
3. Turn the power supply on. The IC will start up and work as a freewheel diode.

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