

## DESCRIPTION

The MP3309A is a WLED step-up converter for 2.7V-to-5.5V input that uses peak-current mode to regulate the LED current sensed through an external low-side resistor. The 200mV feedback voltage and synchronous rectification reduces power loss and reduces PCB space requirements. To connect an external Schottky accomplishes the non-synchronous mode for heavy load to improve the thermal performance.

The MP3309A features a programmable switching frequency to optimize efficiency. It supports both analog and PWM dimming.

In addition, the MP3309A has LED open protection, cycle-by-cycle current limit protection and thermal shutdown protection. The I<sup>2</sup>C interface can set the over-voltage protection threshold, analog dimming and read IC status. MP3309A is available in QFN10 3\*3mm package.

## ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V <sub>IN</sub>	2.7-5.5	V
Output Voltage	V <sub>LED</sub>	<35	V
LED Current	I <sub>LED</sub>	40	mA

## FEATURES

- 2.7V-to-5.5V Input Voltage
- Low 200mV Feedback Voltage with ±1% Accuracy
- Selectable Synchronous or Non-synchronous Mode Thru I<sup>2</sup>C
- 400kHz I<sup>2</sup>C-Compatible Interface
- Analog and PWM Dimming
- Programmable Switching Frequency
- Programmable Over Voltage Protection Point
- Software- or Hardware-Enable Function
- UVLO, Thermal Shutdown
- Available in 3x3mm QFN 10 package

## APPLICATIONS

- Feature Phones and Smart Phones
- Tablets
- Video Displays

All MPS parts are lead-free, halogen free, and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance.

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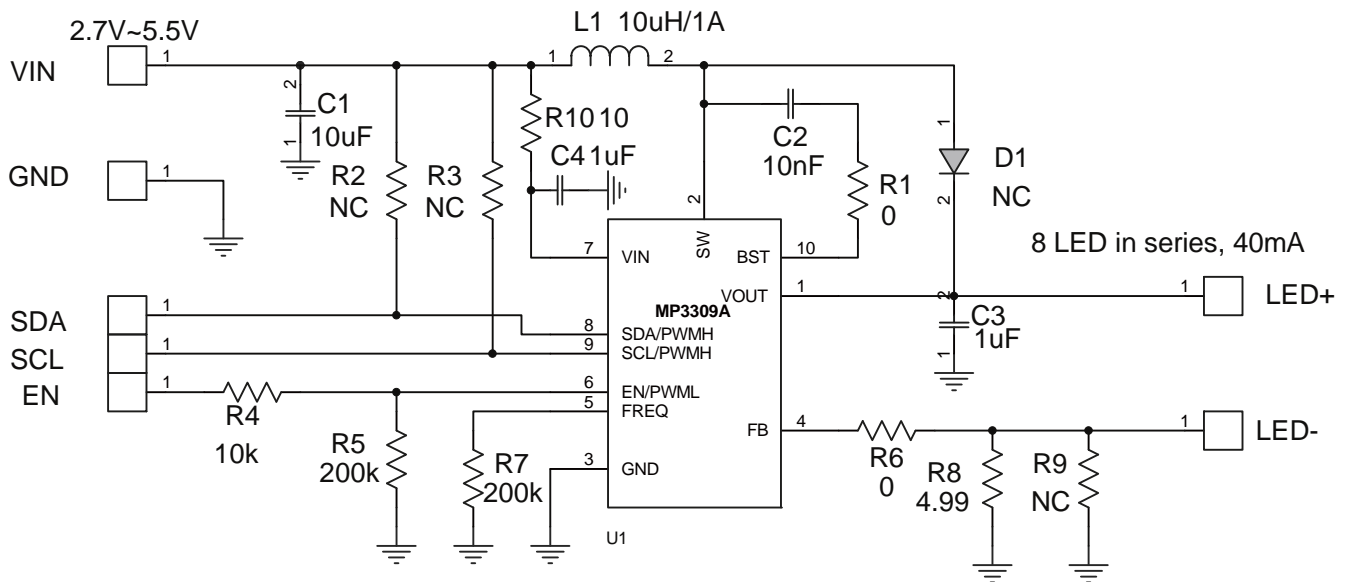
### EV3309A-Q-00A EVALUATION BOARD



(L x W x H) 5cm x 4.6cm x 1.0cm

Board Number	MPS IC Number
EV3309A-Q-00A	MP3309AGQ

### EVALUATION BOARD SCHEMATIC



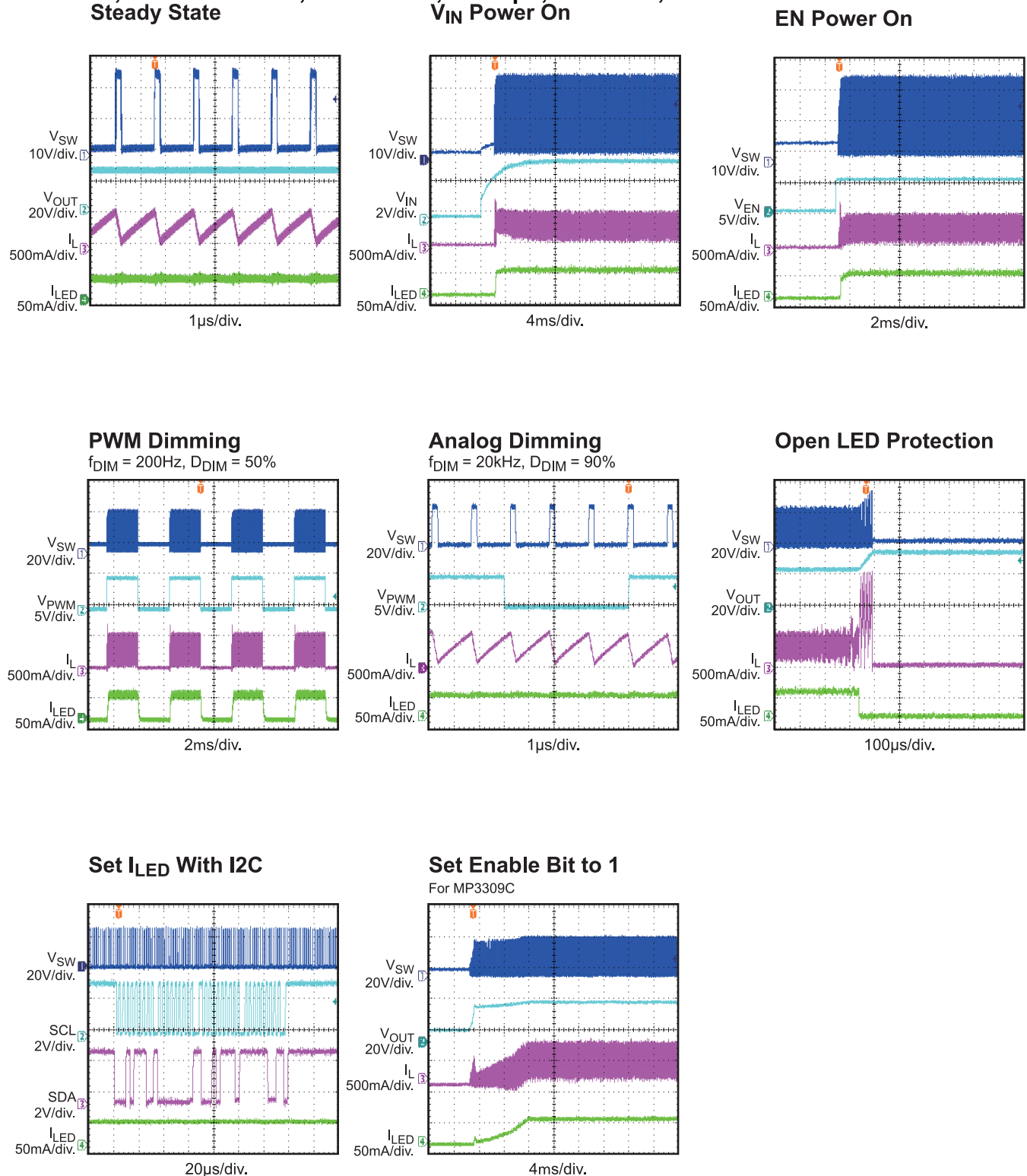
**EV3309A-Q-00A BILL OF MATERIALS**

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	10uF	Ceramic Capacitor, 6.3V, X7R	0805	muRata	GCM21BR70J106KE2
1	C2	10nF	Ceramic Capacitor, 50V, X7R	0603	muRata	GRM188R71H103KA01D
1	C3	1uF	Ceramic Capacitor, 50V, X7R	1206	muRata	GRM31MR71H105KA88L
1	C4	1uF	Ceramic Capacitor, 6.3V, X5R	0603	muRata	GRM188R60T105KA01D
1	D1	NC				
1	L1	10uH	Inductor, 1.14A, DCR=59mOhm	SMD	TOKO	D63LCB-A921CY- 100M=P3
2	R1,R6	0Ohm	Resister, 0Ohm, 5%	0603	Yageo	RC0603JR-070RL
1	R10	10Ohm	Resister, 10Ohm, 1%	0603	Yageo	RC0603FR-0710RL
3	R2, R3, R9	NC				
2	R5,R7	200kOhm	Resister, 200kOhm, 1%	0603	Yageo	RC0603FR-07200KL
1	R4	10kOhm	Resister, 10kOhm, 1%	0603	Yageo	RC0603FR-0710KL
1	R8	4.99Ohm	Resister, 4.99Ohm, 1%	0603	Yageo	RC0603FR-074R99L
1	U1	MP3309AGQ		QFN10(3*3)	MPS	

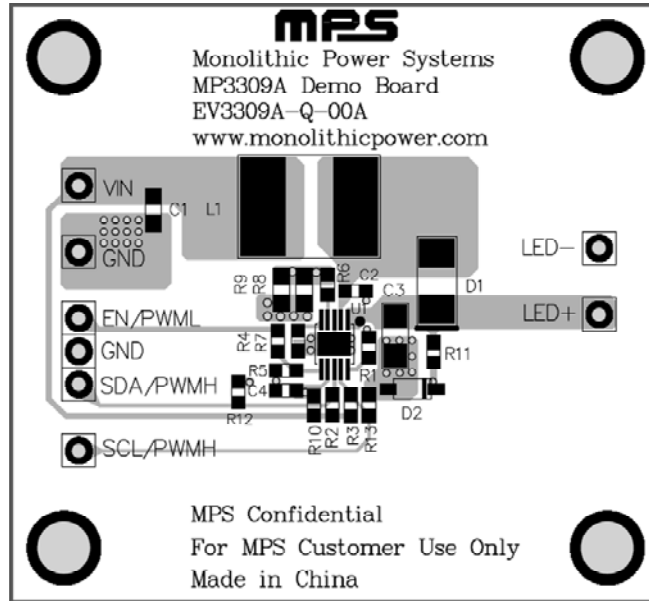
## EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

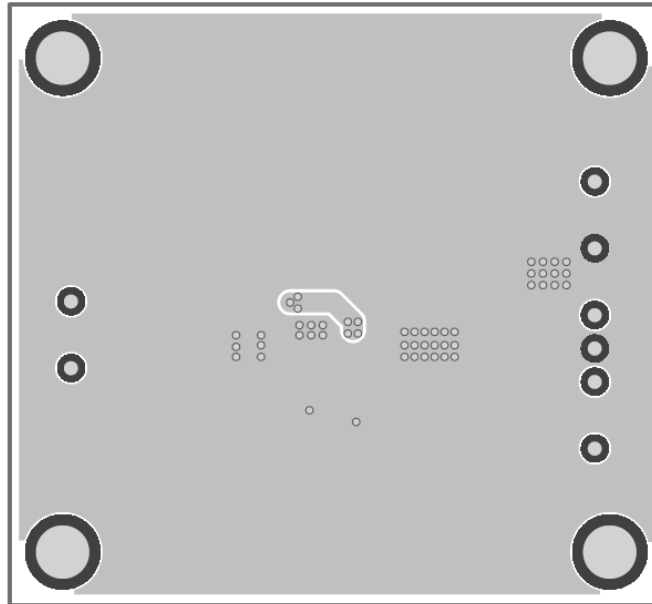
$V_{IN} = 3.6V$ , 8 LEDs in series,  $I_{LED} = 40mA$ ,  $L = 10\mu H$ ,  $T_A = 25^\circ C$ , unless otherwise noted.



**PRINTED CIRCUIT BOARD LAYOUT**



**Figure 1—Top Layer**



**Figure 2—Bottom Layer**