EV3307-J-00A

Non-Synchronized White LED Driver Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The MP3307 is a non-synchronous WLED step-up LED driver with 2.7V-to-5.5V input range. It uses peak-current mode to regulate the LED current sensed through an external, low-side resistor.

The MP3307 features up to 2.2MHz programmable switching frequency which is easy to avoid the noise interference and easy to optimize efficiency and reduce the output filter components size. To extend the dimming range, it supports both analog and PWM dimming mode with separate input.

MP3307 has LED open protection, output over-voltage protection, cycle-by-cycle current limit protection, and thermal shutdown protection.

MP3307 is available in TSOT23-8 package which is good to use in Video displays.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	2.7 – 5.5	V
Output Voltage	VLED	<24	V
LED String		1	string
LED Current	I_{LED}	40	mA

FEATURES

- 2.7V-to-5.5V Input Voltage
- Analog Dimming with >20kHz input signal
- Direct PWM dimming mode with 100Hz to 2kHz input signal
- Up to 2.2MHz Programmable Switching Frequency
- Low 200mV Feedback Voltage with ±1% Accuracy at Room Temperature
- 24V Open-Load Protection Threshold
- UVLO, Thermal Shutdown
- Cycle by Cycle Over Current Protection
- Available in a TSOT23-8 Package

APPLICATIONS

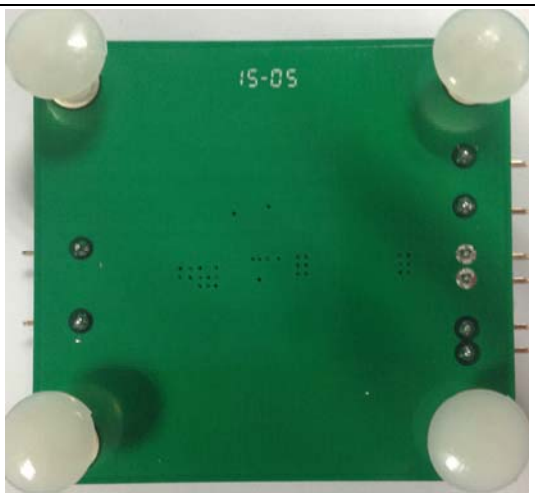
- Video Displays
- In-Car LCD Infotainment
- Tablets

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. “MPS” and “The Future of Analog IC Technology” are Registered Trademarks of Monolithic Power Systems, Inc.

MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.

EV3307-J-00A EVALUATION BOARD

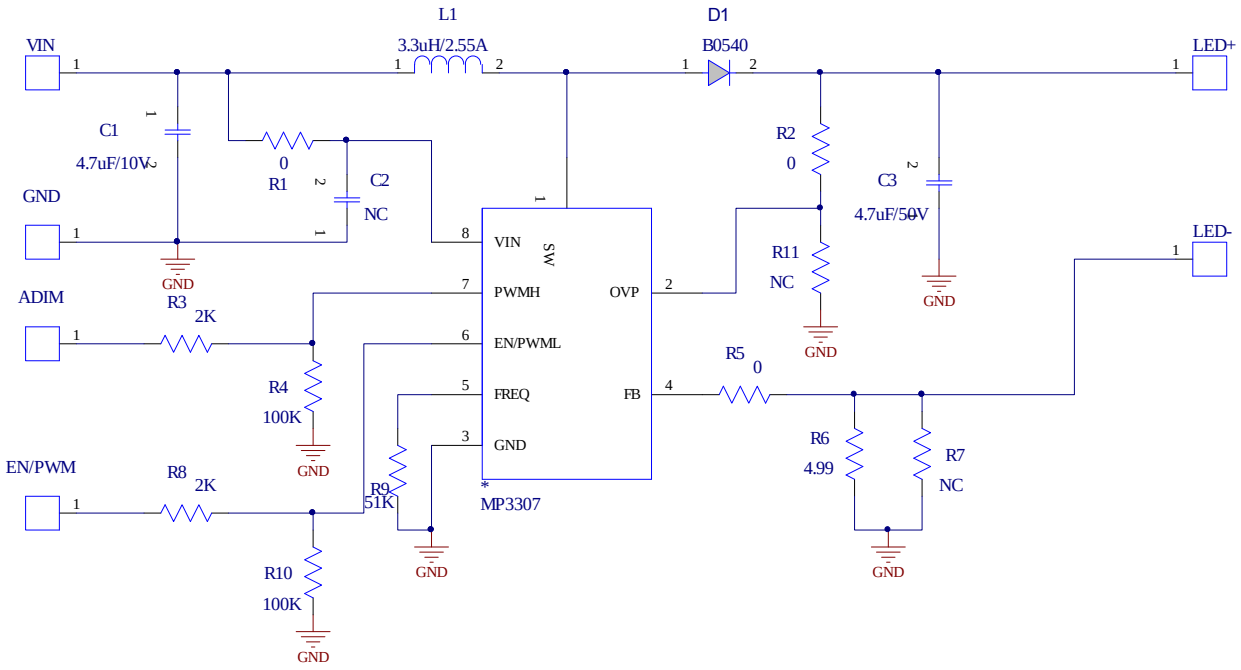




(L x W x H) 5cm x 4.6cm x 1.0cm

Board Number	MPS IC Number
EV3307-J-00A	MP3307J

EVALUATION BOARD SCHEMATIC



MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.

EV3307-J-00A BILL OF MATERIALS

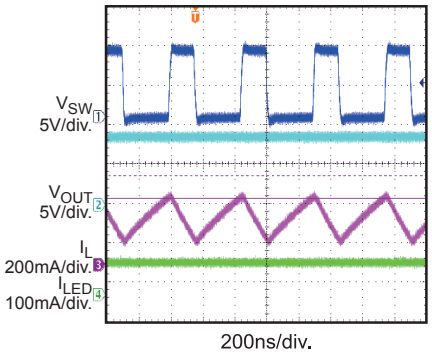
Qty	Ref	Value	Description	Package	Manufacturer	Manufactuer_P/N
1	C1	4.7μF/10V	Ceramic Capacitor;X5R;0805;	CAP/0805	TDK	C2012X5R1A475K
1	C2	NC		CAP/0603		
1	C3	4.7μF/50V	Ceramic Capacitor;X7R;1210	CAP/1210	TDK	C3225X7R1H475K
1	D1	B0540W	Schottky Diode;40V;0.5A;	SOD123	Diodes	B0540W
1	L1	3.3μH/2.55A	Inductor;3.3μH;30m;2.55A	SMD	Wurth	7440700033
3	R1,R2,R5	0	'Film Resistor;5%	RES/0603	Yageo	RC0603FR-070RL
2	R3,R8	2k	'Film Resistor;1%	RES/0603	Yageo	RC0603FR-072KL
2	R4,R10	100k	'Film Resistor;1%	RES/0603	Yageo	RC0603FR-07100KL
1	R6	4.99	Resistor;1%;1/8W;	RES/0805	Yageo	RC0603FR-074R99L
1	R9	51k	'Film Resistor;1%	RES/0603	SYNTON-TECH	RC0805FR-0710RL
2	R7,R11	NC		RES/0603		
1	MP3307			TSOT23-8	MPS	
6	ADIM, EN/PWM, GND, LED+, LED-, VIN	TP		TP	弯排	

MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.

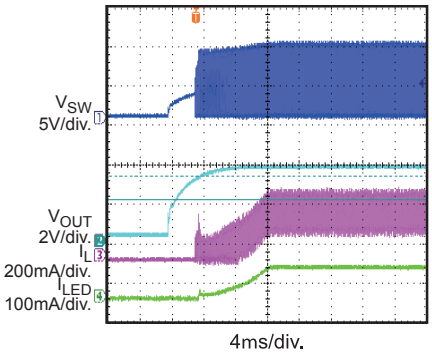
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{IN} = 3.6V, 3s*4p LEDs, L = 3.3μH, fs=2.2MHz, T_A = 25°C

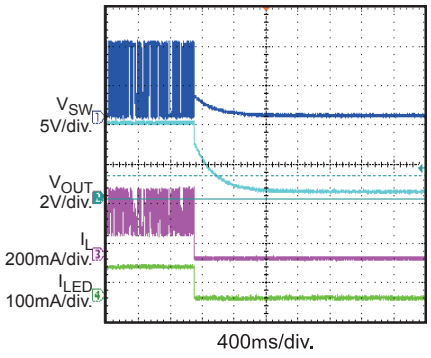
Steady State



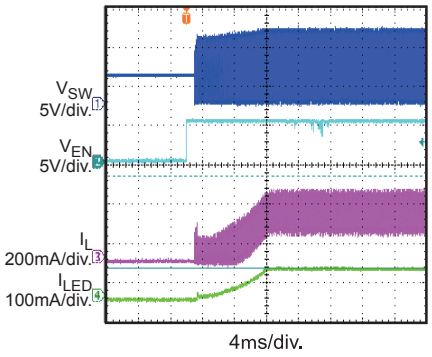
V_{IN} Power On



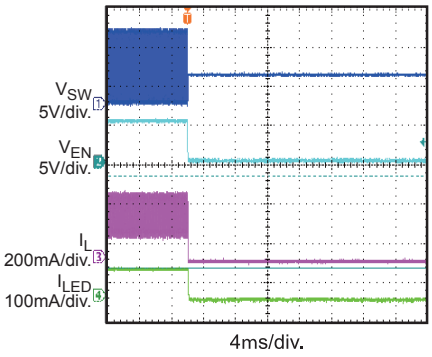
V_{IN} Power Off



EN Power On

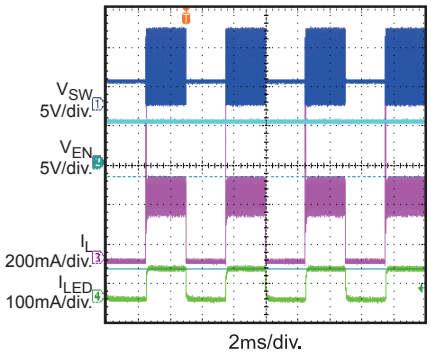


EN Power Off

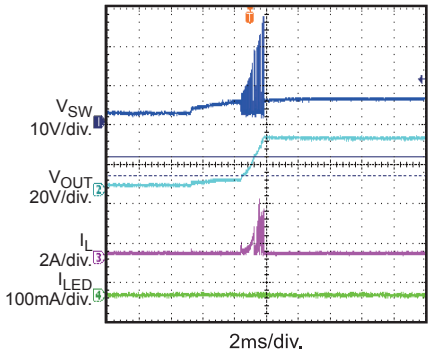


PWM Dimming

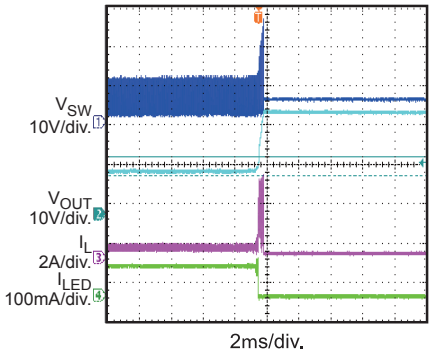
F_{PWM} = 200Hz, D = 50%



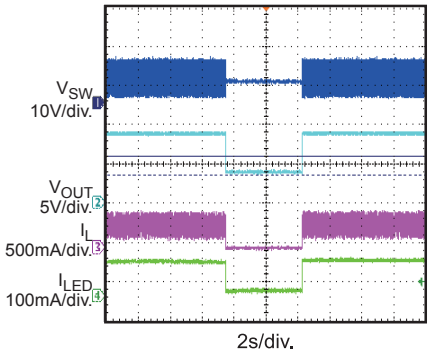
Start-Up when Open Load



Open Load when Work Normal



Thernal Shutdown then Recover



MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.

PRINTED CIRCUIT BOARD LAYOUT

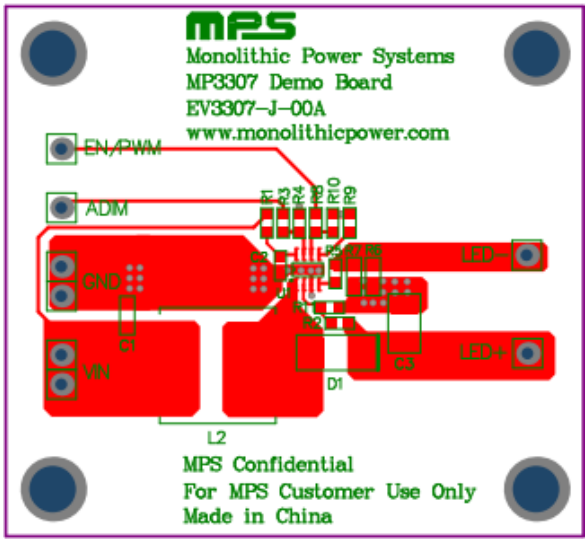


Figure 1—Top Layer

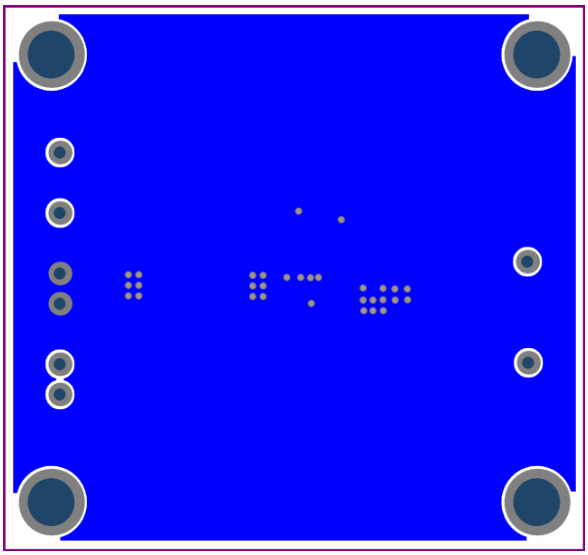


Figure 2—Bottom Layer

MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.

QUICK START GUIDE

1. Connect the positive and negative terminals of the load panel to the LED+ and LED- pins on the EV board, respectively.
2. Connect the positive and negative terminals of the power supply (2.7V ~ 5.5V) to the VIN and GND pins on the EV board, respectively.
3. Drive EN/PWML pin high (5V) to enable the chip. Apply 200Hz~2kHz PWM signal to EN/PWML for PWM dimming.
4. Drive PWMH pin with >20kHz pulse signal for PWM input analog dimming. If PWM input analog dimming is reserved, apply PWMH pin high (5V) to set up Chip.
5. Set current by R4 and R7.
6. If you set R2 as 0, OVP point is settled as 24V by internal resistor divider.

NOTICE: The information in this document is subject to change without notice. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.

MPS Proprietary Information. Patent Protected. Unauthorized Photocopy and Duplication Prohibited.
© 2015 MPS. All Rights Reserved.