EV2489DQ-01A

Step-Down White LED Driver Evaluation Board

DESCRIPTION

The EV2489DQ-01A is an evaluation board for the MP2489DQ, a step-down converter designed in continuous current mode for driving the high brightness light emitting diodes (LEDs) from wide input voltage 8V-36V. If higher input voltage (up to 60V) is required, use B190 instead of B140 in D1-D5.

The MP2489 employs hysteretic control architecture to regulate a high accuracy LED current, which is measured through an external high-side current sensing resistor. Moreover, this control scheme provides optimized circuit stabilization and very quick response time without the loop compensation. Its low 200mV average feedback voltage reduces power loss and improves the converter efficiency.

The MP2489 implements PWM and Analog Dimming with DIM pin. The MP2489 includes under-voltage lockout function, thermal overload protection preventing damage in the event of an output overload.

FEATURES

- Internal 65V MOSFET
- Wide 8V to 60V Input Range
- High Efficiency (Up to 97%)
- Hysteretic Control
- PWM & Analog Dimming
- 1000:1 PWM Dimming Resolution
- UVLO, Thermal Shutdown

APPLICATIONS

- Low Voltage Halogen Replacement
- Low Voltage General Illumination
- Automotive/Decorative LED Lighting
- Signs/Emergency Lighting
- LED Backlighting

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ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	8 –36	V
Output Voltage	Vout	<Vin-3V	
LED Current	I_{LED}	350	mA

EV2489DQ-00A EVALUATION BOARD



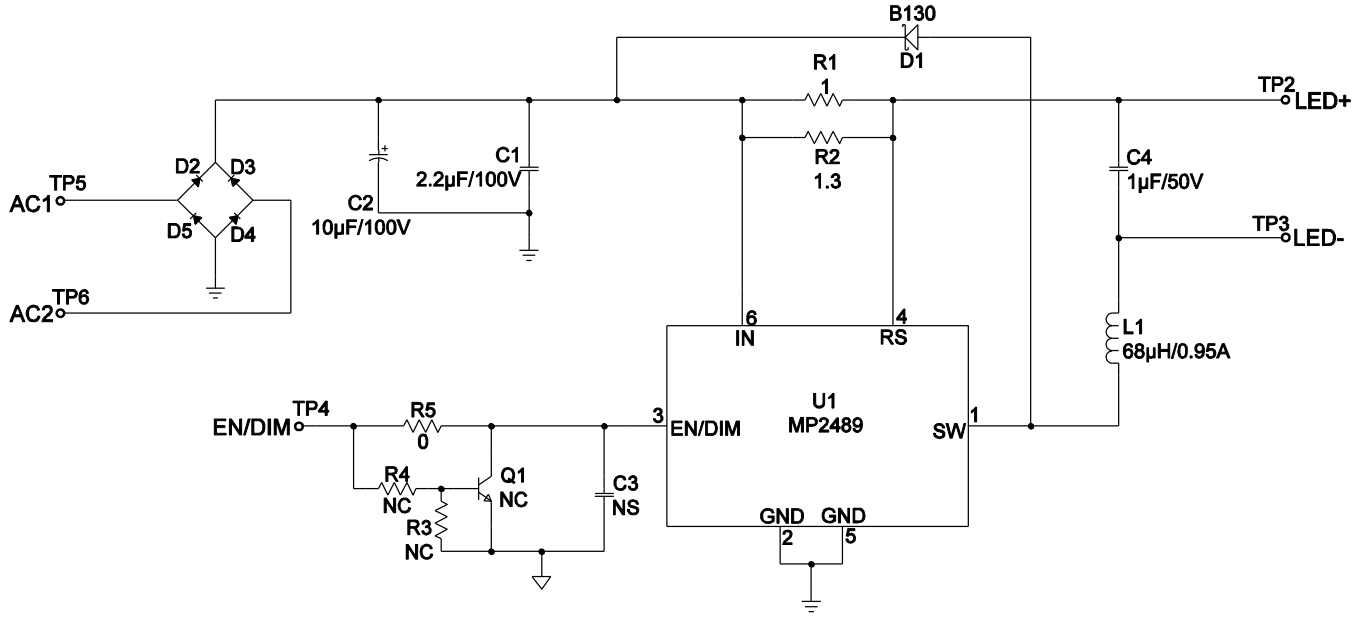


(2x 1.4 x 1) cm xcm x cm

Board Number	MPS IC Number
EV2489DQ-01A	MP2489DQ

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EVALUATION BOARD SCHEMATIC



EV2489DQ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	2.2µF	Ceramic Capacitor,50V,X7R	1210	muRata	GRM32ER71H225KA88L
1	C2	10µF	Electrolytic Capacitor,100V	DIP	Panasonic	10µF/100V
1	C3	1nF	Ceramic Capacitor,50V,COG	603	muRata	GRM188R71H102KA01D
1	C4	1µF	Ceramic Capacitor,50V,COG	1206	muRata	GRM31MR71H105KA88L
5	D1-D5	B140	Diode Schottky	SMA	Diodes Inc.	B140
1	L1	68µH	Inductor 0.95A	SMD	Wurth	744777168
1	R1	1Ω	0.01	805	Yageo	RC0805FR-07R5L
1	R2	1.3Ω	0.01	805	Yageo	RC0805FR-071R3L
1	R3	NC				
1	R4	NC				
1	R5	0Ω	0.05	603	Yageo	RC0603JR-070RL
1	Q1		NPN Transistor		On Semi	MMBT3904LT1
1	U1	MP2489DQ	MPS WLED Driver	QFN6	MPS	MP2489DQ-R1

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PRINTED CIRCUIT BOARD LAYOUT

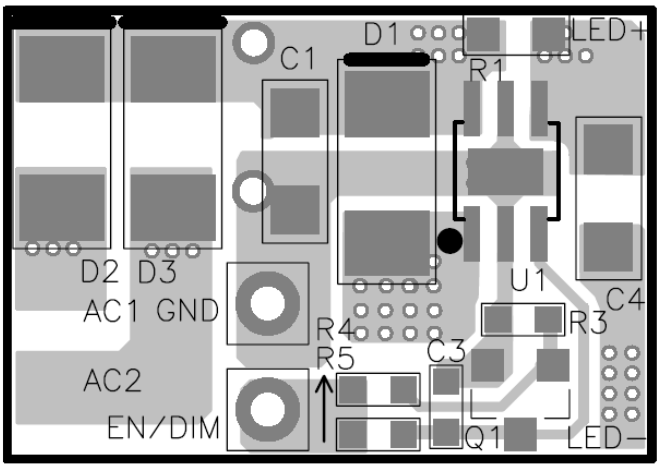


Figure 1—Top Layer

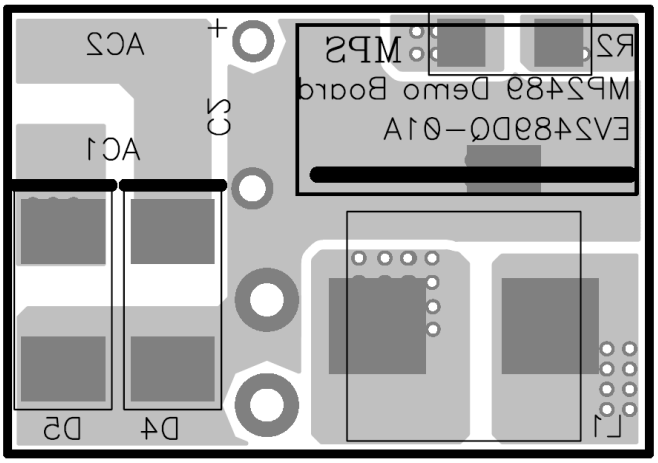


Figure 2—Bottom Layer

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QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the LED+ and LED- pins on the EV board, respectively.
2. Connect the positive and negative terminals of the 24V AC power supply to the AC1 and AC2. If apply a DC power supply, please connect + and – to AC1 and AC2. Turn the power supply on.
3. If PWM dimming is required, provide a 200Hz to 2kHz PWM signal to EN /DIM pin. Remove R5 and put a 10kΩ resistor on R3 and R4. If analog dimming is required, please open R4 and short R6, then provide 0.3-2.5V voltage directly to the EN/DIM pin.
4. The LED current is adjustable by set current sense resistor R1//R2.as below formula,

$$R1//R2=200mV/ILED$$

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