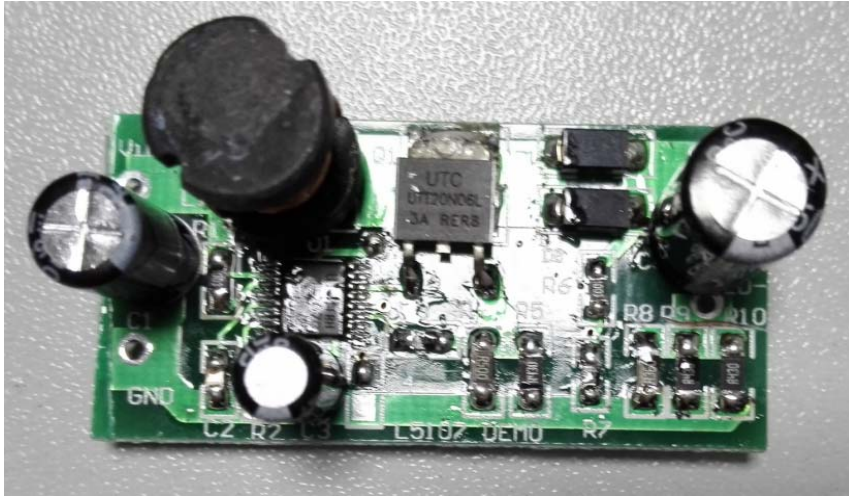




48W DC TO DC LED Driver Using L5107G



Subject

L5107G 48W / 1.6A LED Driver Demo Board Manual

Key features:

- DC Input Range 20V~28V
- DC-DC boost converter
- Efficiency >96.5%(@24V)
- Programmable switching frequency
- PWM Dimming
- Over Voltage Protection (OVP)
- Over temperature protection

Revision History

Revise Date	Version	Reason/Issue
2016/2/5	A	First Issue



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1. LED Driver Demo Board Specification

1.1. Input Characteristics

- DC input voltage rating 22V ~ 26V
- DC input voltage range 20V~ 28V

1.2. Output Characteristics

- Output voltage 26V~34V
- Typical output current 1.6A

1.3. Performance Specifications

- Maximum output power 48W
- Efficiency > 96.5%
- Current load regulation < $\pm 3\%$
- Current line regulation < $\pm 3\%$

1.4. Environment

- Operation Temperature 0°C to 40 °C
- Operation Humidity 20% to 90% R.H
- Storage Temperature -40°C to 60 °C
- Storage Humidity 0% to 90% R.H



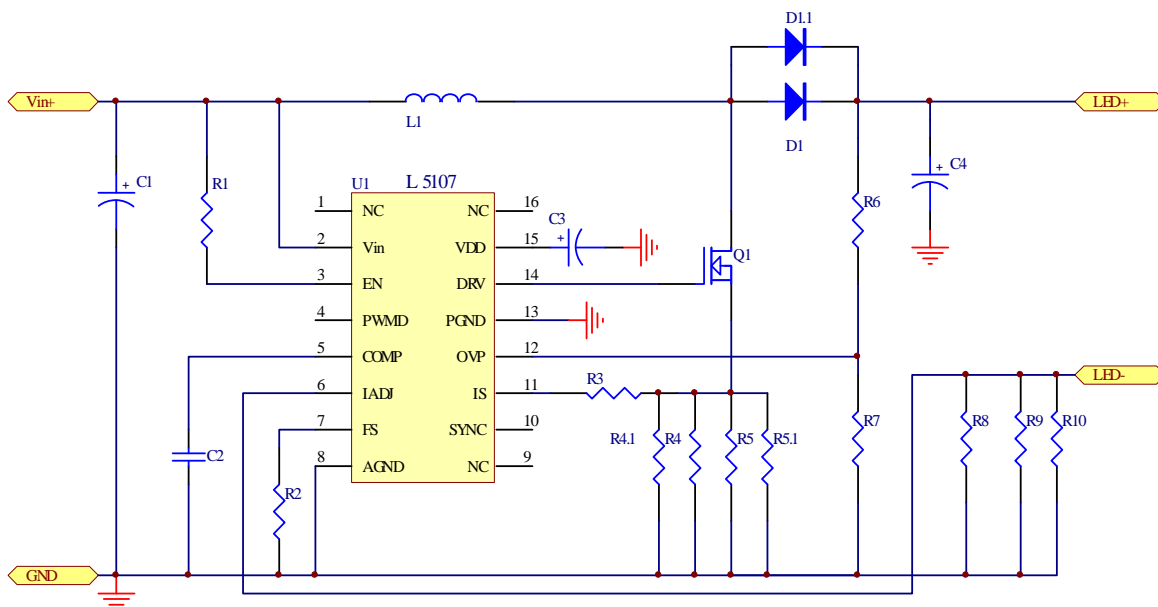
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2. LED Demo Board Information

2.1. Schematic



2.2. BOM

No.	Position	Description	Quantity
1	R1 R6	100KR,5%,0805	2
2	R2	18KR,5%,0805	1
3	R3	510R,5%,0805	1
4	R4/R4.1/R5	0.43R,1%,1206	3
5	R5.1	0.5R,1%,1206	1
6	R7	3.3KR,1%,0805	1
7	R8 R9	0.43R,1%,1206	2
8	R10	0.36R,1%,1206	1
9	C1	100uF,35V,105°, 5000H	1
10	C2	10nF/50V 10% 0805 X7R	1
11	C3	10uF,50V,105°, 5000H	1
12	C4	100uF,50V,105°, 5000H	1
13	L1	DR10*12 30uH φ0.55*25Ts	1
14	PCB	FR-4 44*21*1.6mm	1
15	D1 D1.1	UTC SK36,SMA	2
16	Q1	UTC 20N06,TO-252	1
17	U1	UTC L5107G,TSSOP-16	1



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3. Performance Evaluation

This document presented here is to describe the power module performance.

The measuring data are tested at the board end, unless otherwise specified.

The Summarized Result :

Item	Test result
1. Input Characteristics	
Efficiency (@24V)	96.50%
2. Output characteristics	
Maximum Output Power	48W
Output Typical Voltage	26V~34V
Output Typical Current	1.6A
Load Regulation	±0.3%
Current Line Regulation	±0.4%

Test Equipment:

Item	Vendor	Model No:
1.DC Source	GW INSTRON	APS-9501
2.Digital Power meter	EVERFINE	PF9810
3. Electronic Load	PRODIGIT	3302C
4.Digital Oscilloscope	Tektronics	DPO3012
5.Multi-meter	Keithley	2000
6.Thermal meter	鑫普元	XP300-16



48W DC TO DC LED Driver Using L5107

3.1. Input Characteristics

3.1.1. Input Current

Table 1 Input Current @ Full Load : Operation at Vout as 30V.

Input Voltage	Irms(A)
20V	1.594
22V	1.593
24V	1.593
26V	1.595
28V	1.603

3.1.2. Efficiency Operation at Full Load

Table 2 Efficiency :Operation at Vout as 30V.

Input Voltage	Efficiency(%)
20V	95.64
22V	96.10
24V	96.52
26V	96.65
28V	97.03

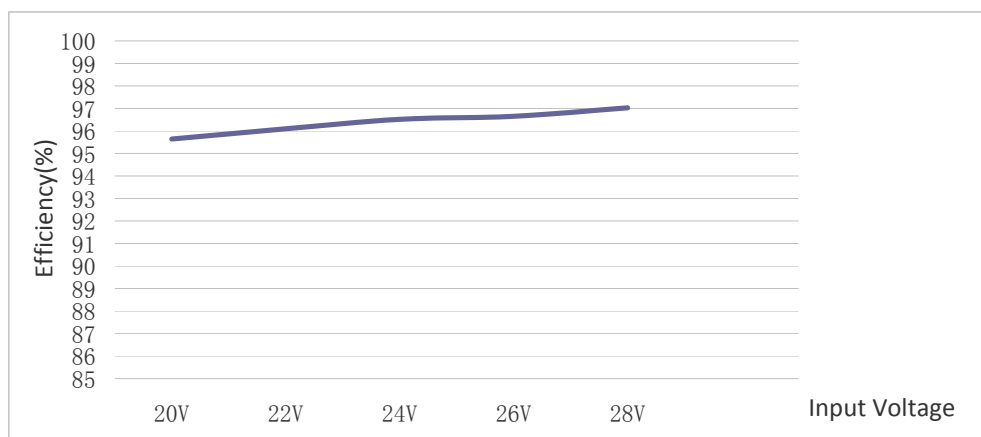


Fig.1 Efficiency V.S. Input Voltage



48W DC TO DC LED Driver Using L5107

3.2. Output Characteristics

3.2.1. Output Current Regulation

Table 3 Line Regulation and Load Regulation

Input Voltage(DC)	Output Current(A)			Load Regulation(%)	Spec	Result
	Vout=26V	Vout=30V	Vout=34V			
20V	1.589	1.594	1.600	± 0.3	<5%	PASS
22V	1.590	1.593	1.600	± 0.3		
24V	1.598	1.593	1.599	± 0.2		
26V	1.603	1.595	1.596	± 0.3		
28V		1.603	1.596	± 0.2		
Line Regulation(%)	± 0.4	± 0.3	± 0.2			

3.3. Thermal Testing

tested at 15X10X5cm Case temperature 30°C. Input 24V Output 30V 1.6A

Table 4 Thermal Testing

Input Voltage	Temperature Rise			
	L1	U1	Q1	D1
24V	63	75	73	80

