

Adaptive 100/120Hz Current Ripple Remover Max Input Current ≤1A

Parameters Subject to Change Without Notice

FEATURES

- Adaptive 100/120Hz current ripple remover
- Input voltage range 5V~60V
- Built-in 60V power MOSFET
- LED voltage low to 0.4V when LED current is 1.3A
- Programmable amplitude of LED current ripple
- Programmable maximum cathode voltage of LED
- Internal LED current limitation
- Short protection
- Hot plug protection
- Over temperature protection
- TO252-5L Package

APPLICATIONS

- LED Lighting

DESCRIPTION

EV1231_S0_R0 is used to remove the 100/120Hz current ripple on AC/DC power by a

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capacitor between VC and GND.

By sensing the LED pin voltage via a resistor divider, JW1230 allows user to setup the maximum cathode voltage of LED string. JW1230 provides voltage limit threshold and short threshold for protection. If the voltage on LED pin exceeds limit threshold, the current ripple removing function is blocked, which could help limit the power dissipation on the chip. It's considered that LED is shorted when LED voltage is higher than short threshold and remains over 0.5 second. The internal MOSFET shuts down when LED is shorted.

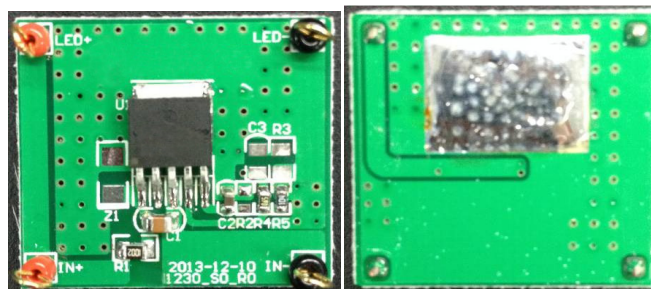
JW1230 also provides OPEN and HOT-PLUG protection. The maximum LED current is internally limited at 1.3A.

JW1230 provides over thermal protection. When OTP is triggered, the current removing function is blocked, and then the temperature decreases.

ELECTRICAL SPECIFICATIONS

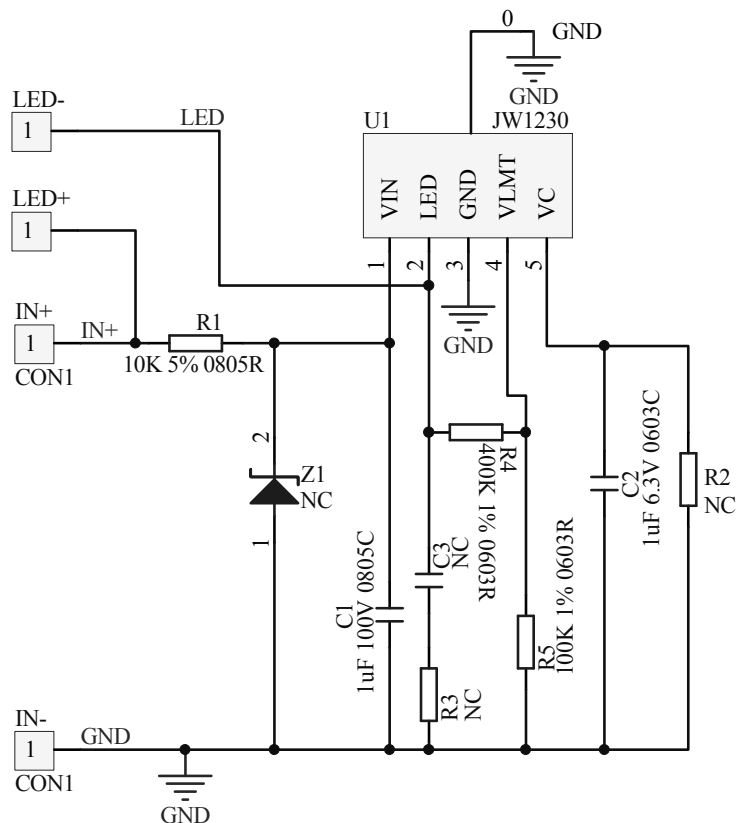
Parameter	Symbol	Value	Unit
Input voltage	VIN	5~55	V
Output voltage	VOUT	~55	V
Output current	IOUT	0.5~0.9	A

TYPICAL APPLICATION



SCHEMATIC

1. SCH-1#



BILL OF MATERIALS

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
	U1	JW1230	IC	TO-252-5L		JW1230
1	C1	1uF/100V	Capacitor	0805C		
1	C2	1uF/6.3V	Capacitor	0603C		
0	C3	NC	Capacitor	0603C		
0	Z1	NC(56V)	Zener	1206D		
1	R1	10K/5%	Resistor	0805R		
0	R2	NC	Resistor	0603R		
0	R3	NC	Resistor	0603R		
1	R4	400K/1%	Resistor	0603R		
1	R5	100K/1%	Resistor	0603R		

PRINTED CIRCUIT BOARD LAYOUT

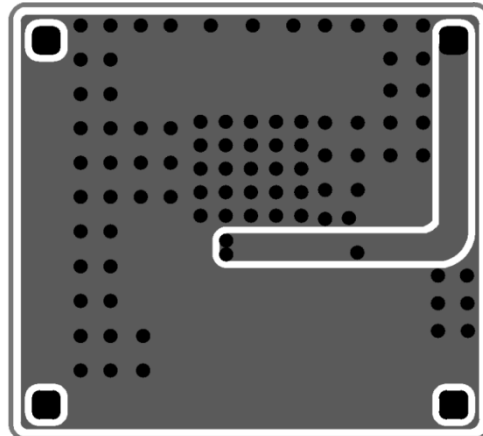
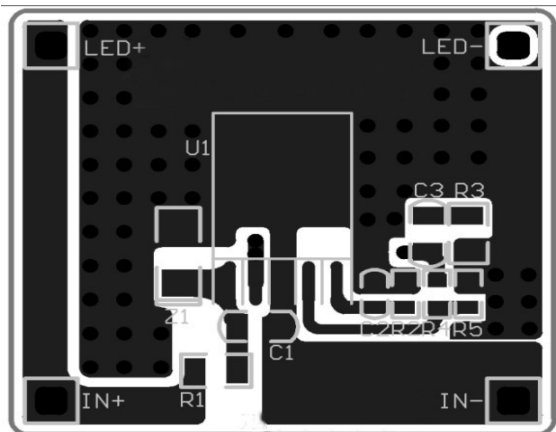


Figure2—Bottom Layer

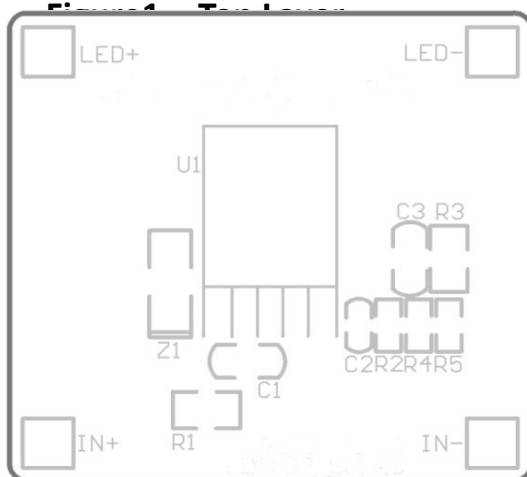


Figure3—Top Silk Layer

QUICK START

1. Connect the IN+ & IN- of the EVB to the output of the pre-driver and connect the positive terminal and negative terminal of the load to LED+&LED-, respectively.
2. Make sure the maximum output voltage of the pre-driver is less than 60V.
3. The load must be LEDs when you test the characteristics of the EVB.
4. Turn on the power supply of the pre-driver, the evaluation board starts operating in normal condition.
5. The output current ripple is adjustable by varying the C2 on the evaluation board.
6. For more information, please refer to the datasheet of JW1230.

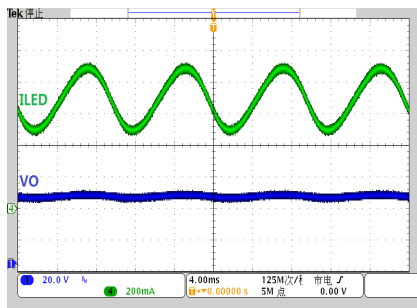
TYPICAL PERFORMANCE CHARACTERISTICS

Note: The pre-driver is JW1600 32W T8 program whose output specification is 42V/700mA and the output capacitances choose electrolytic capacitor 960uF. The V_O noted in the figure below refers to the pre-driver output voltage, I_{LED} refers to the output current, V_C refers to the JW1230 VC pin voltage and V_{LED-} refers to the JW1230 LED pin voltage.

Pre-driver output current

(VIN=220V, Io=700mA, Vo=42V, electrolytic capacitor 960uF/63V)

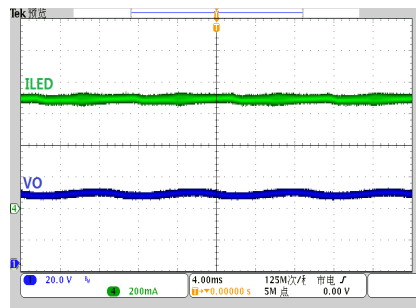
current ripple:448mA,64%



Output current adding JW1230

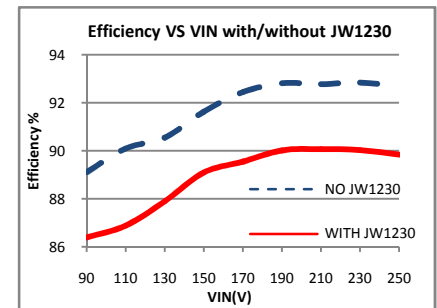
(VIN=220V, Io=700mA, Vo=42V, electrolytic capacitor 960uF/63V)

current ripple:18mA,4%

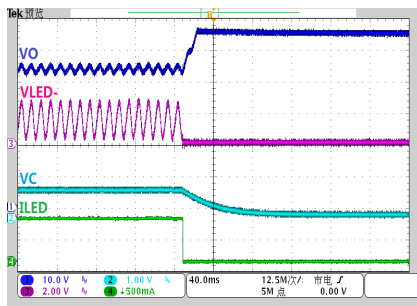


System Efficiency comparison with or without JW1230

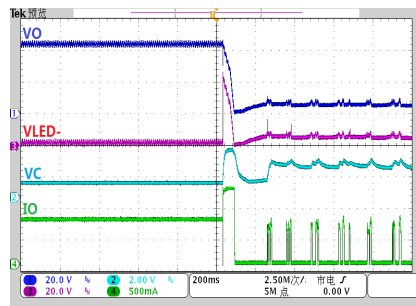
(VIN=220V, Io=700mA, Vo=42V, electrolytic capacitor 960uF/63V)



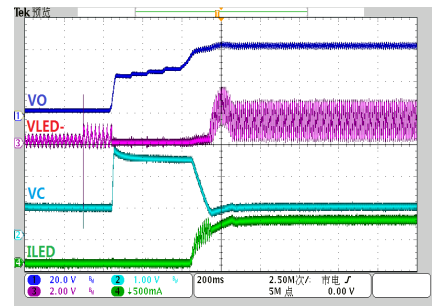
Output Open test



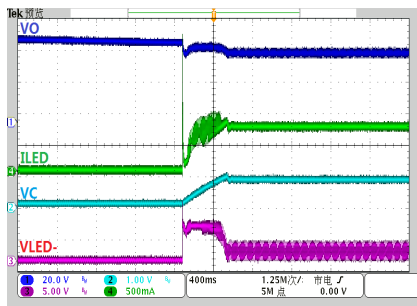
Output Short test



Start up



LED hot plug test



Continuous power on/off test

