

Parameters Subject to Change Without Notice

FEATURES

- Scalable Adaptive 100/120Hz Current Ripple Remover
- 5V~60V Input Voltage
- Built-in LED Driving MOSFET
- LED Voltage Low to 0.65V @ 0.25A
- Programmable LED Current Ripple
- Programmable maximum LED Voltage
- Over thermal protection
- eSOP8 and TO220-5Lpackage

APPLICATIONS

- LED Lighting

DESCRIPTION

JW1210 ballasts for one string of 60V lighting LEDs and removes the 100/120Hz current ripple on AC/DC power by a capacitor between VC and GND.

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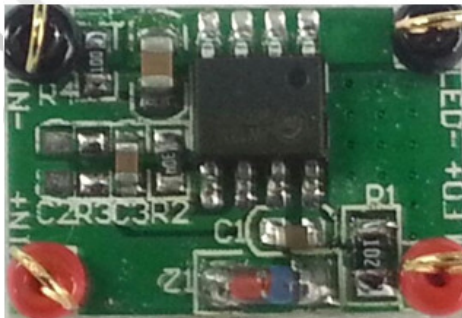
JW1210 allows user to setup the maximum voltage on LED pin by connect a resistor between VLMT and GND. If the voltage on LED pin exceeds limit threshold, the current ripple remover will be disabled and remain the LED voltage, which could help limiting the power dissipation on chip.

Multiple JW1210s can operate in parallel by shorting all VC PINs together. The average current matching rate between each JW1210s is less than $\pm 1\%$. The maximum LED current is internally limited as 440mA. JW1210 provides thermal protection.

ELECTRICAL SPECIFICATIONS

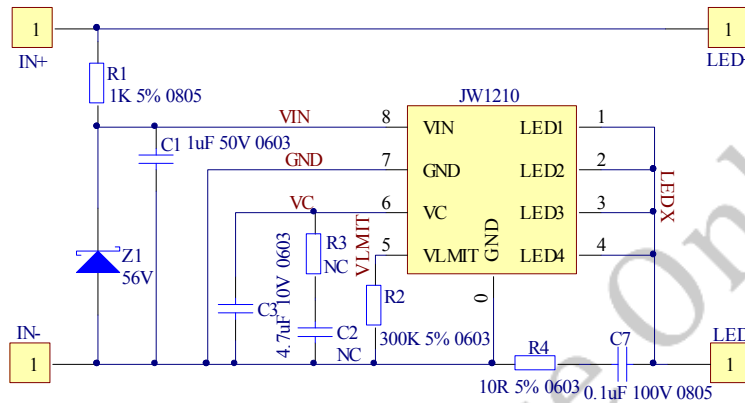
Parameter	Symbol	Value	Unit
Input voltage	VIN	5~60	V
Output voltage	VOUT	~55	V
Output current	IOUT	0~0.35	A

TYPICAL APPLICATION



SCHEMATIC

1. SCH-1#



BILL OF MATERIALS

Qty	Designator	Comment	Description	Package	Manufacturer	Manufacturer P/N
1		JW1210	IC	SOP8-P	Joulwatt	JW1210
1	C1	1uF	Capacitor;50V,X7R	0603C	SAMSUNG	CL10B105KB8NNNC
0	C2	NC	Capacitor	0603C	NC	NC
1	C3	4.7uF	Capacitor;10V,X7R	0603C	SAMSUNG	CL10B475KP8NNNC
1	C7	0.1uF	Capacitor;100V,X7R	0805C	SAMSUNG	CL21B104KCF5FNE
1	R1	1K	Resistor;5%	0805R	Uniohm	0805S8J0102T5E
1	R2	300K	Resistor;5%	0603R	Uniohm	0603SAJ0304T5E
0	R3	NC	Resistor	0603R	NC	NC
1	R4	10R	Resistor;5%	0603R	Uniohm	0603SAJ0100T5E
1	Z1	56V	Zener	MINI-MELF	ST	

PRINTED CIRCUIT BOARD LAYOUT

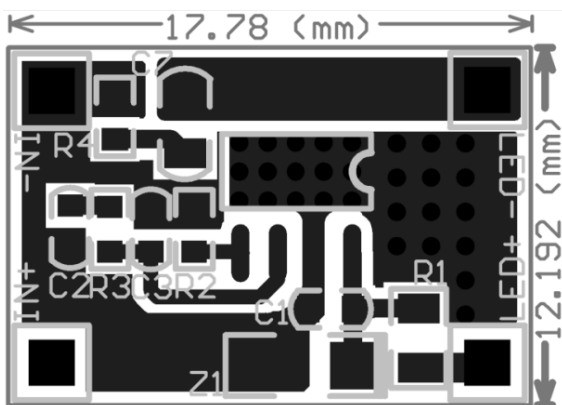


Figure1—Top Layer

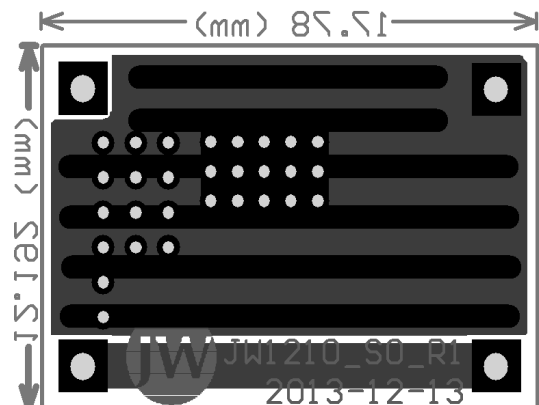


Figure2—Bottom Layer

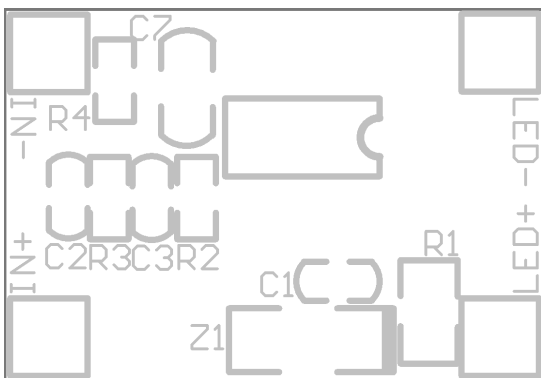


Figure3—Top Silk Layer

QUICK START GUIDE

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 C3 on the evaluation board.
6. The resistor R2 connected between VLMT and GND can set the limit value of LED voltage. The limit threshold is calculated as below: $V_{LIMIT} = R_{LMT} * 16 * 10^{-6} V$.
7. For more information, please refer to the datasheet of JW1210.

TYPICAL PERFORMANCE CHARACTERISTICS

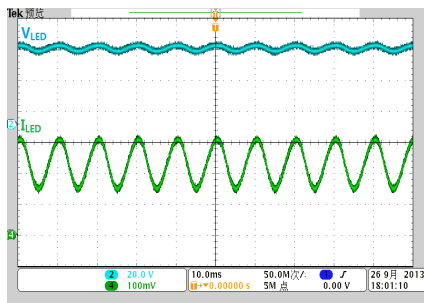
Note: The pre-driver is JW1600 12W T8 program whose output specification is 50V/240mA and the output capacitance chooses electrolytic capacitor 100uF/100V * 2. The Vo noted in the figure below refers to pre-driver output voltage, Io refers to the output current, VC refers to JW1210 VC PIN voltage and VLEDX is JW1210 LEDX PIN voltage.

Pre-driver output current

(VIN=220V, Io=250mA, Vo=50V, electrolytic capacitor

100uF/100V*2) current

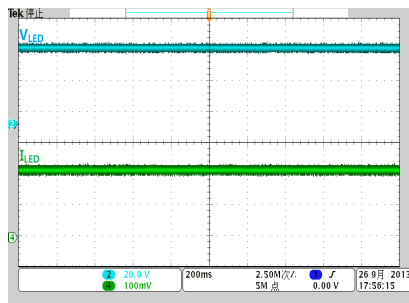
ripple: 179mA, 71.6%



System with JW1210 output current

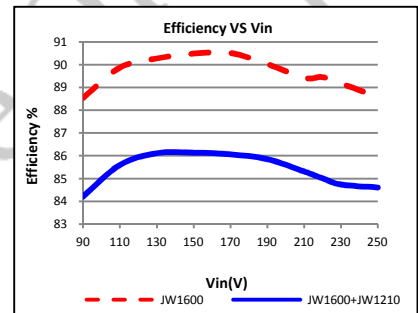
(VC=4.7uF//1M, VLMT=300K)

Current ripple 4mA, 1.6%

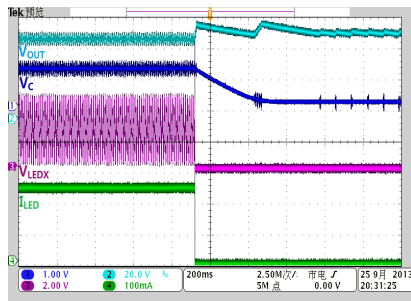


Efficiency comparison

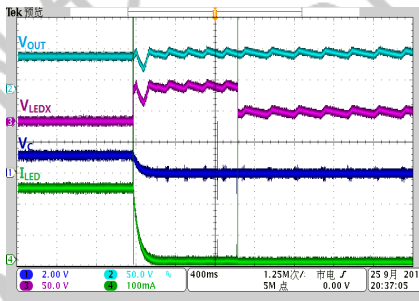
(JW1600&JW1600+JW1210)



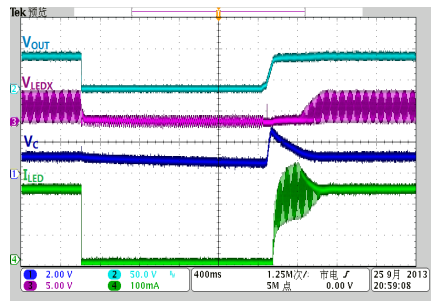
Open circuit test



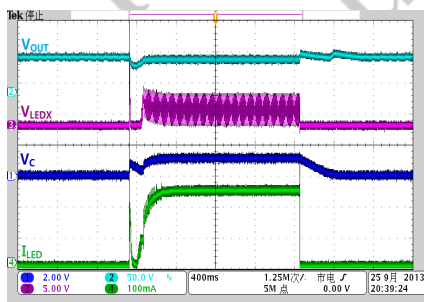
Output short test



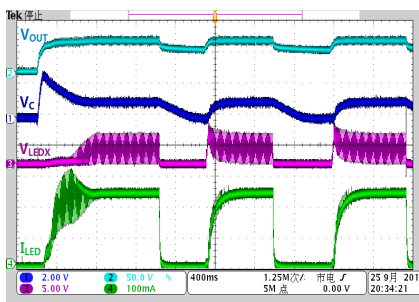
Electrolytic capacitor short test



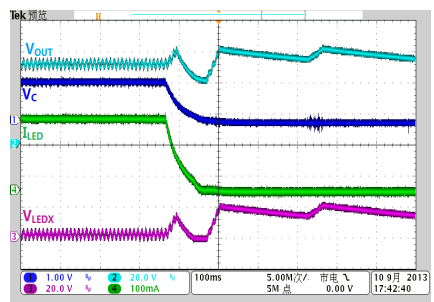
LED hot plug test



Continuous power on/off test



Thermal test



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