

Parameters Subject to Change Without Notice

DESCRIPTION

JW[®]19818C is a single channel linear LED driver with 500V MOSFET integrated, and the output current is set by the external resistor. Patented current control strategy ensures high output current accuracy while the system is simple with few external components and very low BOM cost.

JW19818C provides over temperature protection. When temperature inside chip exceeds OTP_{CHIP} , JW19818C decreases LED current, which can help chip cooling.

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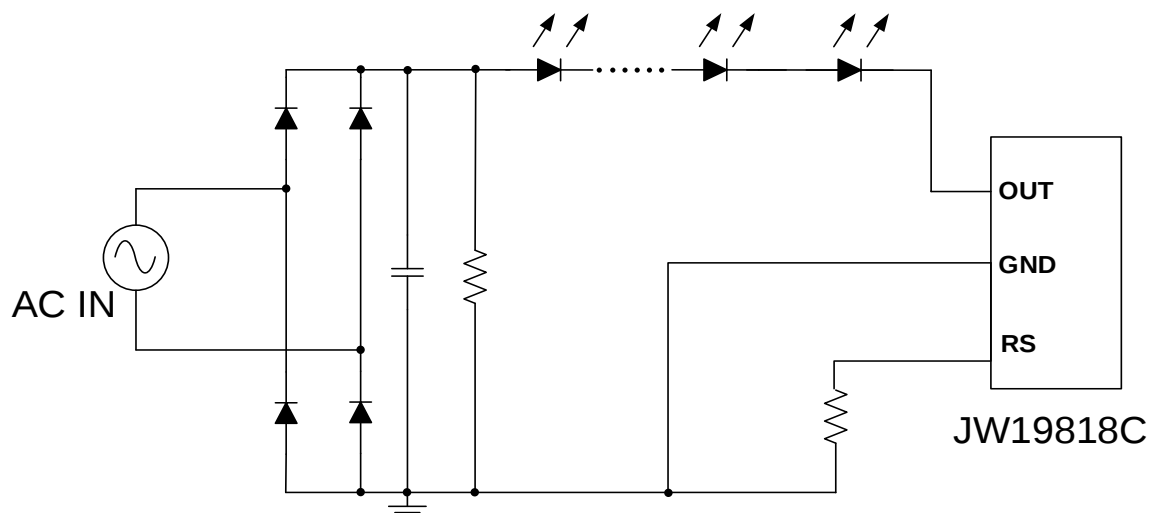
FEATURES

- High-accuracy output current.
- Over temperature protection.
- No EMI issues.
- Low BOM cost.
- ESOP-8 packages

APPLICATIONS

- T5/T8 Series LED Lighting
- LED Bulb Lamp, Floor Lamp

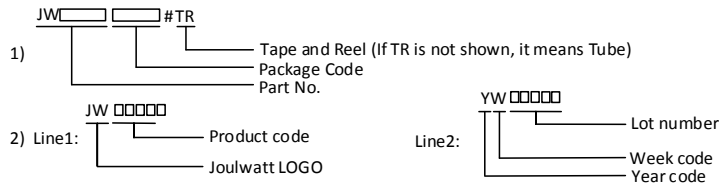
TYPICAL APPLICATION



ORDER INFORMATION

DEVICE ¹⁾	PACKAGE	TOP MARKING ²⁾	ENVIRONMENTAL ³⁾
JW19818CESOP#TR	ESOP8	JW19818C YW□□□□□	Green

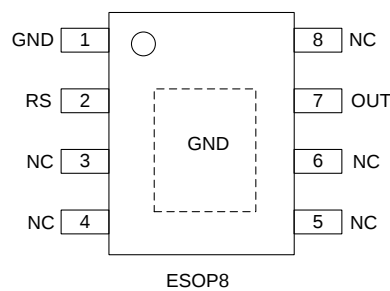
Notes:



3) All Joulwatt products are packaged with Pb-free and Halogen-free materials and compliant to RoHS standards.

PIN CONFIGURATION

TOP VIEW

ABSOLUTE MAXIMUM RATING¹⁾

OUT.....	500V
RS.....	-0.3V to 7V
$I_{out_max@ Ta= 25\text{ }^{\circ}\text{C}}$	100mA
Junction Temperature ²⁾³⁾	150°C
Lead Temperature	260°C
Storage Temperature	-65°C to +150°C

RECOMMENDED OPERATING CONDITIONS

OUT.....	8.5V~400V
Junction Temperature (T_J)	-40°C to 125°C
$I_{out@220Vac}$	<40mA
$I_{out@110Vac}$	<60mA

THERMAL PERFORMANCE⁴⁾

	θ_{JA}	θ_{JC}
ESOP8.....	50.....	10°C/W

Note:

- 1) Exceeding these ratings may damage the device. These stress ratings do not imply function operation of the device at any other conditions beyond those indicated under RECOMMENDED OPERATING CONDITIONS.
- 2) The JW19818C includes thermal protection that is intended to protect the device in overload conditions. Continuous operation over the specified absolute maximum operating junction temperature may damage the device.
- 3) The device is not guaranteed to function outside of its operating conditions.
- 4) Measured on JESD51-7, 4-layer PCB.

ELECTRICAL CHARACTERISTICS

<i>T_a = 25 °C, unless otherwise stated.</i>						
Item	Symbol	Condition	Min.	Typ.	Max.	Unit.
OUT Minimum Input Voltage	V _{out_min}	I _{OUT} =30mA		7		V
OUT Maximum Voltage	V _{out_BV}	I _{OUT} =0mA	500	540		V
Quiescent Current	I _Q	V _{OUT} =40V, V _{RS} =1V	60	96	140	μA
Reference Voltage	V _{REF}	V _{OUT} =10V	580	600	620	mV
Thermal Protection Threshold ⁵⁾	OTP _{CHIP}			150		°C

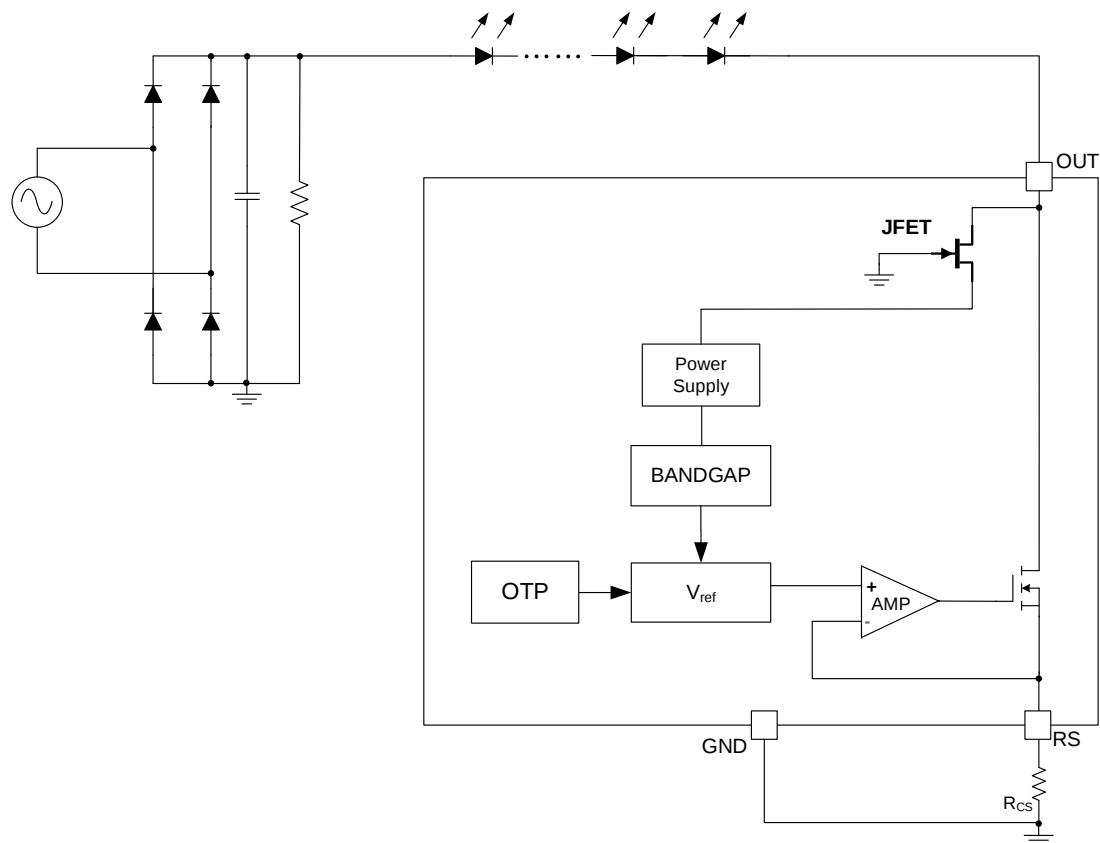
Note

5) Guaranteed by design

PIN DESCRIPTION

Pin ESOP-8	Name	Description
1	OUT	The power supply and constant current output
2	GND	Chip ground
3	RS	LED current setup pin

BLOCK DIAGRAM

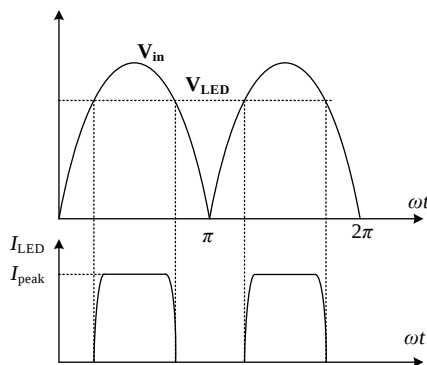


FUNCTIONAL DESCRIPTION

JW19818C is a single channel Linear LED driver for direct line operation.

Theory of Operation

Input power is the rectified voltage from AC line by bridge rectifier. When V_{IN} is higher than the forward voltage of the LEDs, the current of LEDs begins to increase, and I_{LED} reaches its maximum value when the voltage of the OUT pin is higher than V_{out_min} .



Constant peak current control

JW19818C controls the LED peak current from the information of the current sensing resistor. The output LED peak current can be calculated as:

$$I_{peak} = V_{REF}/R_{CS}$$

Where

V_{REF} is the reference voltage;

R_{CS} is the current sensing resistor connected between RS and chip ground.

Over Temperature Protection

When the junction temperature of JW19818C is higher than OTP_{CHIP} , LED current reduces.

PCB Design Guideline

The distance between high voltage wire and low voltage wire (including the RS pin and its peripheral components) should be more than 1mm/200V.

REFERENCE DESIGN

This reference design is suitable for 5W non-isolated LED driver, using JW19818C, with few external components.

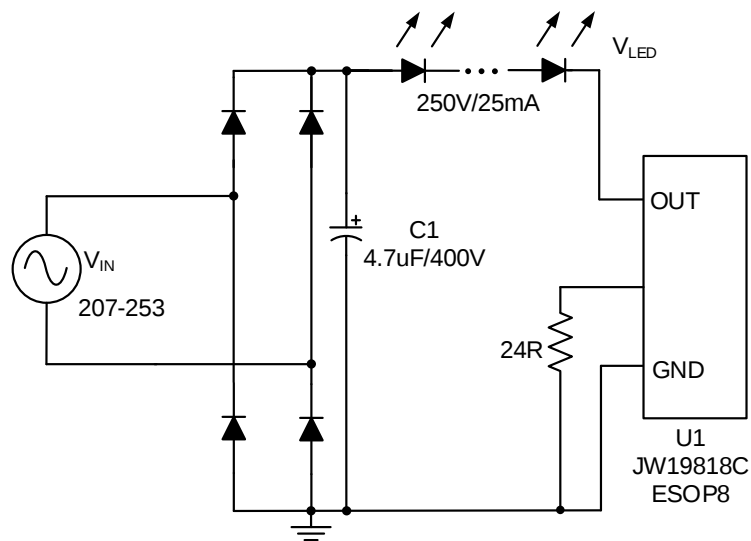
Reference 1:

V_{IN} : 207VAC~253VAC

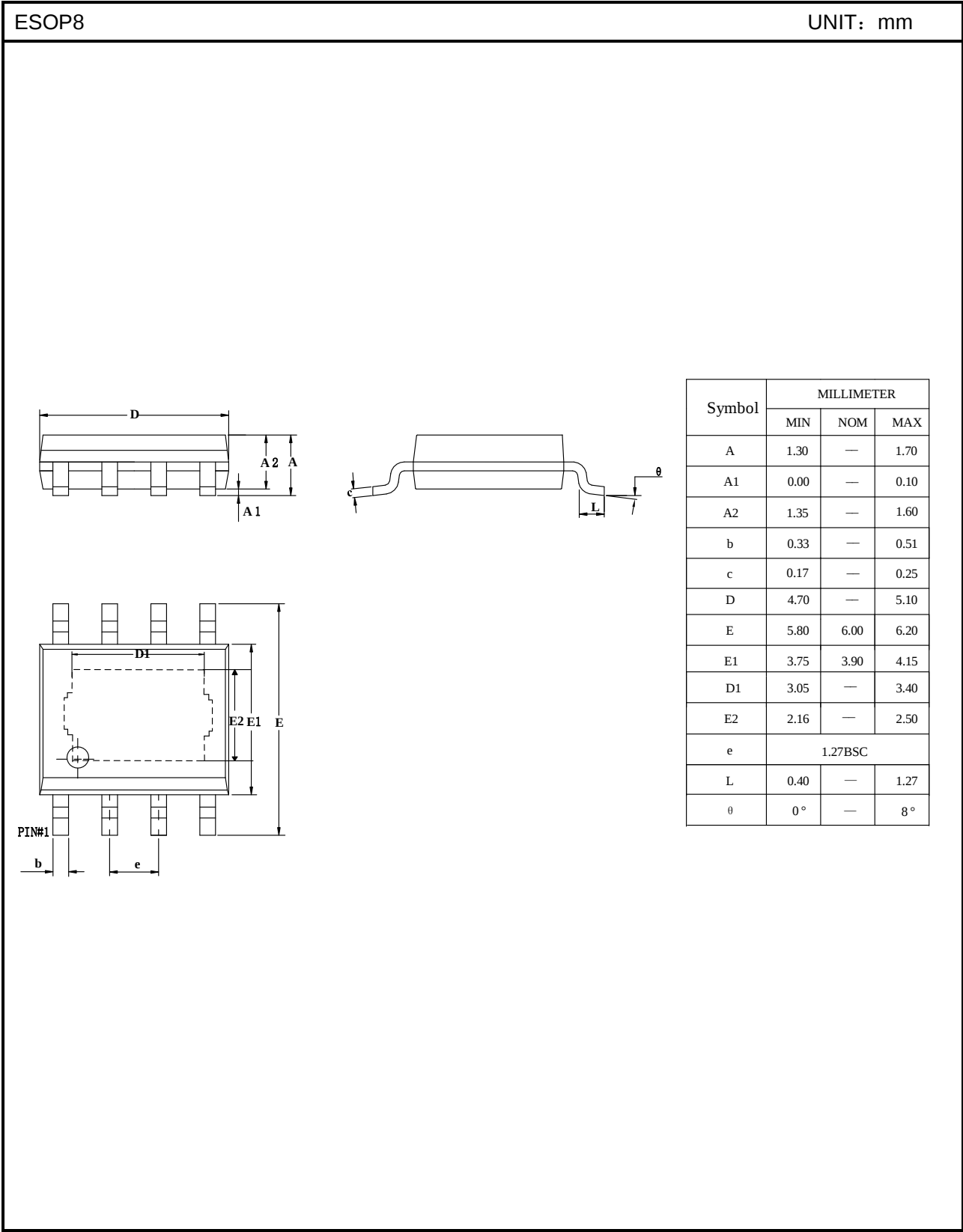
V_{OUT} : 250V

I_{OUT} : 25mA

PF: >0.5



PACKAGE OUTLINE



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