

*Parameters Subject to Change Without Notice*

### DESCRIPTION

JW<sup>®</sup>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.

Company's Logo is Protected, "JW" and "JOULWATT" are Registered Trademarks of JoulWatt technology Inc.

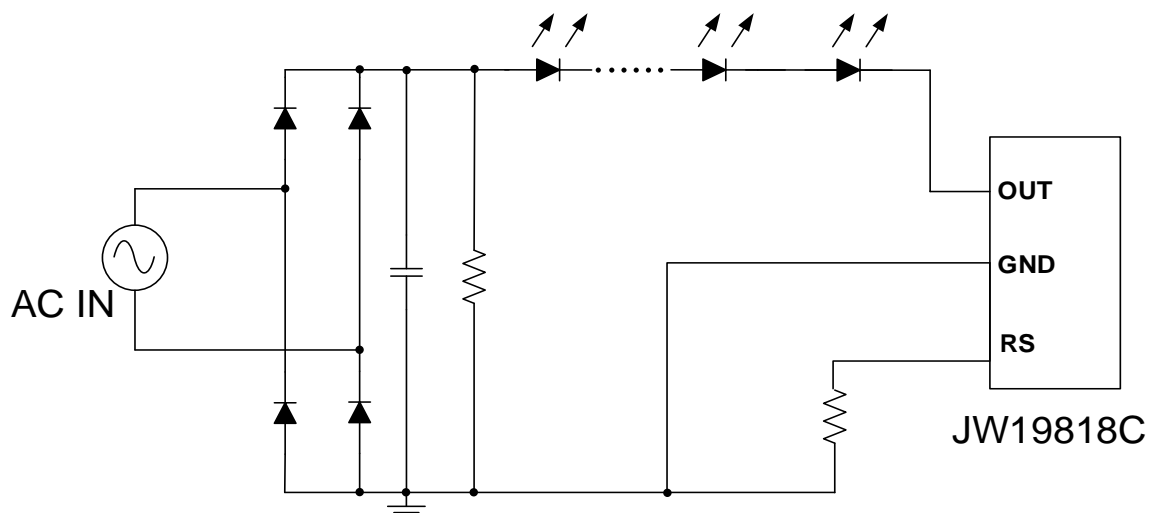
### FEATURES

- 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

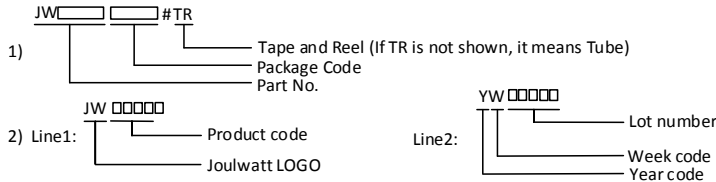
### TYPICAL APPLICATION



**ORDER INFORMATION**

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

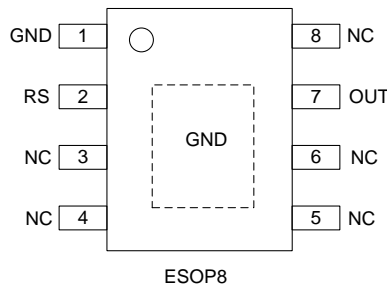
**Notes:**



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

**PIN CONFIGURATION**

**TOP VIEW**



**ABSOLUTE MAXIMUM RATING<sup>1)</sup>**

OUT.....	500V
RS.....	-0.3V to 7V
I <sub>out_max</sub> @ Ta= 25 °C.....	100mA
Junction Temperature <sup>2)3)</sup> .....	150°C
Lead Temperature .....	260°C
Storage Temperature .....	-65°C to +150°C

**RECOMMENDED OPERATING CONDITIONS**

OUT.....	8.5V~400V
Junction Temperature (T <sub>J</sub> ) .....	-40°C to 125°C
I <sub>out</sub> @220Vac.....	<40mA
I <sub>out</sub> @110Vac.....	<60mA

**THERMAL PERFORMANCE<sup>4)</sup>**

	$\theta_{JA}$	$\theta_{JC}$
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 CHARATERISTICS**

*T<sub>a</sub> = 25 °C, unless otherwise stated.*

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

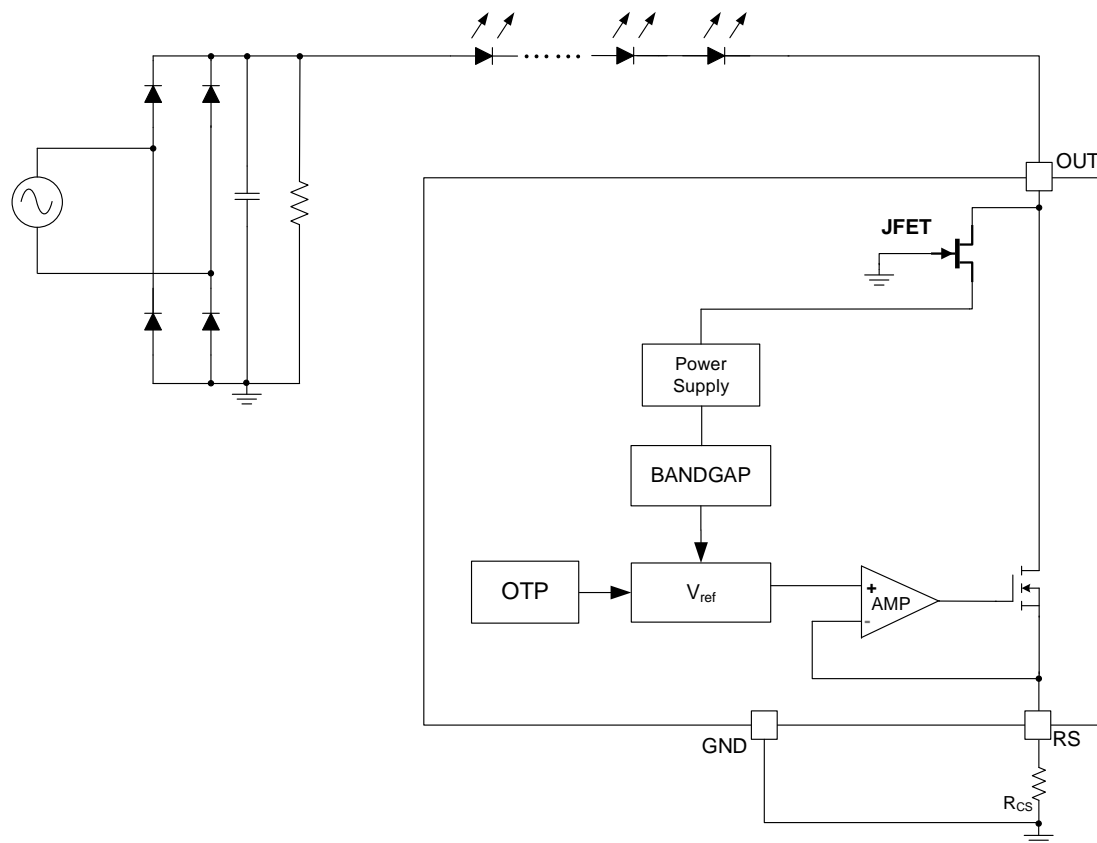
**Note**

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**

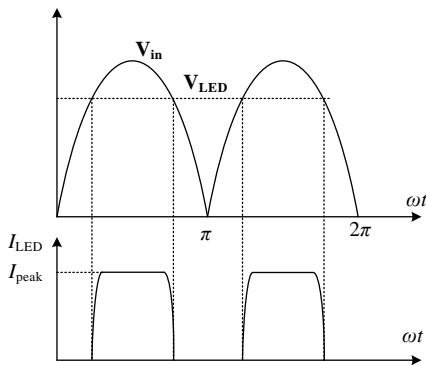


**FUNCTIONAL DESCRIPTION**

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.

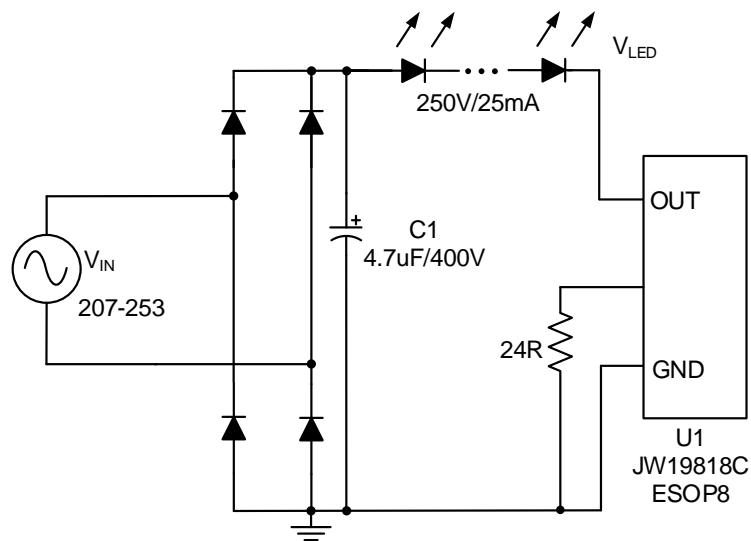
**Reference 1:**

$V_{IN}$ : 207VAC~253VAC

$V_{OUT}$ : 250V

$I_{OUT}$ : 25mA

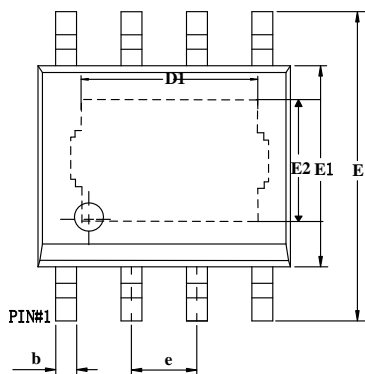
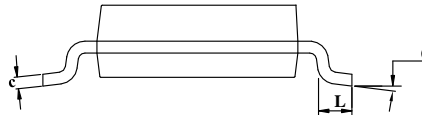
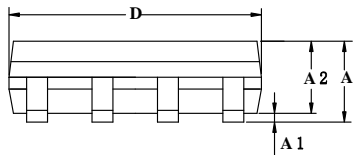
PF: >0.5



PACKAGE OUTLINE

ESOP8

UNIT: mm



Symbol	MILLIMETER		
	MIN	NOM	MAX
A	1.30	—	1.70
A1	0.00	—	0.10
A2	1.35	—	1.60
b	0.33	—	0.51
c	0.17	—	0.25
D	4.70	—	5.10
E	5.80	6.00	6.20
E1	3.75	3.90	4.15
D1	3.05	—	3.40
E2	2.16	—	2.50
e	1.27BSC		
L	0.40	—	1.27
theta	0°	—	8°



**IMPORTANT NOTICE**

- Joulwatt Technology Inc. reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein.
- Any unauthorized redistribution or copy of this document for any purpose is strictly forbidden.
- Joulwatt Technology Inc. does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.

*Copyright © 2020 JW19818C Incorporated.*

*All rights are reserved by Joulwatt Technology Inc.*