Constant Power Linear LED Driver ME8628

Description

ME8628 is a constant power linear LED driver IC. The output current range is 5~110mA. Output current and voltage compensation degree can be adjusted by external resistor. The voltage compensation function can make output current decrease when input voltage increase, so as to achieve nearly constant power. The device also has temperature protection function which can reduce output current when junction temperature is higher than protection threshold.

Features

- Integrate 500V LDMOS.
- Output current adjustable via external resistor.
- Voltage compensation of output current, which is adjustable via external resistor.
- Temperature regulation of output current.

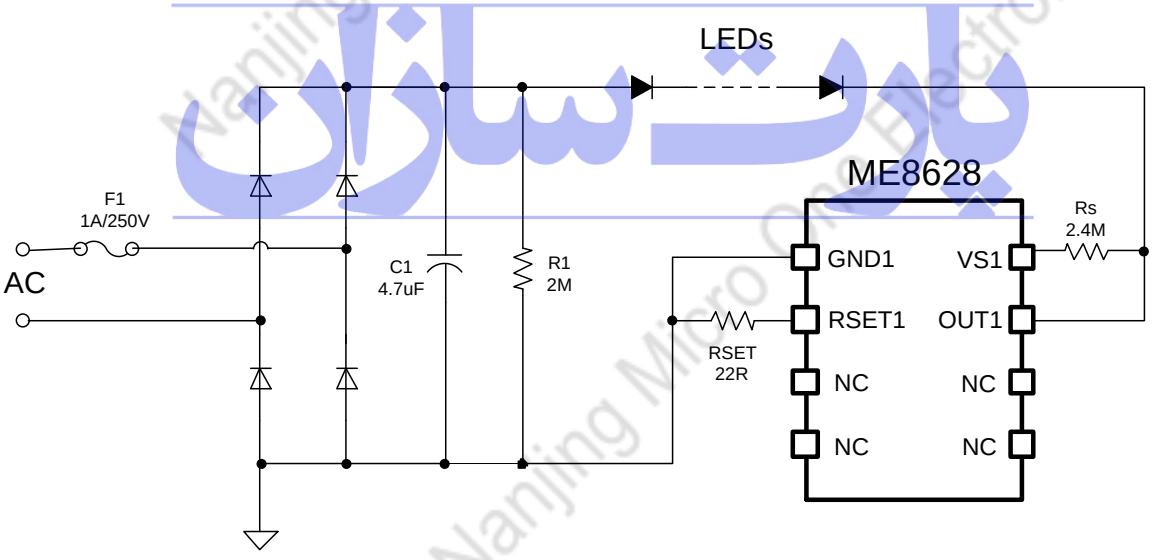
Applications

- LED bulb, LED tube, LED filament lamp.
- Linear LED driving.

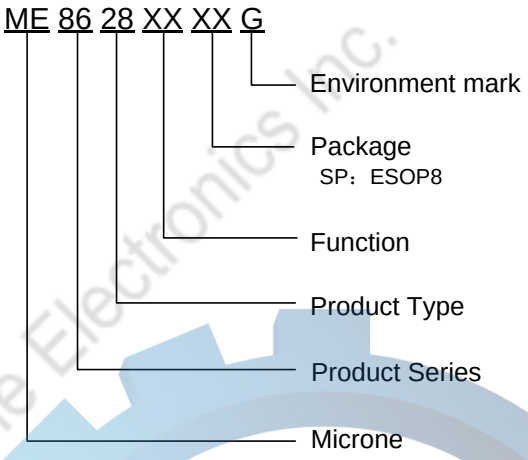
Package

- 8-pin ESOP8

Typical Application Circuit

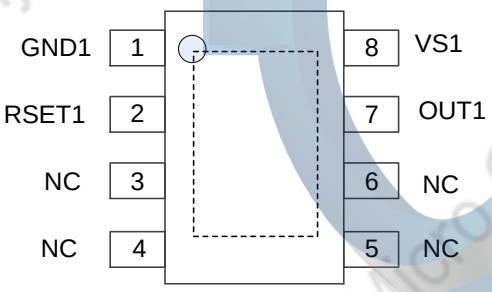


Selection Guide

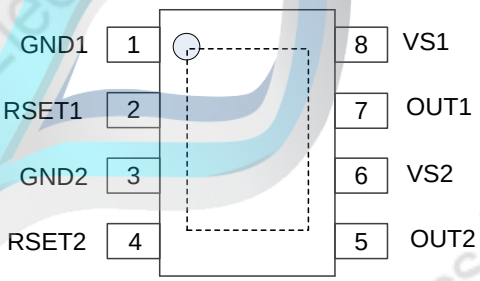


Part Number	Description
ME8628ADSPG	Temperature regulation threshold 150℃；Package： ESOP8(single die).
ME8628ASPG	Temperature regulation threshold 150℃；Package： ESOP8 (double dies).

Pin Configuration



ESOP8（single die）



ESOP8（double dies）

Pin Assignment

ESOP8（single die）	ESOP8（double dies）	Symbol	Description
1	1	GND1	Chip ground, connected to rectifier bridge negative terminal.
2	2	RSET1	Output current setting pin, connect resistor to ground.
3、4、5、6	-	NC	No connection.
7	7	OUT1	Output current pin, connect to LED cathode.
8	8	VS1	Voltage sense pin, connect resistor to OUT1 to adjust voltage compensation degree.
-	3	GND2	Chip ground, connected to rectifier bridge negative terminal
-	4	RSET2	Output current setting pin, connect resistor to ground.
-	5	OUT2	Output current pin, connect to LED cathode.
-	6	VS2	Voltage sense pin, connect resistor to OUT2 to adjust voltage compensation degree.

Block Diagram

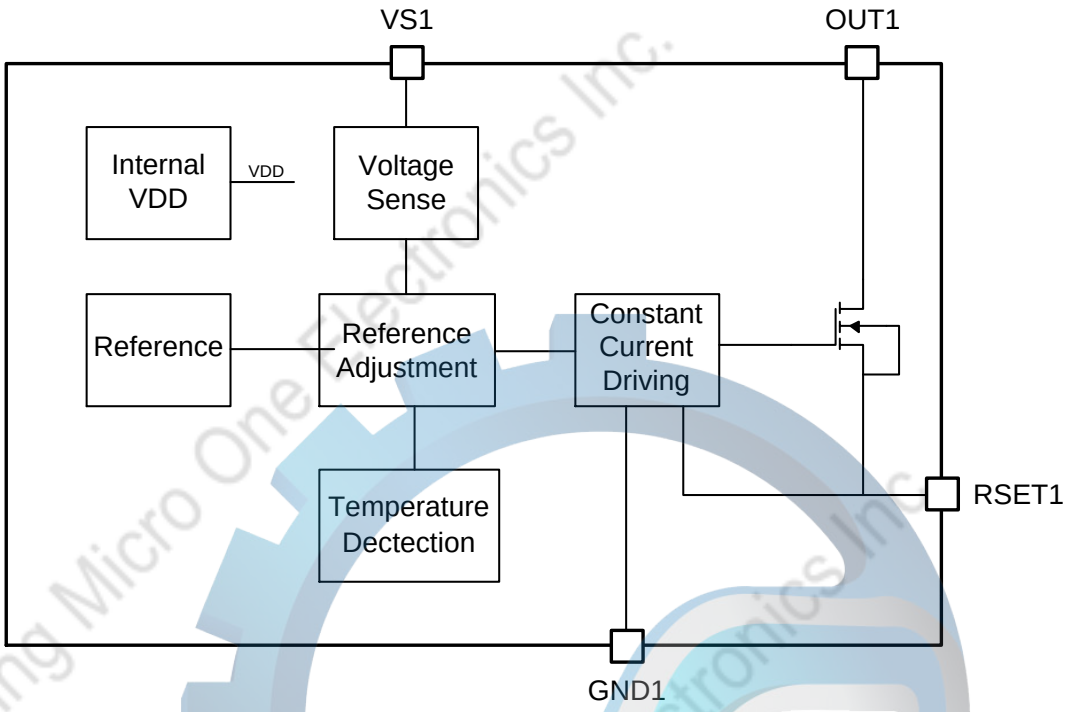


Figure.1 ME8628 Internal block diagram

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
OUT1voltage	V_{OUT1}	-0.5 ~ 500	V
VS1voltage	V_{VS1}	-0.5 ~ 7	V
RSET1voltage	V_{RSET1}	-0.5 ~ 7	V
Operation ambient temperature	T_A	-40 ~ +85	ºC
Junction temperature	T_J	-40 ~ +150	ºC
Storage temperature	T_{STG}	-55 ~ +150	ºC
Soldering temperature （within 5 seconds）	T_{LEAD}	260	ºC
Power dissipation(ESOP8)	P_D	1.98	W
Thermal resistance (junction to air）(ESOP8)	θ_{JA}	63	ºC /W

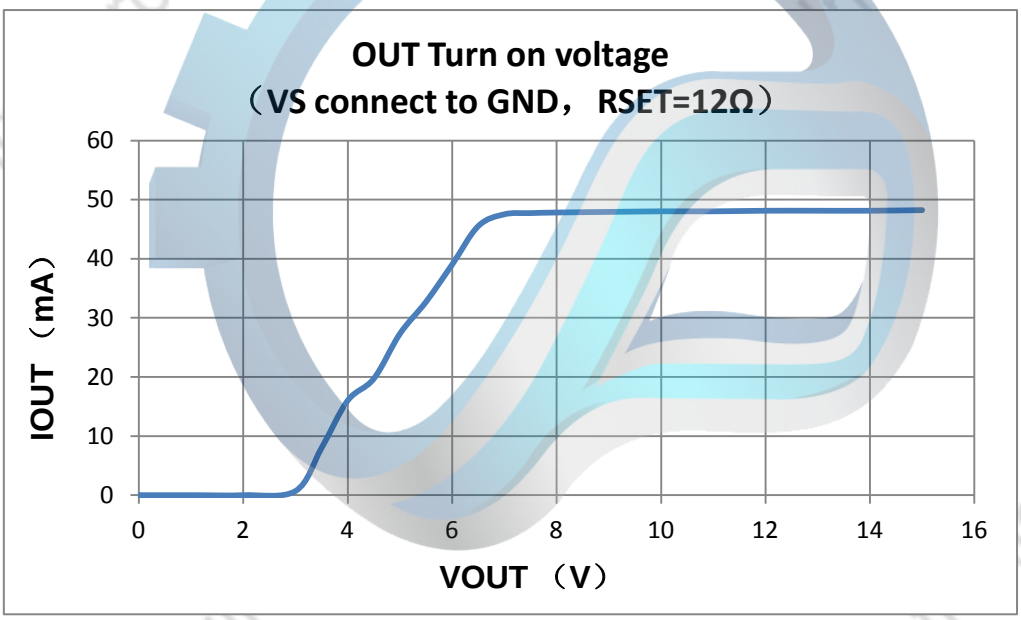
Caution：Exceeding these ratings may damage the device.

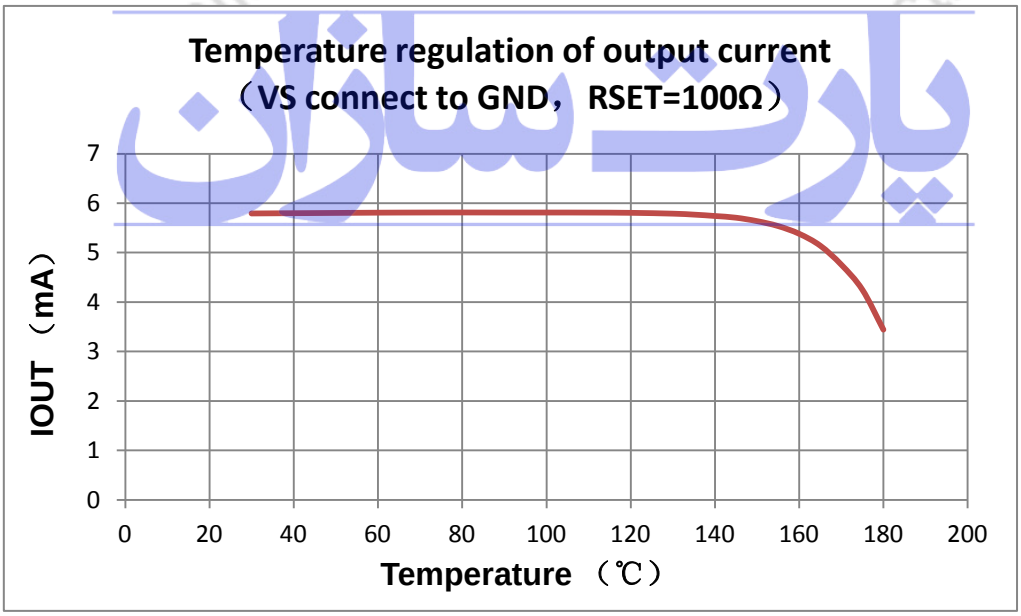
Electrical Characteristics

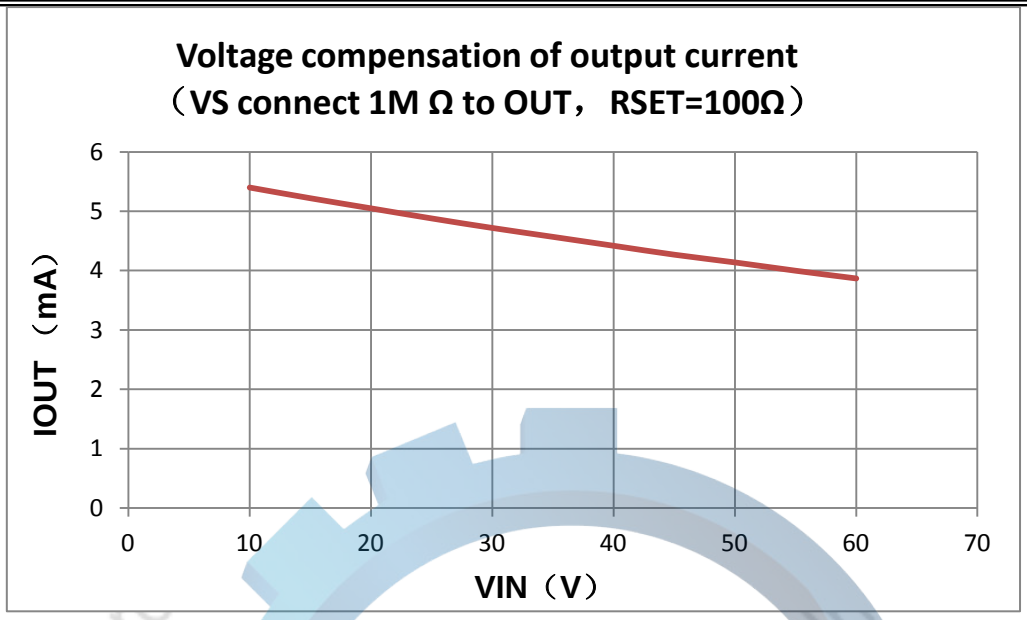
（Ta=25℃,Unless otherwise noticed）

Parameter	Condition	Min.	Typ.	Max.	Unit
Turn on voltage	OUT1 voltage when output current reach to 95% of setting value.	-	6.5	-	V
Quiescent current	RSET floating，V_{OUT1}=20V	-	17	-	uA
Reference voltage	RSET reference voltage	0.55	0.58	0.61	V
Output current	V_{OUT1}=15V	5	-	110	mA
Temperature regulation threshold	Junction temperature when output current decrease to 95% of setting value.	-	150	-	ºC
OUT1_BV	OUT1 breakdown voltage.	500	-	-	V

Typical Performance



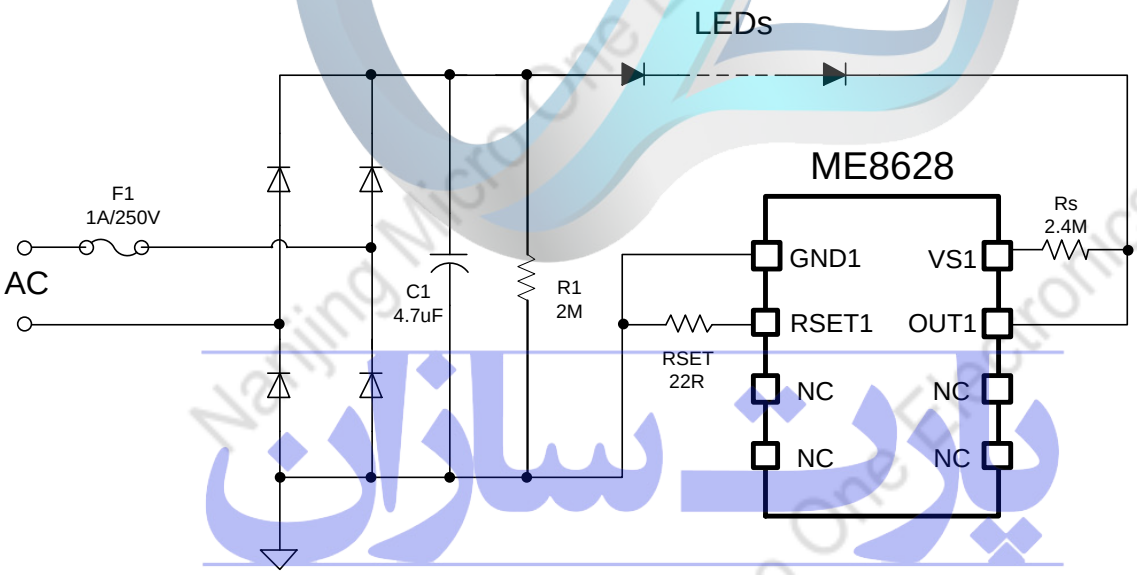




Typical application

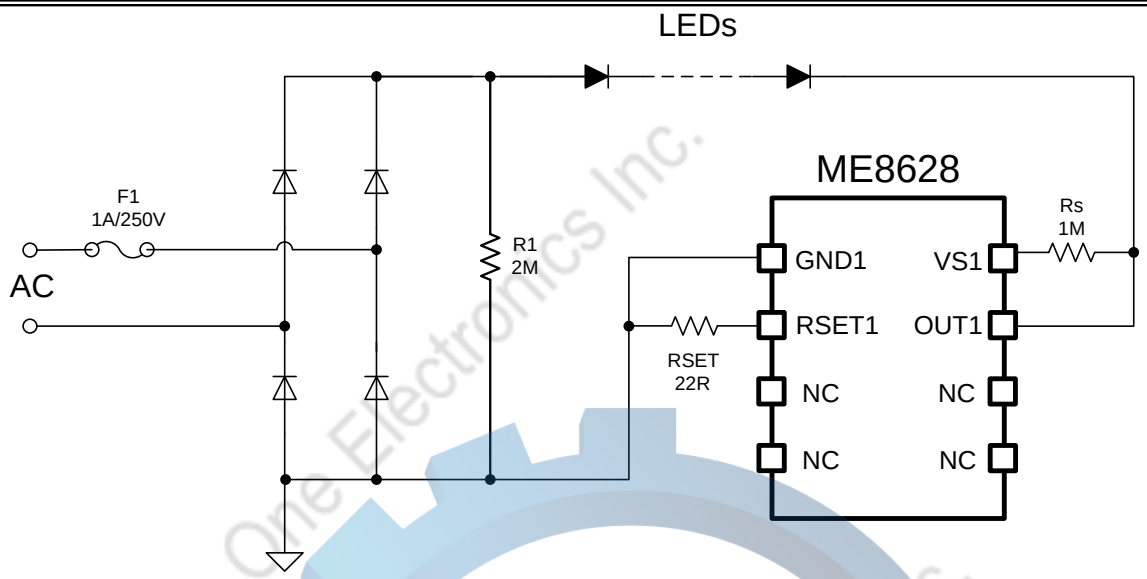
- **Add electrolytic capacitors after the rectifier bridge**

In the case of applying an electrolytic capacitor after the rectifier bridge, it is recommended that the VS resistance value be about 2.4 MΩ to obtain a good input constant power effect.



- **No electrolytic capacitor after rectifier bridge**

In the case where no electrolytic capacitor is applied after the rectifier bridge, it is recommended that the VS resistance value is about 1 MΩ to obtain a good input constant power effect. It should be noted that in the case of no electrolytic capacitor application, the value of the VS resistor of the ideal constant power effect needs to be finely adjusted according to the lamp bead voltage drop. 1MΩ is suitable for lamp voltage drop of around 240V.

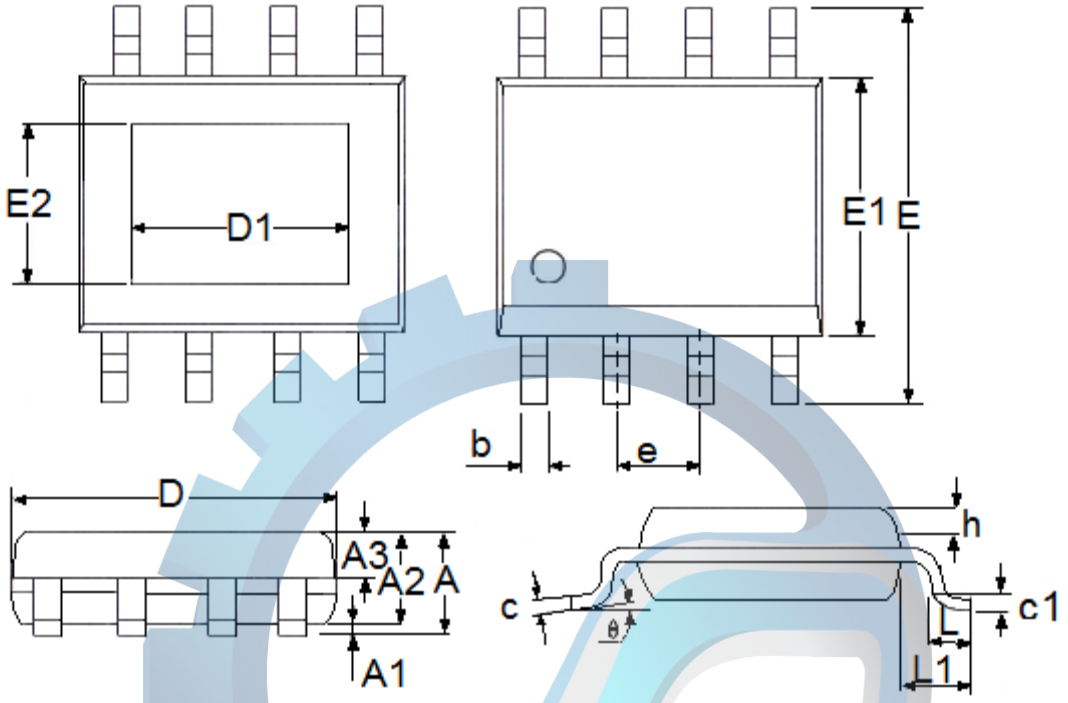


PCB Layout Consideration

- OUT and GND pin copper area should be large to enhance thermal performance.

Package Information

- Package：ESOP8



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.3	1.75	0.0512	0.0689
A1	0	0.2	0.0000	0.0079
A2	1.25	1.65	0.0492	0.0650
A3	0.5	0.7	0.0197	0.0276
b	0.33	0.51	0.0130	0.0201
c	0.17	0.25	0.0067	0.0098
D	4.7	5.1	0.1850	0.2008
E	5.8	6.2	0.2283	0.2441
E1	3.8	4	0.1496	0.1575
e	1.27(TYP)		0.05(TYP)	
h	0.25	0.5	0.0098	0.0197
L	0.4	1.27	0.0157	0.0500
L1	1.04(TYP)		0.0409(TYP)	
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	
D1	3.1(TYP)		0.122(TYP)	
E2	2.21(TYP)		0.087(TYP)	

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