

3000B DATASHEET

The product description

3000B is a high power factor linear constant current high voltage LED driver IC used in LED lighting. The chip uses a unique constant current control patented technology to achieve constant current accuracy of less than $\pm 5\%$, the output current can be adjusted by an external resistor R1, the chip has a high power factor and low harmonic distortion.

3000B has the function of automatic adjustment of output current with temperature. When the temperature is too high, the system will reduce the output current to achieve the effect of lowering the temperature. The temperature protection point can be set via the external resistor at the RTH pin.

3000B has the function of automatic adjustment of the input power. When the input voltage is too high, the output current will be reduced. The amplitude of the current reduction is set by the external resistor RD to ensure that the input power does not change with the input voltage.

The system has a simple structure and various protection functions. No transformers and high-voltage electrolytic capacitors are required. The high-voltage LED driver chip requires few peripheral components and can realize full SMT processing and can realize full-automatic operation.

Features

- No need transformers and electrolytic capacitors
- Integrated high voltage power supply
- Adjustable output current up to 80mA
- Inter-chip current deviation $\leq \pm 5\%$
- Efficiency: $>90\%$
- Power factor >0.95
- With automatic temperature adjustment
- With automatic power adjustment
- Chip application system without EMI problem
- Package form: ESOP8

Application

- T5/T8 series LED tube
- LED bulb
- LED down light
- LED ceiling light
- LED flood light
- LED high bay
- LED street light

Limit parameter

Parameters	Symbol	Range
Working temperature	TOP	-20°C ~ +120°C
Storage temperature	TSTG	-50°C ~ +150°C
ESD	VESD	2KV

Electrical operating parameters

Parameters	Symbol	Condition	Min	Typical value	Max	Unit
D1 Input voltage	VD1	----	9			V
Output current	IOUT	----			80	mA
R Port voltage	VR1	VD1=10		0.65		V
	VR2	VD1=VD2=10		0.72		V
	VR3	VD1=VD3=10		0.80		V
	VR4	VD1=VD4=10		0.90		V
D1/D2 port pressure	VDS_BV 1	ID1=ID2=0	750			V
D3/D4 port pressure	VDS_BV 2	ID3=ID4=0	550			V
IOUT precision	DIOUT	IOUT=10mA~50mA		±5		%
The set port voltage of temperature automatic adjustment functions	VRTH	-	-	1.0	-	V
Temperature protection starting	TSC		-	130	-	°C

Function settings

1. Current setting

3000B is a LED constant current drive control circuit, which integrates LED constant current control module, OUT port high voltage drive module and other functional modules. The minimum input voltage of the D1 port of the chip is 9V (IOOUT = 20mA), and the output current can be 10mA to 80mA through an external RT resistance. The built-in LED constant current drive module can maintain the LED current with high accuracy and is not affected by the ambient temperature. The chip can realize high efficiency and high power factor by turning on four switches step by step.

The output current of the 3000B is adjusted through the resistor RT. The output current is as follows when the 4-stage switch is turned on step by step:

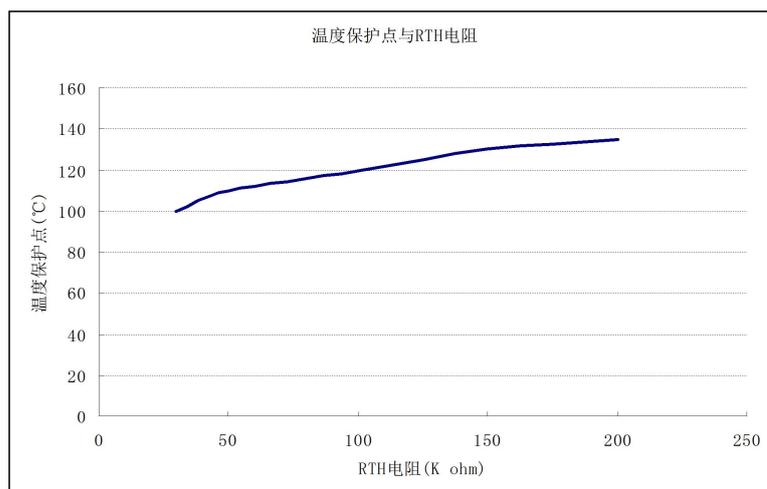
$$ID1=0.65V/RT \quad ID2=0.72V/RT \quad ID3=0.80V/RT \quad ID4=0.90V/RT$$

2. Automatic temperature adjustment function

3000B output current automatically adjusts temperature. When the temperature is too high, the system will reduce the output current to achieve the effect of lowering the temperature.

The temperature protection point can be set by the external resistor at the RTH pin. The RTH voltage is 1.0V. The smaller the resistance value, the lower the temperature protection point.

If the RTH pin is left floating, the temperature protection point is the default 140° .



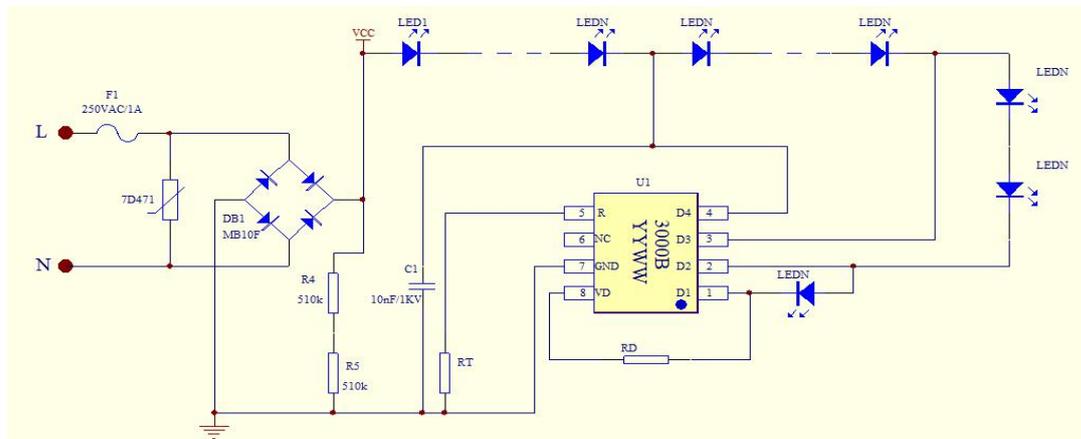
3. input power automatic adjustment function

3000B has the function of automatic adjustment of input power. By monitoring the voltage VD4 at the D4 terminal, when the input voltage is too high, VD4 rises, and the voltage VR4 at the internal logic control R terminal decreases, thereby reducing the output current, and the magnitude of the current reduction through the external resistor R2 Settings, adjustment formulas are as follows:

$$VR4=0.9-(1.6K/RD)*VD4$$

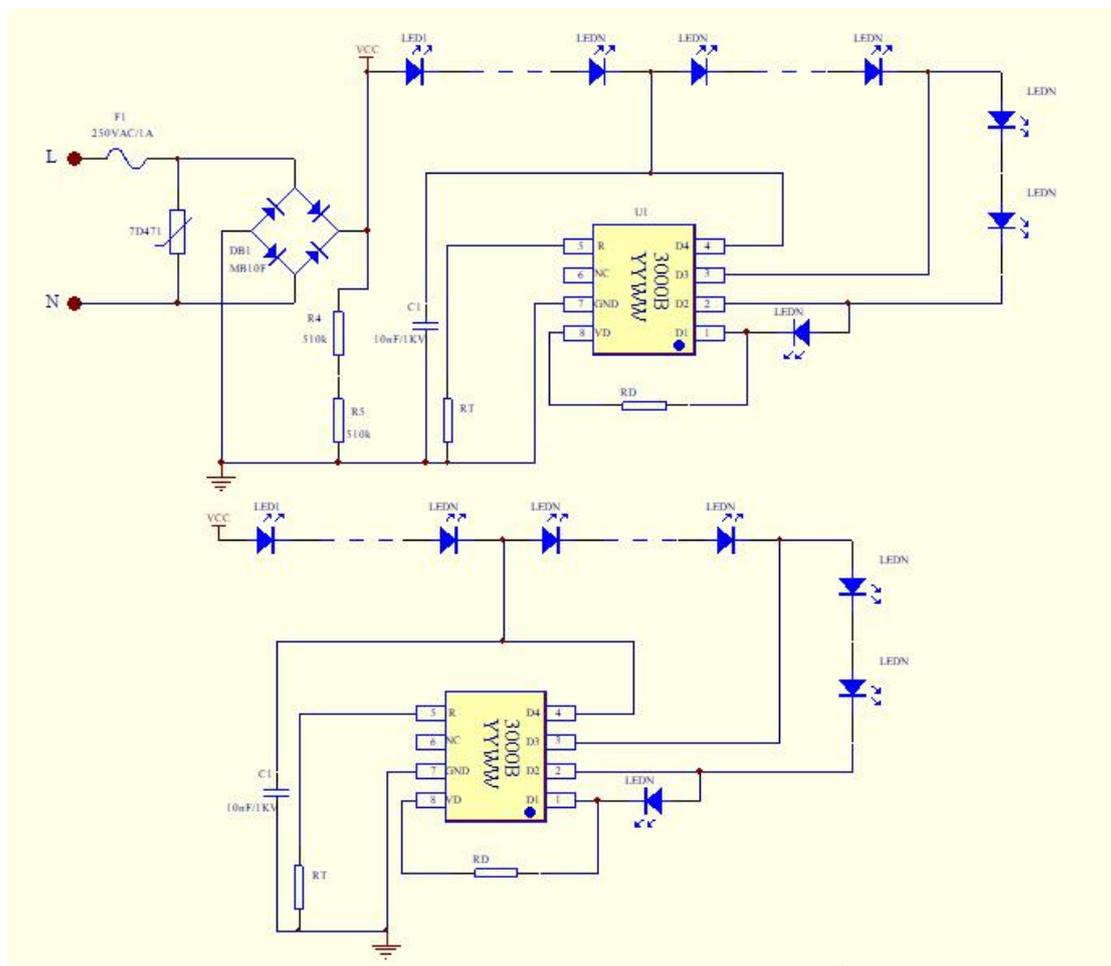
Typical application

➤ 3000B Typical Solution:

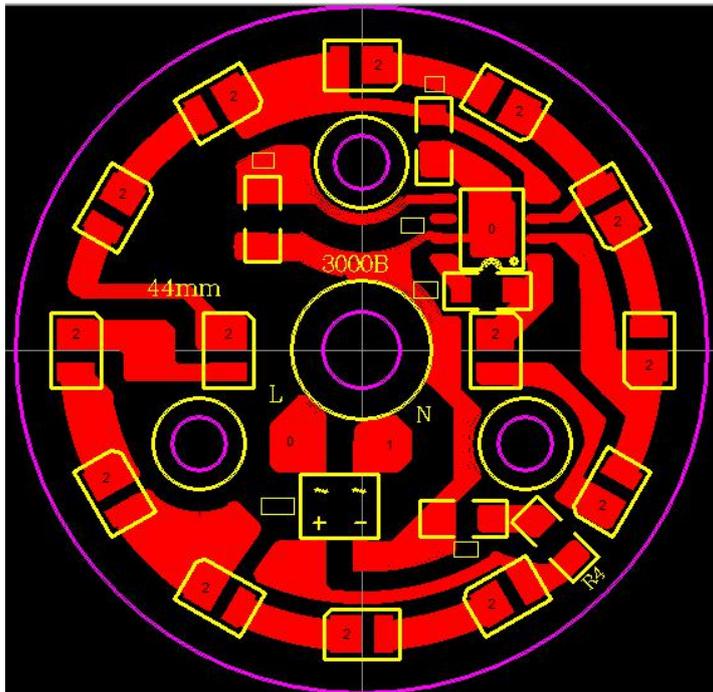


➤

➤ 3000B in Parallel Solution:



➤ Reference Design - PCB Board Design



➤ Reference Design - 9W BOM

Tag No.	Name	Specification	QTY
F1	fuse	1A250V SMD fuse(Optional)	1
VD1	MOV	7D471Plug-in MOV(Optional)	1
DB1	Bridge	MB10F SMD bridge	1
R1,R2	SMD resistor	510K 1206 SMD resistor	2
RT	SMD resistor	15R 1206 1% SMD resistor	1
RD	SMD resistor	380K 1206 SMD resistor	1
IC	CYT3000B	3000B ESOP-8 Package (Bottom with radiator)	1
LED	18V LED	18V 30mA LED SMD2835	14

Note:

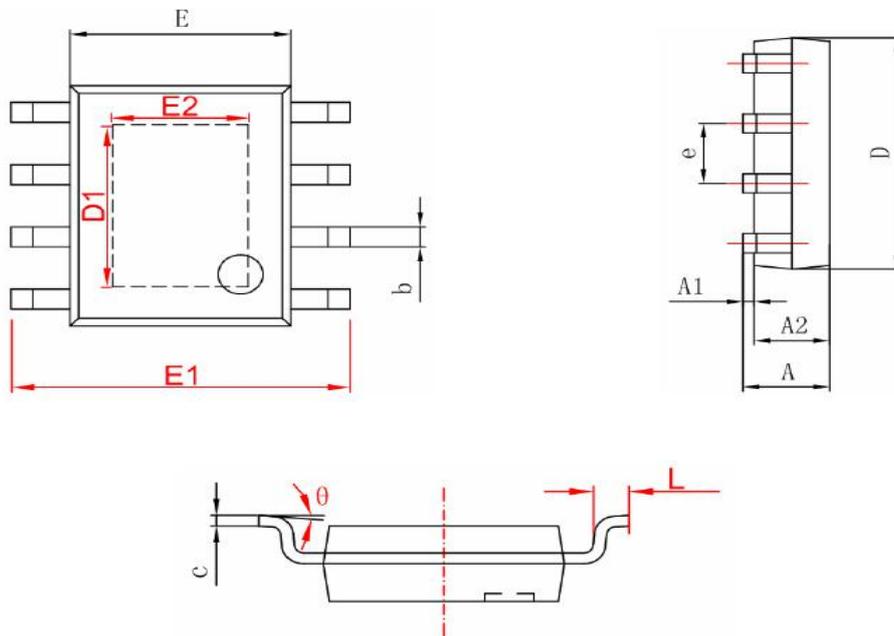
1. The above parameters are for reference only. The actual parameters need user verification and confirmation.
2. When overreflow welding, the welding temperature should not exceed 240°C.

Model Information:

Model	Packing	Package	Marking
3000B	ESOP-08	4000pcs/Reel	3000B YYWW

Package Type

ESOP8



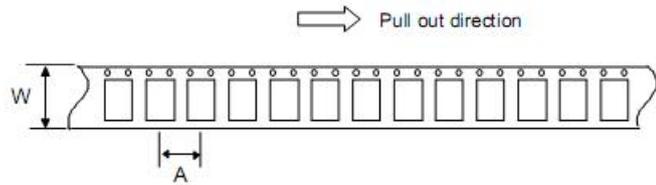
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.350	1.750	0.053	0.069
A1	0.050	0.150	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package Specification

SOP Emboss Taping (TE2)

Symbol	SOP8
A	8
W	12

Unit : mm



Symbol	SOP8
A	330
W	12.0
Contents	4,000 pcs

Unit : mm

