

# High-power LED Drivers for Illumination

# BP5841-1

AC100V input, constant current

## Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit	
Input voltage	$V_i$	170	V	DC
Output voltage	$V_o$	36	V <sub>pk</sub>	
Withstand voltage	BV	1.8	kV	1s (between primary and secondary)
Maximum surface temperature	$T_{cmax}$	105	°C	Ambient temperature + module self-heating $\leq T_{cmax}$
Operating temperature range	$T_{opr}$	-20 to +80	°C	Refer to derating curve
Storage temperature range	$T_{stg}$	-25 to +85	°C	

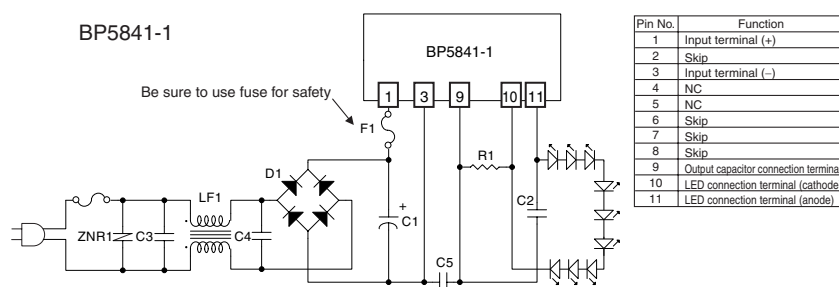
## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage range	$V_i$	113	141	170	V	
Output current	$I_o$	142	150	158	mA	$V_i=141V, R_1=1.2\Omega$ (1%)
Output voltage range1	$V_o$	12.5	—	36	V	$V_i=141V, I_o=100mA$
Output voltage range2		12.5	—	30	V	$V_i=141V, I_o=150mA$
Output ripple voltage	$V_p$	—	—	0.5	V <sub>p-p</sub>	$V_i=141V, I_o=150mA$
Power conversion efficiency	$\eta$	80	84	—	%	$V_i=141V, V_o=30V, I_o=150mA$

\*1 Maximum output current varies depending on ambient temperature ; please refer to derating curve.

\*2 Spike noise is not included in output ripple voltage.

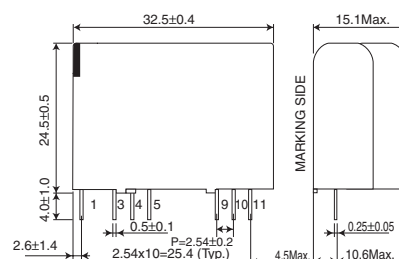
## Application circuit



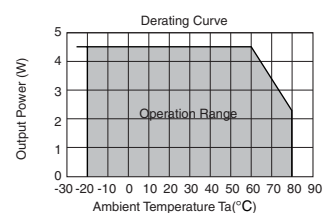
### External components setting

C1 : Input Capacitor	22 $\mu$ F/250V
C2 : Output Capacitor	4.4 $\mu$ F/25V Ceramics capacitor
R1 : Output current setting resistor	1.2 $\Omega$ $\pm$ 1 % 1/4W ( $I_o=150mA$ )
C3, C4: Noise Removal Capacitor	Please use the capacitor, if necessary. Capacitance : 0.1 $\mu$ F to 0.22 $\mu$ F Rated voltage : 250V or higher
C5 : Noise Removal Capacitor	2200pF (Basic insulation)
D1: Diode bridge	800V/1A
F1: Fuse	Fuse must be used for safety
LF1: Line Filter	10mH
ZNR1: Varistor	Varistor must be used. It protects this part from lighting surge and static electricity.

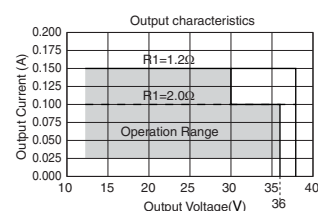
## Dimensions (Unit : mm)



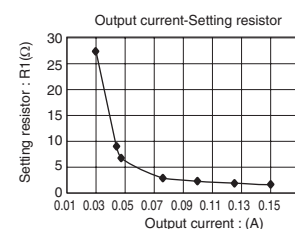
## Derating Curve



## Output Characteristics



## Setting current



How to calculate R1  
 $R1=0.9362/(6.2 \times I_o-0.151)$   
 $I_o$  : Output current

# Power Module Usage Precautions

## Safety Precautions

- 1) The products are designed and manufactured for use in ordinary electronic equipment (i.e. AV/OA/telecommunication/amusement equipment, home appliances). Please consult with the Company's (ROHM) sales staff if intended for use in devices requiring high reliability (e.g. medical/transport/aircraft/spacecraft equipment, nuclear power/fuel controllers, automotive/safety devices) and whose malfunction may result in injury or death. In this case, failsafe measures must be taken, including the following:
  - [a] Installation of protection circuits in order to improve system safety
  - [b] Incorporation of redundant circuits in the case of single-circuit failure
- 2) The products are designed for use under normal conditions. Application in special environments can cause a deterioration in product performance. Therefore, verification and confirmation of product performance, prior to use, is recommended. The following environments are considered to be 'special':
  - [a] Outdoors, exposed to direct sunlight or dust
  - [b] In contact with liquids, such as water, oils, chemicals, or organic solvents
  - [c] In areas where exposure to the sea air or corrosive gases (i.e. Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>) can occur
  - [d] In places where the products may be in contact with static electricity or electromagnetic waves
  - [e] In proximity to heat-producing items, plastic cords, or flammable materials
  - [f] In contact with sealing or coating products, such as resin
  - [g] In contact with unclean solder or exposed to water or water-soluble cleaning agents used after soldering
  - [h] In areas where dew condensation occurs
- 3) The products are not designed to be radiation resistant
- 4) The Company is not responsible for any problems resulting from use of the products under conditions not recommended herein.
- 5) The Company should be notified of any product safety issues. Moreover, product safety issues should be periodically monitored by the customer.

## Application Notes

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