

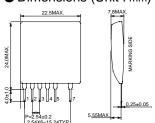
#### 100-230VAC Input/6W Output

# Isolated AC/DC Converter

#### **BP5725**

#### Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit	Conditions
7-pin input voltage	VD	800	V	
4-pin input voltage	VG	45	Vpeak	
7-pin input Current	ΙD	400	mA	
Maximum power	Po	6	W	
Allowable maximum surface temperature	Tcmax	105	°C	Ambient temperature + module self-heating ≤ Tcmax
Operating temperature range	Topr	-25 to +80	°C	
Storage temperature range	Tstg	-25 to +105	°C	



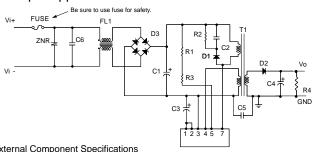
#### Electrical Characteristics

<In case of 12V output> (Unless otherwise noted, Vi=311V, rated load Ta=25°C)

The case of 12 v output?	(Offices officialise floted, VI=511V, fated load fa=25 O)					
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Output detection voltage	Vod	-7.1	-7.6	-8.1	V	Io=500mA
Output current	lo	10	-	500	mA	Refer to derating curve
Line regulation	Vr	ı	380	500	mV	Vi=119V to 405VDC Io=500mA
Load regulation	VI	-	90	200	mV	Io=200mA to 500mA
Output ripple voltage	Vp	1	300	500	mVp-p	*1
Power conversion efficiency	η	70	77	_	%	

<sup>\*1:</sup> Pulse noise is not included.

## Sample Application Circuit



Vod	This is the output detection terminal.	
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Vi(-)	This is the primary side input minus terminal.	
VG	MOSFET, GATE driving input terminal.	
Vs	This is the start terminal. Connect this via the external resistor (720kΩ) to Vi (+).	
NC	This is the NC pin.	
VD	This is the built-in FET of drain terminal. The primary coil minus side of the external transformer, and the snubber circuit for noise reduction are connected to this.	
	Vod Vi(-) VG Vs NC	

# Please verify operation and characteristics in the customer's circuit before actual usage. Ensure that the load current does not exceed

#### **External Component Specifications**

C1:Input smoothing capacitor  $10\mu F/450V$ C2: Noise reduction capacitor 2200pF/1kV 10μF/50V C3: Vod smoothing capacitor C4: Output smoothing capacitor  $1000 \mu F/25 V$ 2200pF/AC250V C5: Noise reduction capacitor C6: Noise reduction capacitor Use if necessary

D1: Rectifier diode FRD 800V/0.5A FRD 200V/1A D2: Rectifier diode 800V/1A D3: Diode bridge R1, R3: Resistor 360kΩ±5% 0.25W

R2: Resistor 200kΩ±5% 1W R4: Bleeder resistor In case Io is less than 10mA, connect a bleeder resistor in parallel to C4.

T1: Switching transformer FL1: Noise reduction filter

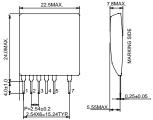
Use if necessary FUSE: Fuse Be sure to use this for safety.

ZNR: Varistor A varistor is required to protect against lightning surges and static electricity.

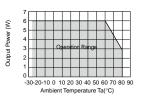
#### Usage Precautions

- When the capacitance of the output smoothing electrolytic capacitor C4 is made large the output may not rise.  $100 \text{ to } 2200 \mu F$  is recommended. Set the rise time within 10ms.
- $\bullet$  Set the Vod electrolytic capacitor C3 to  $10\mu F$
- Be sure to use the VG terminal voltage within the operating voltage range.
- Set the external starting resistor (R1+R3) to 720KΩ. Reducing the resistance value may cause failure during startup.
- A built-in overcurrent protection circuit (reset type) prevents damage due to surge currents. Please discontinue operation if protection circuit is continuously active.

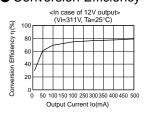
### Dimensions (Unit : mm)



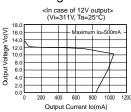
#### Derating Curve



#### Conversion Efficiency



#### Load Regulation



Limiting element voltage DC630V or higher, 0.1 to 0.22µF

# 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

- A sufficient margin must be allowed if changes are made to the peripheral circuit due to variations in the inherent tolerances of the external components as well as transient and static characteristics. In addition, please be aware that the Company has not conducted investigations on whether or not particular changes in the example application circuits would result in patent infringement.
- 2) The application examples, their constants, and other types of information contained herein are applicable only when the products are used in accordance with standard methods.
  - Therefore, if mass production is intended, sufficient consideration to external conditions must be made.

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  - [b] Problems arising from the use of the products listed herein
- 3) The Company prohibits the purchaser from exercising or using the intellectual/industrial property rights or any rights belonging to or are controlled by the Company, other than the right to use, sell, or dispose of the products.

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