

100VAC Input/5VDC (200mA) Output

Non-Isolated AC/DC Converter

BP5063-5

Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit
Input voltage	Vi	170	V
Maximum Output current	Iomax	200	mApk
ESD endurance	Vsurge	2	kV
Operating temperature range	Topr	-25 to +80	°C
Storage temperature range	Tstg	-25 to +105	°C
Maximum surface temperature	Tcmax	105	°C

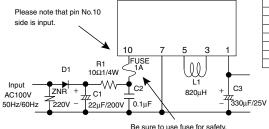
Electrical Characteristics

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage range	Vi	113	141	170	V	DC(80 to 120VAC)
Output voltage	Vo	4.7	5.0	5.3	V	Vi=141V, Io=100mA
Output current	lo	0	_	200	mA	Vi=141V *1
Line regulation	Vr	_	0.05	0.15	V	Vi=113 to 170V, lo=100mA
Load regulation	VI	-	0.07	0.20	V	Vi=141V, Io=0 to 100mA
Output ripple voltage	Vp	_	0.05	0.15	Vp-p	Vi=141V, Io=100mA *2
Power conversion efficiency	η	50	62	_	%	Vi=141V, Io=200mA

^{*1} Maximum output current varies depending on ambient temperature; please refer to derating curve

Application Circuit

BP5063-5



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

Output terminal Vo(5V)

Choke coil connect

Choke coil conne

Not used Not used

External Component Specifications

FUSE: Fuse Use a quick-acting fuse 1A

Capacitance: 22 to 100µF Rated voltage: 200V or higher C1: Input smoothing capacitor

Ripple current is 0.13Arms above.

Capacitance: 0.1 to 0.22µF Rated voltage: 200V or higher C2: Noise reduction

Use a film or ceramic capacitor to reduce voltage noise. capacitor

Evaluate under actual conditions before use.

C3: Output smoothing Capacitance: 100 to 470µF Rated voltage: 16V or higher, capacitor

ESR is 0.25Ω max. Ripple current is 0.25Arms or above. Evaluate performance in actual set.

D1: Rectifier diode In the absolute maximum ratings, the reverse peak voltage should be

400V or higher, the average rectifying current should be 0.5A or higher,

and the peak surge current 20A or higher. (Full-wave rectification can be used.)

Coil for switching regulator. The inductance should be $820\mu\text{H}\text{,}$ L1: Choke coil

the rated direct current should be 0.42A or above in order to

prevent abnormal heating or oscillation.

R1: Noise reduction 10 to 22Ω 1/4W

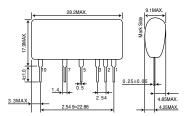
Optional for voltage noise reduction. Determine the ideal value through resistor

actual evaluation.

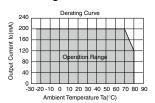
A varistor must be used to protect the part from lightning surges and ZNR: Varistor

static electricity.

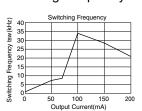
Dimensions (Unit : mm)



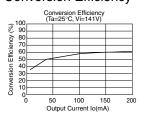
Derating Curve



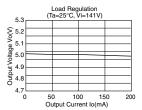
Switching Frequency



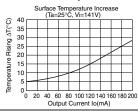
Conversion Efficiency



Load Regulation



Surface Temperature Increase



^{*2} Spike noise is not included in output ripple voltage

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. Cl₂, H₂S, NH₃, SO₂, NO₂) 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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- 2) Product information and data, including application examples, contained in the specifications are for reference purposes only; the Company does not guarantee the industrial/intellectual property rights or any other rights of a third party. Accordingly, the Company shall not bear responsibility for:
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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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