AC/DC converter BP5716

AC100V input, 12V/1000mA output

● Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit	Conditions
8-pin input voltage	V_D	500	V	
6-pin input voltage	V_{DD}	25	V	
8-pin input current	I_D	500	mA	
6-pin input current	I_{DD}	10	mA	
Maximum Power	Po	13	W	
Withstanding voltage	Vi	2.5	kV	1s (primary-secondary)
Allowable maximum surface temperature	Tcmax	105	°C	Ambient temperature + The module self-heating ≤ Tcmax
Operating temperature range	Topr	−25 to +80	°C	
Storage temperature range	Tstg	−40 to +105	°C	

● Electrical Characteristics

<Input conditions> (Unless otherwise noted, Vi=141V, Ta=25°C)

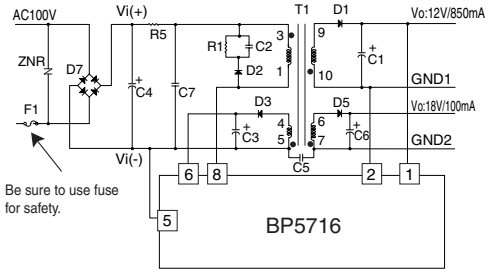
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
8-pin input voltage	V_D	–	–	350	V	Io=1000mA
Operating power voltage	V_{DD}	8.8	12	20	V	DC, Io=1000mA ∗1

<12V output>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output voltage	Vo	11.4	12.0	12.6	V	
Output current	Io	0	–	1000	mA	Refer to derating curve
Line regulation	Vr	–	10	200	mV	Vi=113V to 170VDC, Io=1000mA
Load regulation	VI	–	58	200	mV	Io=50mA to 1000mA
Output ripple voltage	Vp	–	300	500	mVpp	∗2
Power conversion efficiency	η	75	84	–	%	

∗1 Operating start voltage is15.5V to 17.5V.
∗2 Pulse noise not included.

● Application circuit



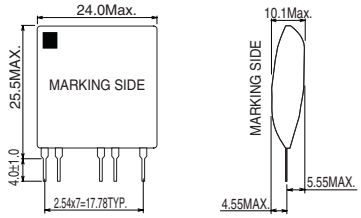
Pin No.	Name	Function
1	Vo	This is the secondary side 12V output voltage control terminal. Insert the output smoothing capacitor 1000µF between GND.
2	GND	This is the GND terminal for the secondary side 12V output.
5	Vin(-)	This is the primary side input minus terminal.
6	V_{DD}	This is the internal circuit power supply terminal.
8	V_D	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.

For actual usage, Please kindly evaluate and confirm our part mounted in your product, Especially, Please make sure to confirm whether the load current exceed Max. rated current by using the current probe.

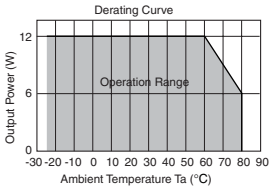
External components setting

C1: Capacitor for output voltage smoothing	1000µF / 35V Low impedance for power supply
C2: For noise terminal voltage reduction	2200pF / 400V or higher
C3: Capacitor for output voltage smoothing	10µF / 50V Low impedance for power supply
C4: Capacitor for input voltage smoothing	33µF / 250V
C5: For noise terminal voltage reduction	Please set it, if necessary
C6: Capacitor for output voltage smoothing	100µF / 35V Low impedance for power supply
C7: Noise terminal voltage countermeasure capacitor	Please set it, if necessary Limiting element voltage 250V or higher 0.1 to 0.22µF
D1: Rectifier diode	60V / 6A
D2: Rectifier diode	1kV / 1A
D3: Rectifier diode	80V / 0.1A
D5: Rectifier diode	100V or higher / 1A
D7: Diode bridge	800V / 1A
R1: Resistor	100kΩ ± 5% 3W Limiting element voltage 300V or higher
R5: Noise terminal voltage countermeasure resistor	Please set it, if necessary 1W or higher 10 to 22Ω
T1: Switching transformer	
F1: Fuse	Be sure to use this for safety
ZNR: Varistor	Must be use. It protects this part from lightning surge and static electricity.

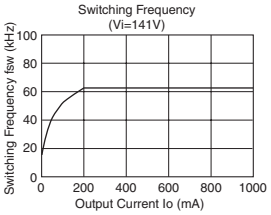
● Dimensions (Unit : mm)



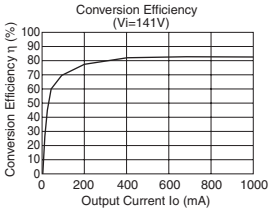
● Derating Curve



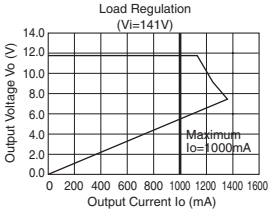
● Switching Frequency



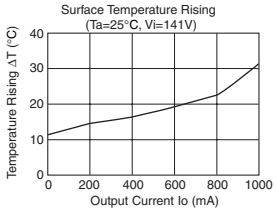
● Conversion Efficiency



● Load Regulation



● Surface Temperature Rising



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_2, H_2S, NH_3, SO_2, NO_2) 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

1) 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.

Notes Regarding Industrial Property

1) The specifications included herein contain information related to the Company's industrial property. Their use other than pertaining to the relevant products is forbidden. Duplication and/or disclosure to a third party without express written permission is strictly prohibited.
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:
   [a] Infringement of the intellectual property rights of a third party
   [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.

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).
Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.
It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact your nearest sales office.

ROHM Customer Support System

THE AMERICAS / EUROPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster@rohm.co.jp

ROHM CO., LTD. 21 Saiin Mizosaki-cho, Ukyo-ku, Kyoto 615-8585, Japan
TEL : +81-75-311-2121
FAX : +81-75-315-0172