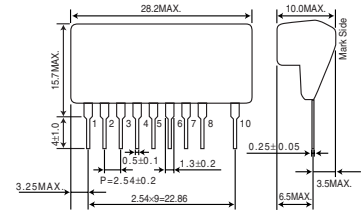


### Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit
Input voltage	$V_i$	195	V
Output current	$I_o$	100	mA
ESD endurance	$V_{surge}$	2	kV
Operating temperature range	$T_{opr}$	-25 to +80	°C
Storage temperature range	$T_{stg}$	-25 to +105	°C

### Dimension (Unit : mm)

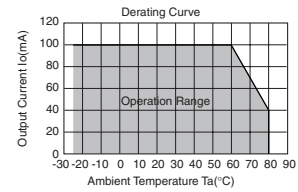


### Electrical Characteristics

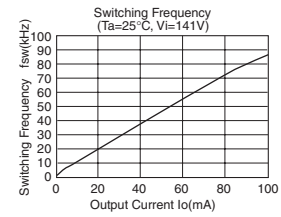
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage range	$V_i$	113	141	195	V	DC(80 to 138VAC level)
Output voltage	$V_o$	11	12	12.8	V	$V_i=141V, I_o=50mA$
Output current	$I_o$	0	-	100	mA	$V_i=141V$ *1
Line regulation	$V_r$	-	0.02	0.1	V	$V_i=113$ to $195V, I_o=50mA$ *2
Load regulation	$V_l$	-	0.05	0.15	V	$V_i=141V, I_o=0$ to $50mA$ *2
Output ripple voltage	$V_p$	-	0.05	0.15	Vp-p	$V_i=141V, I_o=50mA$ *2
Power conversion efficiency	$\eta$	60	68	-	%	$V_i=141V, I_o=100mA$ *2

\*1 The max output is changed due to the ambient temperature. Please refer to note regarding derating curve.  
 \*2 Please refer to regarding the definitions of the Line regulation, Load regulation, Output ripple voltage, Conversion efficiency.

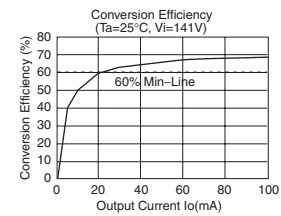
### Derating curve



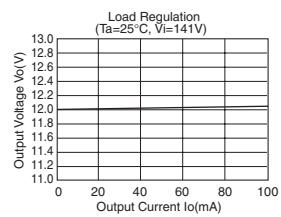
### Switching Frequency



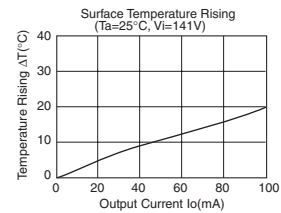
### Conversion Efficiency



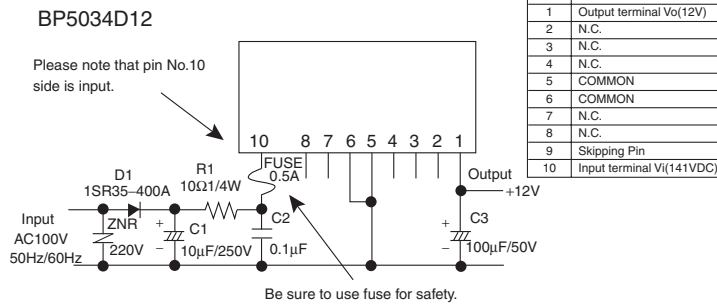
### Load Regulation



### Surface Temperature Rising



### Application circuit



Pin No.	Terminal definition
1	Output terminal $V_o(12V)$
2	N.C.
3	N.C.
4	N.C.
5	COMMON
6	COMMON
7	N.C.
8	N.C.
9	Skipping Pin
10	Input terminal $V_i(141VDC)$

Be sure to use fuse for safety.  
 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 0.1A by current prove.

### External components setting

- FUSE:** Please make sure to use fuse 0.5A
- C1 :** Capacitor for input voltage smoothing  
 Capacitance : 3.3 $\mu$ F to 22 $\mu$ F Ripple current is 0.13Arms above.  
 Rated voltage : 200V or higher
- C2 :** For noise terminal voltage reduction  
 Capacitance : 0.1 $\mu$ F to 0.22 $\mu$ F Rated voltage : 200V or higher  
 Film capacitor or ceramic capacitor. Reduce the noise terminal voltage.  
 The constant value should be evaluated in the set.
- C3 :** Capacitor for Output voltage smoothing  
 Capacitance : 100 $\mu$ F to 470 $\mu$ F Rated voltage : 25V or higher, Low impedance part  
 Impedance is 0.39 $\Omega$  max at High frequency range.  
 Ripple current is 0.1Arms above.  
 Impedance of capacitor affects the output ripple voltage.
- D1 :** Rectifier diode  
 In the absolute maximum ratings, the reverse surge voltage should be 400V or higher, the average rectifying current should be 0.5A or higher, and the forward surge current should be 20A or higher.
- R1 :** For noise terminal voltage reduction  
 10 $\Omega$ -22 $\Omega$  1/4W  
 Reduce the noise terminal voltage. The constant value should be evaluated in set.
- ZNR :** Varistor  
 Varistor must be used. It protects this part from lightning surge and static electricity.

# 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

- 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.

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- 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.
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  - [a] Infringement of the intellectual property rights of a third party
  - [b] Problems arising from the use of the products listed herein
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