



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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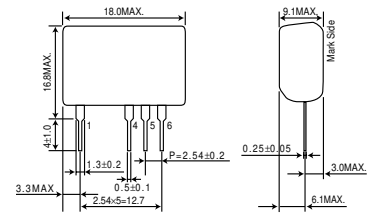
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



### Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit
Input voltage	$V_i$	170	V
Output current	$I_o$	30	mApk
ESD endurance	$V_{surge}$	2	kV
Operating temperature range	$T_{opr}$	-20 ~ +80	°C
Storage temperature range	$T_{stg}$	-20 ~ +85	°C

### Dimension(Unit : mm)

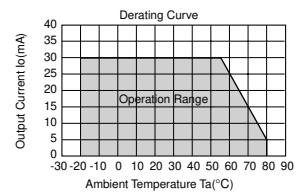


### Electrical Characteristics

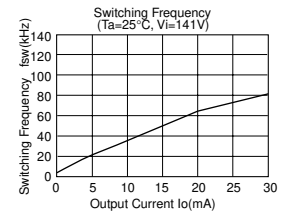
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage range	$V_i$	113	141	170	V	DC(80~120VAC)
Output voltage	$V_o$	11	12	13	V	$V_i=141V, I_o=30mA$
Output current	$I_o$	0	-	30	mA	$V_i=141V$ *1
Line regulation	$V_r$	-	0.17	0.3	V	$V_i=113\sim170V, I_o=30mA$
Load regulation	$V_l$	-	0.19	0.3	V	$V_i=141V, I_o=0\sim30mA$ *2
Output ripple voltage	$V_p$	-	0.05	0.15	Vp-p	$V_i=141V, I_o=30mA$
Power conversion efficiency	$\eta$	40	50	-	%	$V_i=141V, I_o=30mA$ *2

\*1 Maximum output current varies depending on ambient temperature ; please refer to derating curve.  
\*2 Please refer to Load regulation, Conversion efficiency.

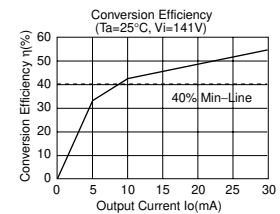
### Derating Curve



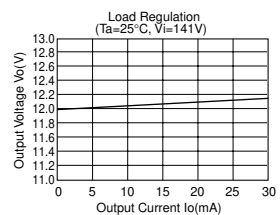
### Switching Frequency



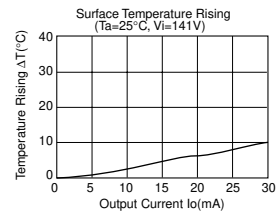
### Conversion Efficiency



### Load Regulation

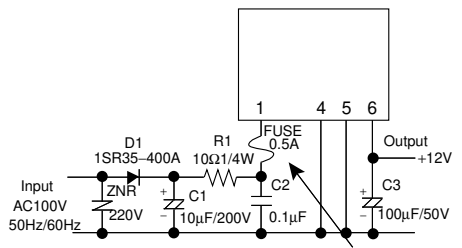


### Surface temperature Rising



### Application circuit

BP5038A



Be sure to use fuse gor 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 Max. rated current by using the current probe.

Pin No.	Function
1	Input terminal $V_i$ (141VDC)
2	N.C.
3	N.C.
4	COMMON
5	COMMON
6	Output terminal $V_o$ (12V)

#### External components setting

- FUSE:** Fuse  
Please make sure to use quick acting fuse 0.5A
- C1:** Capacitor for input voltage smoothing  
Capacitance : 3.3μF~22μF Rated voltage : 200V or higher  
Ripple current is 0.13Arms above.
- C2:** For noise terminal voltage reduction  
Capacitance : 0.1μF~0.22μF 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 : 100μF~470μF Rated voltage : 25V or higher,  
ESR is 0.39Ω max. Ripple current is 0.1Arms above.  
Output noise voltage is influenced.Please evaluate it in the 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 should be 20A or higher.  
(Full-wave rectifier can be used in our part.)
- R1:** For noise terminal voltage reduction  
10Ω~22Ω 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.

# Precautions on Use of ROHM Power Module

## Safety Precautions

- 1) The products are designed and produced for application in ordinary electronic equipment (AV equipment, OA equipment, telecommunication equipment, home appliances, amusement equipment etc.).  
If the products are to be used in devices requiring extremely high reliability (medical equipment, transport equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or operational error may endanger human life and sufficient fail-safe measures, please consult with the Company's sales staff in advance. If product malfunctions may result in serious damage, including that to human life, sufficient fail-safe measures must be taken, including the following:
  - [a] Installation of protection circuits or other protective devices to improve system safety
  - [b] Installation of redundant circuits in the case of single-circuit failure
- 2) The products are designed for use in a standard environment and not in any special environments. Application of the products in a special environment can deteriorate product performance. Accordingly, verification and confirmation of product performance, prior to use, is recommended if used under the following conditions:
  - [a] Use in various types of liquid, including water, oils, chemicals, and organic solvents
  - [b] Use outdoors where the products are exposed to direct sunlight, or in dusty places
  - [c] Use in places where the products are exposed to sea winds or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, and NO<sub>2</sub>
  - [d] Use in places where the products are exposed to static electricity or electromagnetic waves
  - [e] Use in proximity to heat-producing components, plastic cords, or other flammable items
  - [f] Use involving sealing or coating the products with resin or other coating materials
  - [g] Use involving unclean solder or use of water or water-soluble cleaning agents for cleaning after soldering
  - [h] Use of the products in places subject to dew condensation
- 3) The products are not 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.

## Precautions Regarding Application Example and External Circuits

- 1) If change is made to the constant of an external circuit, allow a sufficient margin due to variations of the characteristics of the products and external components, including transient characteristics, as well as static characteristics. Please be informed that the Company has not conducted investigations on whether or not particular changes in the application examples or external circuits would result in the infringement of patent rights of a third party.
- 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] any problems incurred by the use of the products listed herein.
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- Products listed in this document use silicon as a basic material.  
Products listed in this document are no antiradiation design.

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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.

#### About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.