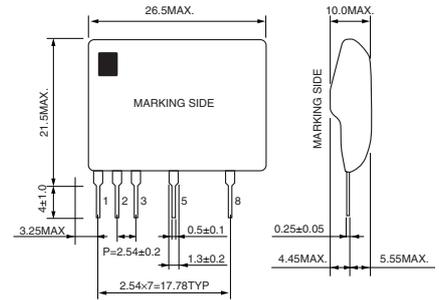


Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit
Input voltage	Vin	-195	V
Operating temperature range	Topr	-20 to +85	°C
Storage temperature range	Tstg	-25 to +105	°C
Maximum surface temperature	Tsmax	100	°C
Output current	Io	200	mA

Dimensions(Unit : mm)



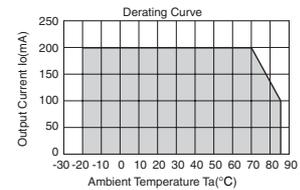
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage range	Vin	-113	-141	-195	V	DC
Output voltage	Vo	-11.5	-12.5	-13.2	V	
Output current	Io	-	-	200	mA	*1
Line regulation	Vr	-	0.04	0.20	V	Vin=-113 to -195V
Load regulation	Vl	-	0.03	0.20	V	Io=0~200mA
Output ripple voltage	Vp	-	0.07	0.20	Vp-p	*2
Conversion efficiency	η	74	82	-	%	

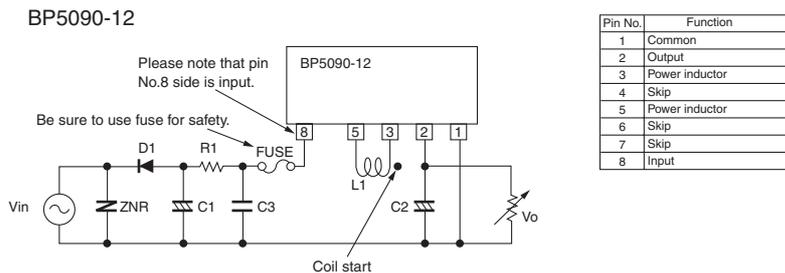
*1 Maximum output current varies depending on ambient temperature ; please refer to derating curve.

*2 Spike noise is not included in output ripple voltage.

Derating Curve



Application circuit



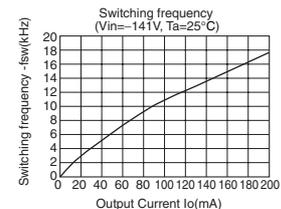
Pin No.	Function
1	Common
2	Output
3	Power inductor
4	Skip
5	Power inductor
6	Skip
7	Skip
8	Input

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.

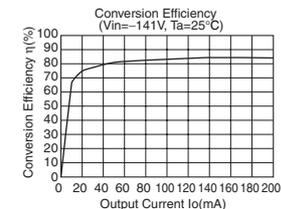
External components setting

- FUSE:** FUSE. Recommend the use of fast-acting type fuse 1.0A.
- C1:** Input capacitor. Rated voltage : More than 250V. Capacity : 22 to 100μF.
- C2:** Output capacitor. Rated voltage : More than 25V. Capacity : 100 to 470μF, low impedance type. ESR : Less than 0.16Ω. Rated ripple current : More than 0.58Arms. Evaluate it with the actual opportunity because it influences an output ripple voltage.
- C3:** Noise removal capacitor. Rated voltage : More than 250V. film capacitor, or Ceramic capacitor. Capacity : 0.1 to 0.22μF.
- L1:** Choke coil. Inductance : 820μH. Rated current : More than 0.42A. Choose components that do not easily get magnetically saturated in high temperature.
- R1:** Noise removal resistor. Resistance : 10 to 22Ω. Power : More than 1/4W.
- D1:** Rectifier diode. Peak reverse voltage : More than 400V. Mean rectifying current : More than 1.0A. Peak forward surge current : More than 20A. This product can use even all the wave rectification.
- ZNR:** Varistor. Be sure to use it to protect this product from thunder surge and the static electricity.

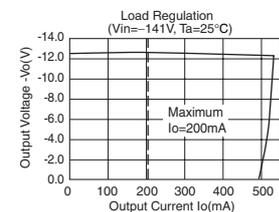
Switching frequency



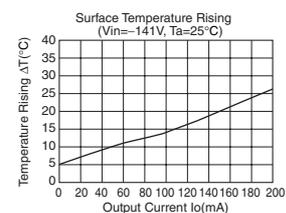
Conversion Efficiency



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. 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

- 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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 - [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.

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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.

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