AC/DC converter BP5081A15

AC100V input, output-1 : 15V/80mA, output-2 : 5V/350mA

● Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit
Input voltage	Vi	170	V
Maximum Output current(15V)	I15MAX	80	mApk
Maximum Output current(5V)	I5MAX	350	mApk
ESD endurance	Vsurge	2	kV
Maximum surface temperature	Tcmax	105	°C
Operating temperature range	Topr	−25 ~ +80	°C
Storage temperature range	Tstg	−25 ~ +105	°C

● Electrical Characteristics

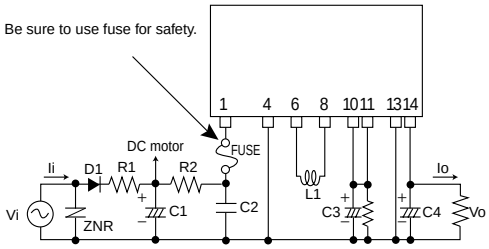
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	Vi	113	141	170	V	DC
Output voltage1	V15	14.0	15.0	16.0	V	Vi=141V, I15=80mA
Output current1	I15	0	–	80	mA	Vi=141V ∗1
Output voltage2	V5	4.7	5.0	5.3	V	Vi=141V, I5=200mA
Output current2	I5	0	–	350	mA	Vi=141V ∗1
Line regulation1	Vr1	–	0.1	0.2	V	Vi=113~170V, I15=80mA
Line regulation2	Vr2	–	0.1	0.2	V	Vi=113~170V, I5=350mA
Load regulation1	Vl1	–	0.05	0.2	V	Vi=141V, I15=0~80mA ∗2
Load regulation2	Vl2		0.05	0.2	V	Vi=141V, I5=0~350mA ∗2
Output ripple voltage1	Vp1	–	0.05	0.2	Vp-p	Vi=141V, I15=80mA, I5=0mA
Output ripple voltage2	Vp2	–	0.05	0.2	Vp-p	Vi=141V, I15=0mA, I5=350mA
Power conversion efficiency1	η1	65	72	–	%	Vi=141V, I15=80mA, I5=0mA ∗2
Power conversion efficiency2	η2	60	65	–	%	Vi=141V, I15=0mA, I5=350mA ∗2

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

● Application circuit

BP5081A15

Be sure to use fuse for safety.



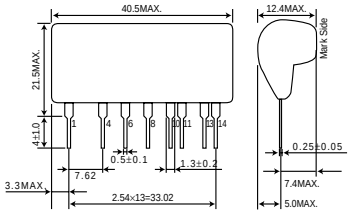
Pin No.	Function
1	Input terminal Vi(141VDC)
2	Not used
3	Not used
4	COMMON
5	Not used
6	Choke coil connect
7	Not used
8	Choke coik connect
9	Not used
10	15V output terminal
11	15V input terminal
12	Not used
13	COMMON
14	Output terminal Vo(5V)

For acutual 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.

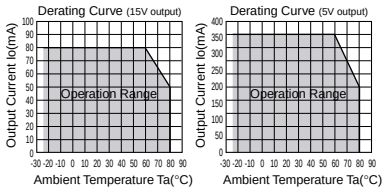
External components setting

FUSE: Fuse	Please make sure to use quick acting fuse 1A
C1: Capacitor for input voltage smoothing	Capacitance : 22μF~390μF 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 (15V output)	Capacitance : 100μF~1000μF Rated voltage : 25V or higher, ESR is 0.4Ω max. Ripple current is 0.25Arms above. Output ripple voltage is infuenced. Please evaluate it in the actual set.
C4: Capacitor for Output (5V output)	Capacitance : 100μF~1000μF Rated voltage : 16V or higher, ESR is 0.4Ω max. Ripple current is 0.25Arms above. Output ripple voltage is infuenced. Please evaluate it in the actual set.
L1: Choke coil	L : 1mH Allowable current : 490mA or higher. Please use the one that is hard to be magnetic saturated even in the high temperature.
D1: For noise terminal voltage reduction	In the absolute maximum ratings, the reverse peak voltage should be 400V or higher, the average rectifying current should be 1A or higher,and the peak surge current should be 40A or higher. Rush current can be reduced by setting R1, but, to use the large capacity one for surge current is recommended.(Full-wave rectifier can be used in our part.)
R1: Rush current limiting resistance	Limiting resistance must be used because rush current at powering up is applied in proportion to the C1 capacitance.Please determine the resistance value after confirming the rising characteristics of the module at powering up.
R2: For noise terminal	10Ω~22Ω 1/4W Reduce the noise terminal voltage.Please set it,if necessary. The constant value should be evaluated in set.
ZNR: Varistor	Varistor must be used. It protects this part from lightning surge and static electricity.

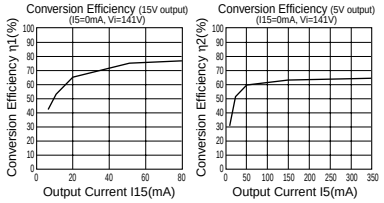
● Dimension(Unit : mm)



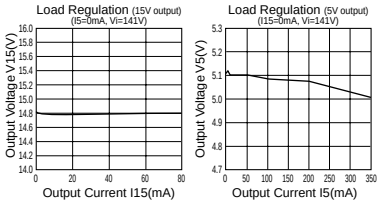
● Derating Curve



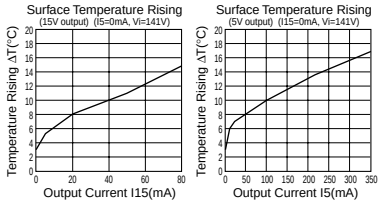
● Conversion Efficiency



● Load Regulation



● surface Temperature Rising



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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:
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   [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:
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   [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 Cl2, H2S, NH3, SO2, and NO2
   [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 othe 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.
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