

Isolated AC/DC Converter

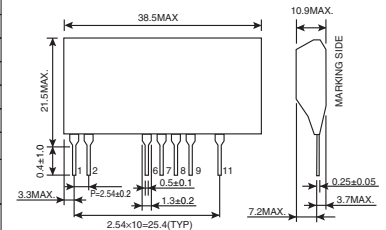
BP5723-33

AC 100V to AC 220V input, 3.3V / 3A output

Absolute Maximum Ratings

Parameter	Symbol	Limits	Unit	Conditions
11 pin input voltage	VD	700	V	
7 pin input voltage	VDD	25	V	
11 pin input currents	ID	500	mA	PEAK
8 pin input currents	IDD	10	mA	
Maximum output power	Po	10	W	
Withstand voltage	VI	3	KV	1 sec (Primary - Secondary)
Permission temperature	Tcmax	105	°C	Contain a self-fever
Operating temperature range	Topr	-25 to +80	°C	
Storage temperature range	Tstg	-30 to +105	°C	

Dimensions (mm)



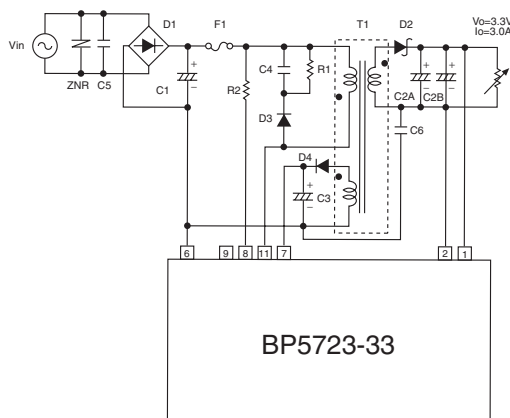
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Pin 11 input voltage	VD	-	-	650	V	Vin=141V Io=3A
Operating power voltage(Pin 7)	VDD	8.5	14	20	V	Vin=141V Io=1A *1
Rated output voltage	Vo	3.13	3.3	3.47	V	Vin=141V, Io=2A
Rated output current	Io	0	-	3.0	A	Refer to derating curve
Line regulation	ΔV_r	-	10	200	mV	Vi=113V to 374VDC Io=2A
Load regulation	ΔV_l	-	10	200	mV	Vin=141V, Io=0A to 2A
Output ripple voltage	$\Delta \gamma$	-	100	500	mVpp	Vin=141V, Io=2A *2
Power conversion efficiency	η	70	79	-	%	Vin=141V, Io=3A

*1: Operation start voltage becomes 16V to 18 V.

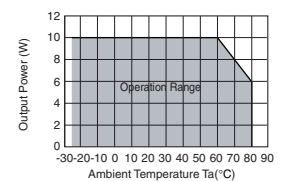
*2: Pulse noise does not include it.

Sample Application Circuit

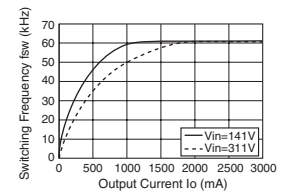


Pin No.	Name	Terminal function
1	Vo	Secondary output voltage control terminals.
2	GND	GND terminals for the Secondary side output.
6	Vin(-)	The primary side input minus terminal.
7	VDD	The power supply terminal of an inside circuit.
8	Vs	Triggering terminal.
9	NC	NC pin.
11	VD	It is the drain terminal of inclusion FET.

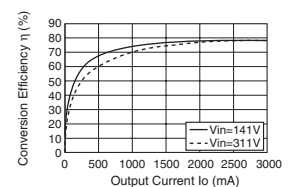
Derating Curve



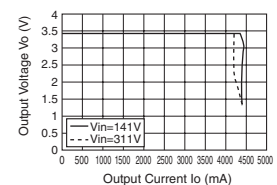
Switching Frequency



Conversion Efficiency



Load Regulation



External Component Settings

C1:	Input Capacitor	33 μ F / 450V	D1:	Diode bridge	-
C2A, C2B:	Output Capacitor	560 μ F / 10V	D2:	Shottkey diode	30V / 15A
		High polymer aluminum solid condenser	D3:	Rectification Diode	1kV / 1A
C3:	Output Capacitor	10 μ F / 50V Low impedance type	D4:	Rectification Diode	80V / 0.13A
C4:	Noise Removal Capacitor	4700pF / 1kV	R1:	Resistance	47k Ω ±5% 3W DC300V over
C5:	Noise Removal Capacitor	As occasion demands attach it	R2:	Resistance	1.5M Ω ±5% 0.25W 750V over
C6:	Noise Removal Capacitor	As occasion demands attach it	T1:	Switching transformer	Custom
			F1:	Fuse	Be sure to use a fuse for the safety.
			ZNR:	Varistor	Be sure to use it to protect this product from thunder surge and the static electricity.

Operation Notes

- An excessively large capacitance at C1 may cause the output to become inactive. Therefore, a capacitance between 500 μ F to 2200 μ F is recommended, with a rise time of 10 μ s or less.
- The capacitance of C3 should be 10 μ F, since an excessively small value will result in malfunction. The activation time is defined as : $t(s) = R2 \cdot C3 \ln[1 - 17 / (VI - 30 \mu A \cdot R2)]$, where VI is the DC voltage after smoothing.
- The resistance of R2 should be 1.5M Ω , since an excessively small value will result in malfunction.
- Overcurrent (reset type) and overvoltage (latch type) protection circuits are built in, preventing damage from occurring due to unexpected conditions. The overvoltage protection circuit shuts down operation once VDD exceeds 20V. In order to reset the input capacitor C4 must be discharged and the power turned back on.

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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 - [b] Problems arising from the use of the products listed herein
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