

AC80V to AC138V input, 18W output

# Isolated AC/DC converter

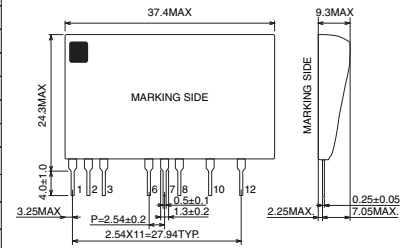
BP5717

## Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Limits	Unit	Conditions
12-pin input voltage	V <sub>D</sub>	480	V	
12-pin input current	I <sub>D</sub>	1	Apk	
10-pin input voltage	V <sub>H</sub>	400	V	
7-pin input voltage	V <sub>CC</sub>	30	V	
6-pin input current	I <sub>sozcd</sub>	-2.0	mA	
	I <sub>sizcd</sub>	+3.0	mA	
1-pin input current	I <sub>pc</sub>	10	mA	
Maximum power	P <sub>o</sub>	18	W	113V to 195VDC (about 80 to 138VAC)
Withstanding voltage	V <sub>I</sub>	2.5	kV	1sec (between primary and secondary)
Allowable maximum surface temperature	T <sub>cmax</sub>	105	°C	(Ambient temperature + the module self-heating) ≤ T <sub>cmax</sub>
Operating temperature range	T <sub>opr</sub>	-25 to +80	°C	
Storage temperature range	T <sub>stg</sub>	-30 to +105	°C	

## Dimensions (Unit : mm)



## Electrical Characteristics

<12V output>

(Unless otherwise noted, V<sub>i</sub>=141V, rated load Ta=25°C)

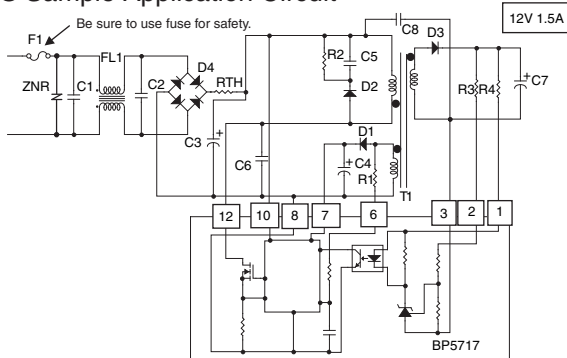
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output voltage	V <sub>o</sub>	11.4	12.0	12.6	V	I <sub>o</sub> =1500mA
Output current	I <sub>o</sub>	0	-	1500	mA	*1
Line regulation	V <sub>r</sub>	-	2	200	mV	V <sub>i</sub> =113V to 195VDC I <sub>o</sub> =1500mA
Load regulation	V <sub>l</sub>	-	5	200	mV	I <sub>o</sub> =50 to 1500mA
Output ripple voltage	V <sub>p</sub>	-	55	500	mVpp	I <sub>o</sub> =1500mA *2
Power conversion efficiency	η	82	87	-	%	I <sub>o</sub> =1500mA

\*1: Maximum output current must be reduced by ambient temperature.

\*2: An output ripple voltage sometimes changes in capacitor to use, the measurement environment.

Especially right attention has to be paid to aluminum electrolytic capacitor, because ESR changes greatly at the time of the low temperature and output voltages increase.

## Sample Application Circuit

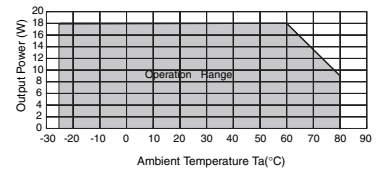


Pin No.	Name	Function
1	PC	Secondary-Side Photocoupler Current Supply Pin
2	V <sub>o</sub>	Secondary Output Voltage Control Pin. Connect the output smoothing capacitor between GND.
3	GND	GND Pin for Secondary Output
6	ZCD	Zero-Current Adjustment Pin
7	V <sub>cc</sub>	Internal Power Supply Pin
8	V <sub>in</sub> (-)	Primary Input (Negative) Pin
10	V <sub>H</sub>	Startup Pin
12	VD	Drain Pin for Internal FET. Connect to the primary windings of the external transformer.

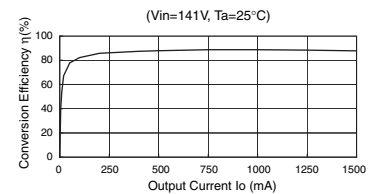
### External Component Settings

C1, C2: EMI Capacitor for AC Line	0.1 to 0.22μF/AC250V
C3: Input smoothing capacitor	47μF / 250V
C4: V <sub>cc</sub> smoothing capacitor	10μF / 50V low impedance
C5: Noise reduction capacitor	2200pF / 1kV
C6: Quasi-resonance capacitor	Use if necessary
C7: Output smoothing capacitor	1000μF / 35V×2 low impedance, Rated ripple current 5.5Arms.
C8: Noise reduction capacitor	2200pF/AC250V
D1: Rectifier diode	FRD 200V/0.5A
D2: Rectifier diode	600V/1A
D3: Rectifier diode	60V/20A
D4: Diode bridge	400V/1A
R1: Zero-Current Adjustment Resistor	47kΩ±1% 0.125W
R2: Snubber Resistor	200kΩ±5% 3Ω Rated at 300V or higher
R3: Output voltage setting resistor	69.2Ω (68kΩ + 1.2kΩ) ±1% 0.125W
R4: PC Current-Limiting Resistor	910Ω ±1% 0.125W
T1: Switching transformer	-
F1: Fuse	Be sure to use this for safety
FL1: EMI Filter for AC Line	-
ZNR: Varistor	Be sure to use this for safety
RTH: Thermistor	Use if necessary

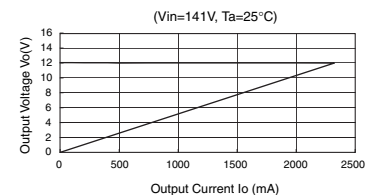
## Derating Curve



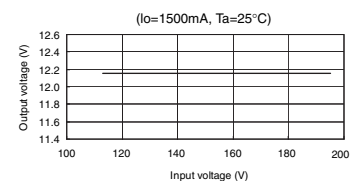
## Conversion Efficiency



## Load Regulation



## Line Regulation



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