TOPPOWER

TP15AC series



DESCRIPTION : **15W 4KVAC Isolation Wide Input AC/DC Converters**

The rated output power of TP15AC series is 15W,With very low no-load consumption (only ＜0.1W), Low leakage current(only 0.1mA),ultra-small size, （50.8*25.4*15.3mm） ,isolated voltage up to 4KVAC. Product safe and reliable,Good EMC performance,EMC And meet the safety specifications of IEC/EN61000-4,CISPR22/EN55022,UL60950/EN60950/EN60601,etc.

Widely used in medical, industrial, office and civil industries, if applied to the bad electromagnetic compatibility must refer to the application circuit

FEATURES

Universal input voltage range	AC and DC dual-use	Wide input voltage: 4:1
Low power consumption	High efficiency,high power density, ultra-small size	Over current protection, Short circuit protection
Low Ripple & Noise	RoHS compliant	Operating temperature: -40℃to70℃

SELECTION GUIDE

Part Number	Input Voltage		Output		Efficiency (typ.) %
	VAC	VDC	Voltage （VDC）	Current（A）	
TP15AC220S03W	85-265	120-370	3.3	3.00	80
TP15AC220S05W	85-265	120-370	5	3.00	84
TP15AC220S09W	85-265	120-370	9	1.66	85
TP15AC220S12W	85-265	120-370	12	1.25	85
TP15AC220S15W	85-265	120-370	15	1.00	87
TP15AC220S24W	85-265	120-370	24	0.62	87

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

INPUT CHARACTERISTICS

Parameter	Conditions	Mini.	Typ.	Max.	Units
Voltage range	DC Input	120	220	370	VDC
Voltage range	AC Input	85	220	265	VAC
Input frequency		50		60	HZ
Input Current	115VAC			210	mA
Input Current	230VAC			100	mA
Inrush current	115VAC		16		A
Inrush current	230VAC		30		A
External fuse recommended value		1A/250V, slow fusing, necessary			
Hot plug		Unavailable			
Leakage current	265VAC/50Hz		＜0.1		mA

OUTPUT CHARACTERISTICS

Parameter	Conditions	Mini.	Typ.	Max.	Units
Output voltage accuracy				±2	%
Line regulation				±1	%
Load regulation				±1	%
Short-circuit protection	Overvoltage, overcurrent, short circuit protection,self-recovery				
Ripple & Noise	20MHz bandwidth (peak-peak value)		50	100	mv
Temperature Coefficient			±0.03		%/℃
Start rising time	115VAC Input while full-load		200		ms
Start rising time	230VAC Input while full-load		100		ms
Output hold time	115VAC Input while full-load		15		ms
Output hold time	230VAC Input while full-load		40		ms

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TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Mini.	Typ.	Max.	Units
Isolation voltage	Tested for 1 min.	4000			VAC
Operating Temperature	According to the output load derating curve	-40		+70	℃
Storage Temperature		-40		+85	℃
Storage Humidity		10		95	% .RH max

Case temperature shall not exceed the maximum case temperature

SAFETY & ELECTROMAGNETIC COMPATIBILITY

Safe standard	UL1012,EN60950,EN60601,UL60950,UL60601
Isolated voltage	I/P-O/P:4000VAC
Isolation resistance	I/P-O/P>100M Ohms/500VDC 25℃ 70% RH
Conduction and radiation	EN55011, EN55022 (CISPR22) CLASS B
Electrostatic discharge(ESD)	IEC/EN 61000-4-2 level 4 8kV/15kV
Rf radiation immunity (RF)	IEC/EN 61000-4-3
EFT	IEC/EN 61000-4-4 level 4 4kV (Note: see application circuit for details)
Surge	IEC/EN 61000-4-5 level 4 2kV (Note: see application circuit for details)
MTBF	200K hrs min. MIL-HDBK-217F(25)

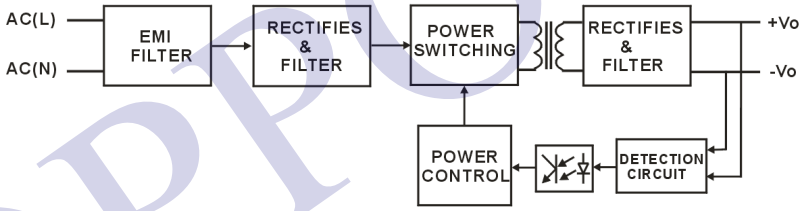
NOTES

1.The above data, except for special instructions, are measured at TA = 25℃, humidity <75%, input nominal voltage 230Vac and output rated load

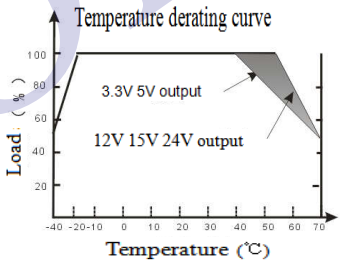
2.Ripple and noise are measured according to the application circuit of this manual, using a 300mm twisted pair and in the case of a bandwidth of 20MHz

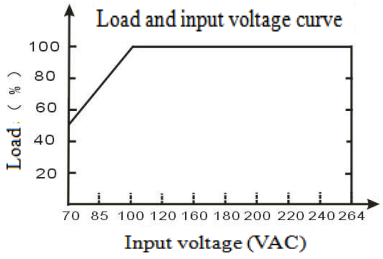
3.The parts in the system is considered as a component, need to combine the terminal equipment for electromagnetic compatibility related confirmation.

PRODUCT SCHEMATIC

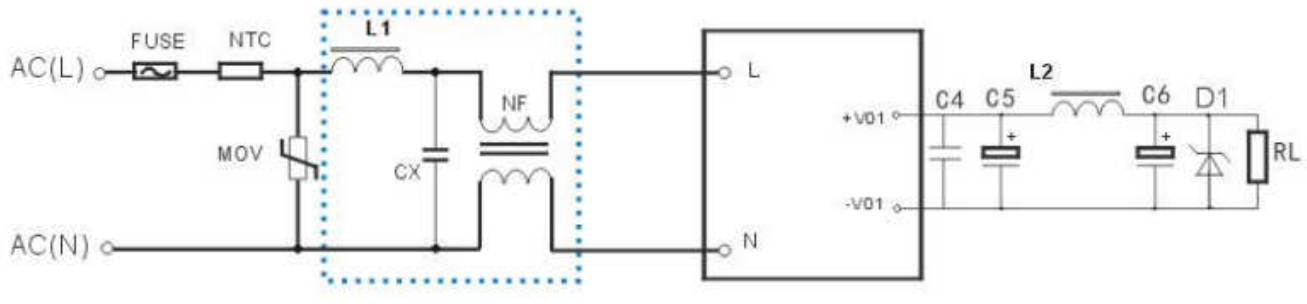


DERATING CURVE





TYPICAL APPLICATION CIRCUIT



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NOTES:

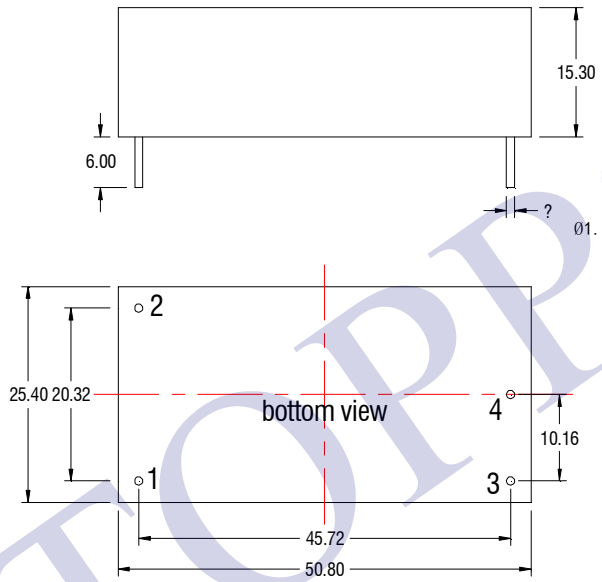
1. The output filter capacitance C4 is the electrolytic capacitor. It is recommended to use the high frequency low resistance electrolytic capacitance, the capacity and the current of the flow. Please refer to the technical specifications provided by the manufacturers. Capacitance pressure reduction is greater than 80%. The C5 is to remove the high frequency noise. D1 is recommended for the TVS tube to protect the rear circuit (when the module is abnormal).
2. The dashed box is an EMC filter that is accessible for higher EMC requirements, which can be omitted while general applications
3. We has formed a filter for C1, C2, C3 and NF ,for the customer to use, the model is FA01.

TYPICAL APPLICATION CIRCUIT

Component / PN	FUSE	NTC	NF	L1	MOV	CX	L2	C5/C6	C4	D1
TP15AC220S03W	T1A /250V	Recommended external NTC thermistor, model: 10D-9	NF is common mode inductance, inductance value in 30mH, current 0.5 A.	0.1 mH/ 0.5A	MOV is the voltage resistance and the recommended value is 14D471K	CX is the safety X capacitance, 104K / 275V	10uH /3A	470uF/16V	104K/50 (Ceramic capacitors)	P6KE6.8A
TP15AC220S05W								470uF/16V		P6KE6.8A
TP15AC220S09W								150uF/16V		P6KE16A
TP15AC220S12W								120uF/16V		P6KE16A
TP15AC220S15W								120uF/25V		P6KE20A
TP15AC220S24W								100uF/35V		P6KE33A

MECHANICAL DIMENSIONS

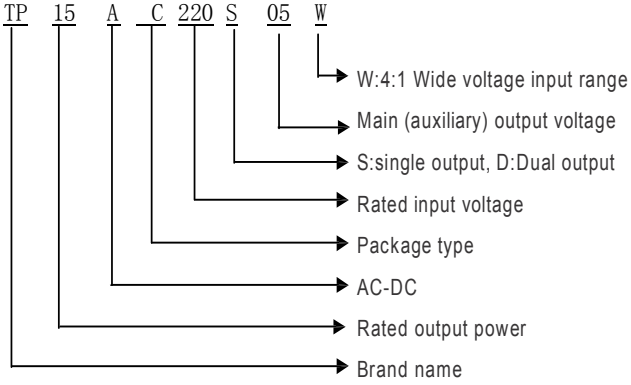
DIP packaging



All dimensions in mm ±0.2mm

PIN	Single
1	N
2	L
3	+V0
4	-V0

SELECTION GUIDE



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