TOPPOWER

TP05AC Series



DESCRIPTION : **5W 4KVAC Isolation Wide Input AC/DC Converters**

The rated output power of TP05AC series is 5W with wide input voltage range, for both AC input and DC input application. High reliability, precision, large power density, ultra-small size, no external heat sink required, stable output voltage and etc, with over current protection, EMI filter circuit, the rectifier filter circuit, 4000V isolation voltage, short circuit, overload, internal thermal protection, Widely used in telecommunications, industrial control, instrument, data acquisition, signal control and other electronic systems.

FEATURES

Universal input voltage range	Both for AC and DC input voltage	Wide input voltage: 4:1
Fixed switching frequency	Overheat protection	Over current protection
Short circuit protection	RoHS compliant	Operating temperature :-25℃ to 70℃

Part Number	Input Voltage		Output		Efficiency (Typ.)
	Rated		Voltage (VDC)	Current (A)	%
	(VAC)	(VDC)			
TP05AC220S05W	85-300	110-370	5	1.0	69
TP05AC220S06W	85-300	110-370	6	0.83	69
TP05AC220S09W	85-300	110-370	9	0.55	73
TP05AC220S12W	85-300	110-370	12	0.42	75
TP05AC220S15W	85-300	110-370	15	0.33	76
TP05AC220S24W	85-300	110-370	24	0.23	78

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

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Input / Output 1 minute, leakage current 2mA		4000		VAC
Input Frequency	10~55Hz	47		63	HZ
Over current protection	Full input range	Auto recovery			
Cooling	Free air convection				
Case material	Flame-retardant plastic				

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Startup voltage	VAC In module(85V-300V)	85	220	300	VAC
Startup voltage	VDC In module(110V-370V)	110	220	375	VDC
External fuse recommended value(wiring, rail type Package has included fuse)		Fuse must be connected, recommended 1A / 250V slow-off type			

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage accuracy				±2	%
Line regulation	Full load		±0.5		%
Load regulation	10%~100% load		±1		%
Standby power consumption				0.3	W
Over current protection	≥110%Io, self-recovery				
Over voltage protection	Over-voltage shutdown output				
Ripple and noise	20MHz bandwidth		50	100	mv
Short-circuit protection	Hiccup-type, sustainable short-circuit, self-recovery				
Switch frequency			140		Hz
Power-down hold time	110VAC		12		ms
	230VAC		80		ms

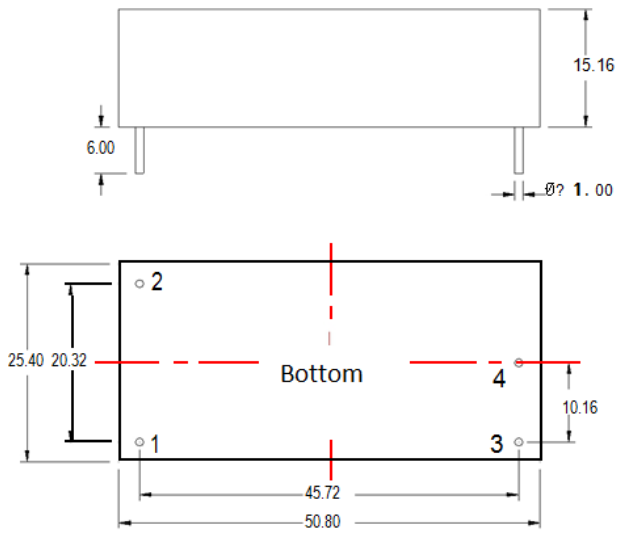
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ENVIRONMENT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating temperature	industrial-class	-40		+70	℃
Maximum case temperature	industrial-class			+95	℃
Storage temperature	Industry-class	-40		+85	℃
Relative humidity	No condensation			85	RH(%)
Temperature coefficient			±0.02		%/℃
Power derating	+55℃~+70℃	2.0			%/℃
Power derating	+0℃~-25℃	2.0			%/℃
MTBF	MIL-HDBK-217F@25℃＞300,000 h				

- Case temperature shall not exceed the maximum case temperature.

MECHANICAL DIMENSIONS

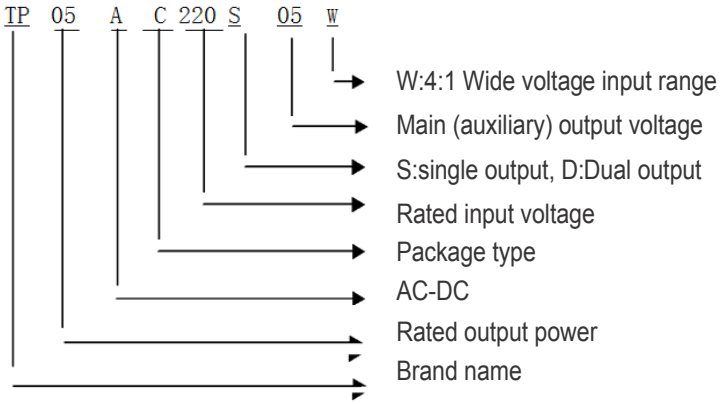


Pin	Single Output
1	N
2	L
3	+V0
4	-V0

* Pin not fitted on single output variants

Units:mm Tolerance:±0.2mm

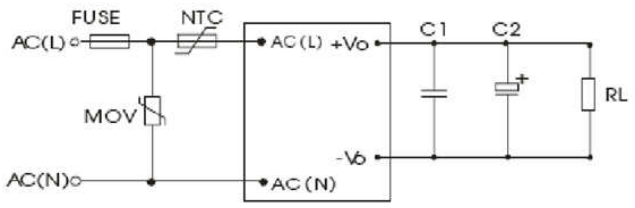
MODEL SELECTION



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RECOMMEND CIRCUIT

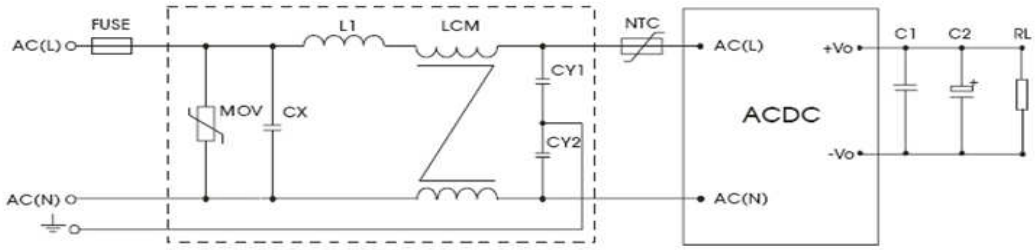
1.the typical application circuit



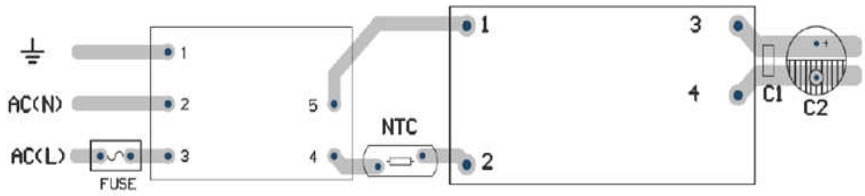
Part No.	C1(μF))	C2(μF))
TP05AC220S05W	1	220
TP05AC220S09W	1	220
TP05AC220S12W	1	100
TP05AC220S15W	1	100
TP05AC220S24W	1	47

The output filter capacitor C2, the proposed use of high-frequency low-resistance electrolytic capacitors, capacity and flow of current refer to the manufacturers to provide technical specifications. The output capacitor withstanding voltage derating factor is greater than 80%. C1 is a ceramic capacitor to remove high frequency noise. Recommended external N C thermistor, model: 12D-5. Recommended external MOV varistor, type: 14D561K.

2. EMC solutions - recommended circuit



EMC Solutions - Recommended Circuit PCB Lavout



Note: safety regulations and the width of the proposed line:

line width ⩾ 3mm, line distance ⩾ 6mm, line distance ⩾ 6mm

Component	Recommended value
MOV	14D561K
CX	0.1μF/275VAC
L1	4.7uH/2.0A
CY1	1nF/400VAC
CY2	1nF /400VAC
LCM	2.2mH
FUSE	1A/250V, Slow blow, must connect

EMC CHARATERISTICS

EMI	Conducted harassment	CISPR22/EN55022, CLASS B	
EMI	Radiation harassment	CISPR22/EN55022, CLASS B	
EMS	Electrostatic discharge	IEC/EN61000-4-2 ±6KV/8KV	perf. Criteria B
EMS	Radiation immunity	IEC/EN61000-4-3 10V/m	perf. Criteria A
EMS	Impulse group immunity	IEC/EN61000-4-4 ± 2kV	perf. Criteria B
EMS	Impulse group immunity	IEC/EN61000-4-4 ± 4kV (see recommended circuit)	perf. Criteria B
EMS	Surge Immunity	IEC/EN61000-4-5 ±1KV	perf. Criteria B
EMS	Surge Immunity	IEC/EN61000-4-5 ±2KV/±4KV (see recommended circuit)	perf. Criteria B
EMS	Conducted disturbance immunity	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A
EMS	Power frequency magnetic field immunity	IEC/EN61000-4-8 10A/m	perf. Criteria A
EMS	Voltage dips, drops and short interrupt immunity	IEC/EN61000-4-11 0%-70%	perf. Criteria B

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