


DESCRIPTION : 3W 2.5KV Isolation Wide Input AC/DC Converters

The rated output power of TP03AZ series is 3W 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, , 2500V 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 : -40℃ to 70℃

SELECTION GUIDE

Part Number	Input Voltage		Output		Efficiency (Typ.) %	Recommend output external capacitor			
	Rated	Range values	Voltage (VDC)	Current (A)		C1	C2、 C3	C4	C5
	(VAC)								
TP03AZ-S03	220(4:1)	90-264	3.3	0.6	64	104K/275V	102K/400V	220uF/16V	104K/50V
TP03AZ-S05	220(4:1)	90-264	5	0.6	69	104K/275V	102K/400V	220uF/16V	104K/50V
TP03AZ-S09	220(4:1)	90-264	9	0.33	73	104K/275V	102K/400V	100uF/16V	104K/50V
TP03AZ-S12	220(4:1)	90-264	12	0.25	75	104K/275V	102K/400V	100uF/16V	104K/50V
TP03AZ-S15	220(4:1)	90-264	15	0.2	76	104K/275V	102K/400V	47uF/25V	104K/50V
TP03AZ-S24	220(4:1)	90-264	24	0.125	78	104K/275V	102K/400V	47uF/35V	104K/50V

- TP03AZ-S24 is 1.5KVAC isolated , others are 2.5KVAC isolated

*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	1500	2500		VAC
Seismic	10~55Hz	5	5		G
Over current protection	Full input range	Auto recovery			
Cooling	Free air convection				
Case material	Flame-retardant plastic				
Fuse	T0.5A/250V				
NTC	20Ω/1W				
NF	3-10mH, 0.2A-0.5A				
MOV	7D471K				
Leakage Current	<1mA at 230VAC/50Hz				
Isolation resistance	I/P-O/P>100M Ohms/500VDC 25℃ 70% RH				
EMI / RFI conducted	EN55011, EN55022 (CISPR22) (For details, see the application notes)				
ESD	IEC/EN 61000-4-2 level 4 8kV/15kV (For details, see the application notes)				
RF	IEC/EN 61000-4-3(For details, see the application notes)				
EFT	IEC/EN 61000-4-4 level 4 4kV(For details, see the application notes)				
Surge	IEC/EN 61000-4-5 level 4 2kV/4kV(For details, see the application notes)				
MTBF	200K hrs min.	MIL-HDBK-217F(25)			
Dimension	32*20.0*15mm (L*W*H)				

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Startup voltage	220VAC In module(90V-264V)	90	220	264	VAC
Input frequency	47 ~ 440Hz				
Input current	45mA / 115VAC 23m A / 230VAC				

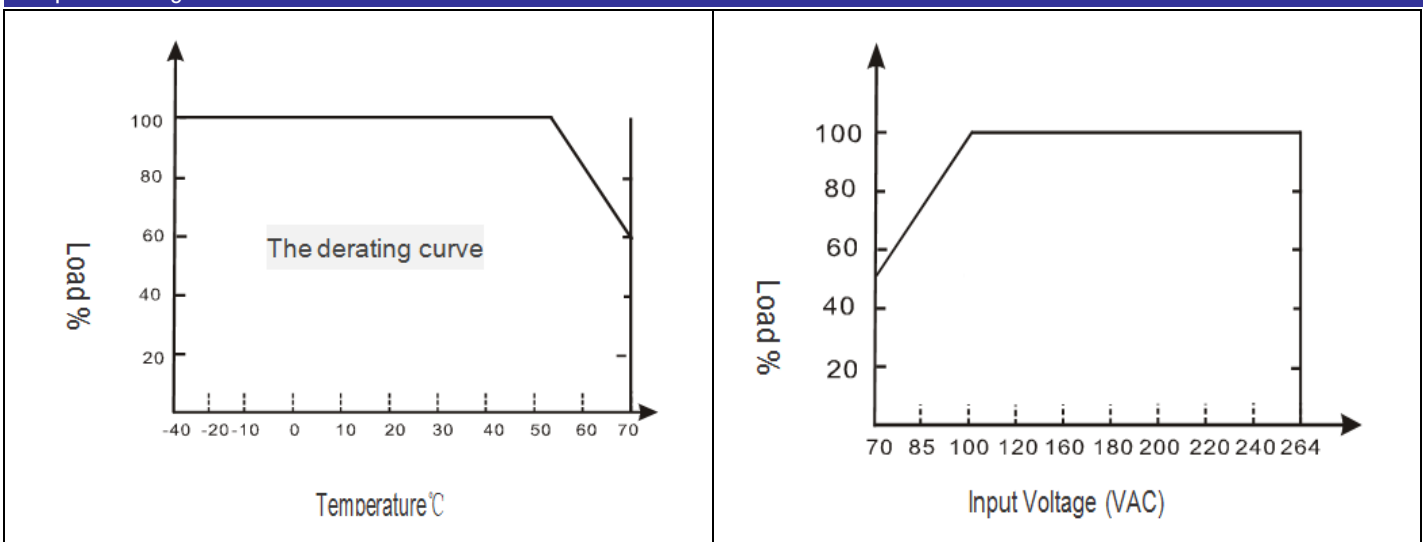
OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage accuracy	$I_o=0.1 \cdots 1.0 \times I_{onom}$ $V_i=V_i$ rated		± 2		%
			± 2		%
Line regulation	$V_{imin} \leq V_i \leq V_{imax}$		± 0.1		%
Load regulation	$I_o=0.1 \cdots 1.0 \times I_{onom}$ $V_{imin} \leq V_i \leq V_{imax}$		± 1		%
Ripple and noise	20MHz bandwidth		50		mVp-p
Over-current protection	$V_{imin} \leq V_i \leq V_{imax}$	120			%
Switch frequency	$V_{imin} \leq V_i \leq V_{imax}$		100K		Hz

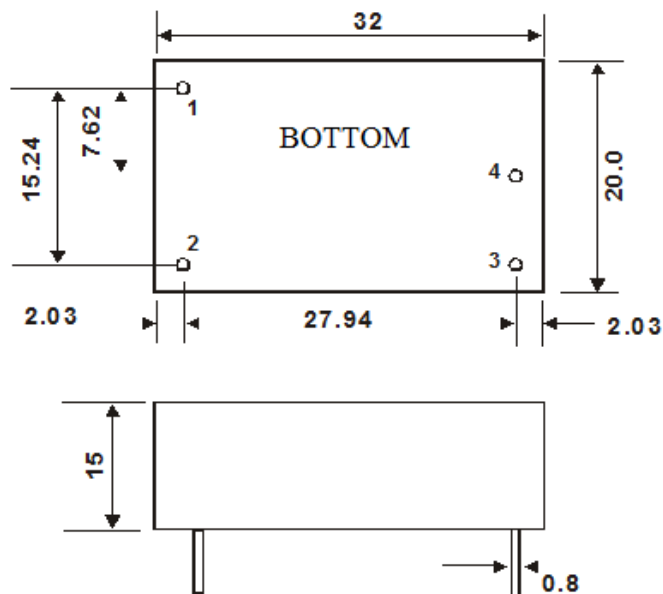
ENVIRONMENT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating temperature	industrial-class	-40		+70	°C
Maximum case temperature	industrial-class			+95	°C
Storage temperature	Industry-class	-40		+85	°C
Relative humidity	No condensation	25		85	RH(%)
Temperature coefficient			± 0.03		%/°C

Output Derating



MECHANICAL DIMENSIONS



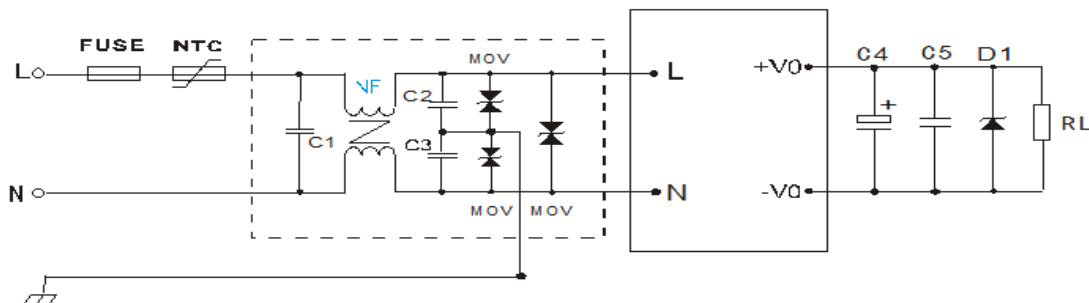
Pin	Function
1	AC
2	AC
3	-Vo
4	+Vo

* Pin not fitted on single output variants

Units:mm

Tolerance:±0.2mm

Block Diagram



C1, C2, C3, C4, C5 capacitor values refer to parameter table

USING ATTENTIONS

- 1.The output filter capacitor C4 is electrolytic capacitor, recommend using of high frequency and low resistance of electrolytic capacitors, the capacity and the current flowing-through need refer to the technical specifications provided by the manufacturer. Capacitance voltage derating is greater than 80% .C5 is use to remove high frequency noise.TVS D1 is used for protecting flow-up circuit (when module be abnormal)and recommended to use.
- 2.EMC filter used in the dashed box is to meet the higher requirements, if it is used in general applications, it can be omitted.
- 3.Our company makes the circuit(C1,C2,C3,NF) in the dashed box into products, and named: FA01 and can be used with switching power supply.