TP03(05)AD Series

DESCRIPTION: **3W, 5W 3KVAC Isolation Wide Input AC/DC Converters**

TP03(05)AD series is 3W ,5W with wide input voltage range, for both AC input and DC input application, come with Low power consumption <0.05W , low Leakage current @0.1mA ,miniature size:35*25.4*18mm ,and good EMC performance, can meet the EMC and safety specifications: IEC / EN61000-4 CISPR32 / EN55032, UL62368, EN62368, IEC62368 and other related standards. This series of power supplies have important applications in many fields such as LED, street light control, industry, office and civil industries ,etc.***please refer to the application circuit when the parts is applied in the environment with severe electromagnetic compatibility.

FEATURES

Universal input voltage range	Low Ripple &Noise	Wide input voltage: 4:1
Low power consumption <0.05W	High efficiency, high power density, miniature	Over load/short circuit protection
Both for AC and DC input voltage	RoHS compliant	Operating temperature: -40℃ to 70℃

SELECTION GUIDE

Part Number	Input		Output		Efficiency (Typ.) %
	Voltage VAC	Voltage VDC	Voltage (VDC)	Current (A)	
TP03AD220S03W	85-305	120-430	3.3	0.70	66
TP03AD220S05W	85-305	120-430	5	0.60	76
TP03AD220S09W	85-305	120-430	9	0.33	78
TP03AD220S12W	85-305	120-430	12	0.25	79
TP03AD220S15W	85-305	120-430	15	0.20	80
TP03AD220S24W	85-305	120-430	24	0.12	81
TP05AD220S03W	85-305	120-430	3.3	1.00	68
TP05AD220S05W	85-305	120-430	5	1.00	78
TP05AD220S09W	85-305	120-430	9	0.56	79
TP05AD220S12W	85-305	120-430	12	0.42	80
TP05AD220S15W	85-305	120-430	15	0.33	81
TP05AD220S24W	85-305	120-430	24	0.21	81

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

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	DC input	120	220	430	VDC
Input Voltage Range	AC input	85	220	305	VAC
Input Frequency		47		440	HZ
Input Current	115VAC		95		mA
Input Current	230VAC		46		mA
Inrush Current	115VAC		10		A
Inrush Current	230VAC		30		A
Recommended External Fuse		Fusible resistor: 10Ω/1W			
Hot Plug		Unavailable			
Leakage current	<0.1mA at 265VAC/50Hz				

OUTPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±2	%
Output Voltage Accuracy (3.3V output)				±3	%
Line Regulation				±1	%
Load Regulation				±1	%
Short Circuit Protection		over-voltage/over-current/short circuit protection, self-recovery			
Temperature Coefficient	0~50℃		±0.03		%/℃
Start rising time	115VAC input		200		ms
Start rising time	230VAC input		100		ms
Output hold time	115VAC input		15		ms
Output hold time	230VAC input		40		ms

ENVIRONMENT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature	≥50℃, derating @ 0.12W/℃	-40		+70	℃
Storage Temperature		-40		+85	℃
Storage Humidity		10		95	% .RH max
Operating Humidity	85% .RH max				
Vibration coefficient	10~500Hz, 2G10min./1cycle, 60min. each along X, Y, Z axes				

- Case temperature shall not exceed the maximum case temperature.

SAFETY & ELECTROMAGNETIC COMPATIBILITY

Safety Standard	EN60950,EN60601,UL60950
Isolation 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 (refer toTypical application circuit)
Electrostatic Discharge (ESD)	IEC/EN 61000-4-2 level 4 8kV/15kV (refer toTypical application circuit)
RF radiation immunity (RF)	IEC/EN 61000-4-3 (refer toTypical application circuit)
Electrical Fast Transient Burst (EFT)	IEC/EN 61000-4-4 level 4 4kV (refer toTypical application circuit)
Surge	IEC/EN 61000-4-5 level 4 2kV
MTBF	200K hrs min. MIL-HDBK-217F(25)

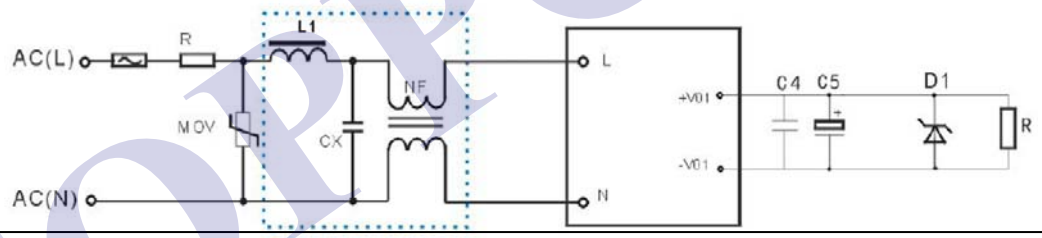
NOTES

1、 The data in this manual are measured at TA=25 ° C, humidity <75%, input nominal voltage 230Vac and output rated load,except for special instructions.

2、 Ripple and noise are measured with a bandwidth of 20MHz, using a 300mm twisted pair, and a 0.1uF high-frequency ceramic capacitor and a 47uF electrolytic capacitor in parallel at the same time.

3、This power supply is considered as a component in the system, and it is necessary to confirm the electromagnetic compatibility with the terminal equipment.

APPLICATION CIRCUIT



Notes:

1. C4 is electrolytic capacitor ,recommend to use High-frequency low-resistance electrolytic capacitor (the capacitance and current refer to data sheet) ,C5 is to filter out high frequency noise

2. The EMC filter within the dashed box is connected to meet the higher EMC requirements.it is not necessary in the general application

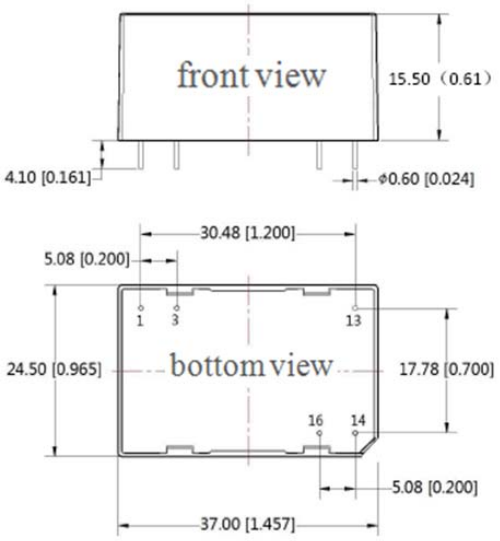
3.The components L1,CX,NF in the dashed box, we have made them into a filter , Named PN: FA01

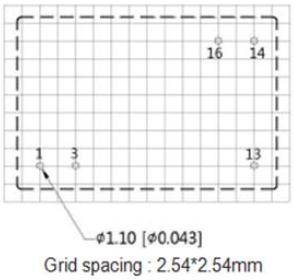
APPLICATION CIRCUIT TYPICAL VALUES

Component / PN	FUSE	R	NF	MOV	CX	L1	C5	C4	D1
3.3V output	/	Fusible resistor: 10Ω/1W	NF is Common-mode inductance, the value 30mH, current 0.5A.	MOV is Varistors, recommended value 14D561K	CX is Safety grade capacitance ,104K/275V	1Mh /0.5A	470uF/16V	104K/50V (ceramic capacitor)	P6KE6.8A
5V output							470uF/16V		P6KE6.8A
9V output							150uF/16V		P6KE16A
12V output							120uF/16V		P6KE16A
15V output							120uF/25V		P6KE20A
24V output							100uF/35V		P6KE33A

MECHANICAL DIMENSIONS

DIP package





PIN	design
1	AC(L)
3	AC(N)
13	NC
14	-Vo
16	+Vo

unit: mm

tolerance of PIN diameter: ±0.10MM Unmarked tolerances :±0.50MM

SELECTION GUIDE