

Pin	Function
1	L (AC)
2	N (AC)
3	-Vo
4	+Vo

Unit: mm
Pin diameter tolerances: ± 0.10
Pin length tolerances: ± 1.00
General tolerances: ± 0.50

VA(03)05-T2Sxx-E AC-DC Power Supply Module Universal AC input, isolated single output

Product Characteristics

- Universal AC input, 85-264VAC (or 130-370VDC)
- Input and output isolation, 3000VAC
- Applications: VA(03)05-T2Sxx-E is a small package power supply, suitable for low power needed area where universal AC input is available, such as smart home appliances, industrial equipment, communication and other civil applications.
- Designed according to EN62368-1
- Output protection: OCP, SCP

Model Selection Table

Model	Dimensions (L*W*H)	Rated power	Rated output voltage/current		Typical efficiency ($V_{in}=1000VDC$)	
			V_o	I_o		
VA03-T2S03-E	38.0*19.5*17.0mm	2W	3.3V	600mA	65%	
VA03-T2S05-E			5V	600mA	68%	
VA03-T2S09-E			9V	330mA	69%	
VA03-T2S12-E			3W	12V	250mA	70%
VA03-T2S15-E				15V	200mA	71%
VA03-T2S24-E				24V	125mA	72%
VA05-T2S03-E		5W	3.3W	3.3V	1000mA	65%
VA05-T2S05-E				5V	1000mA	69%
VA05-T2S09-E				9V	550mA	70%
VA05-T2S12-E				12V	410mA	71%
VA05-T2S15-E				15V	330mA	72%
VA05-T2S24-E				24V	210mA	73%

Input Characteristics

Item	Test Condition / Description	MIN	TYP	MAX
Input voltage range	AC input	85VAC	230VAC	264VAC
	DC input	130VDC	310VDC	370VDC
Input current	230VAC Input, VA03-T2Sxx-E	-	-	40mA
	115VAC Input, VA03-T2Sxx-E	-	-	80mA
	230VAC Input, VA05-T2Sxx-E	-	-	80mA
	115VAC Input, VA05-T2Sxx-E	-	-	160mA

Output Characteristics

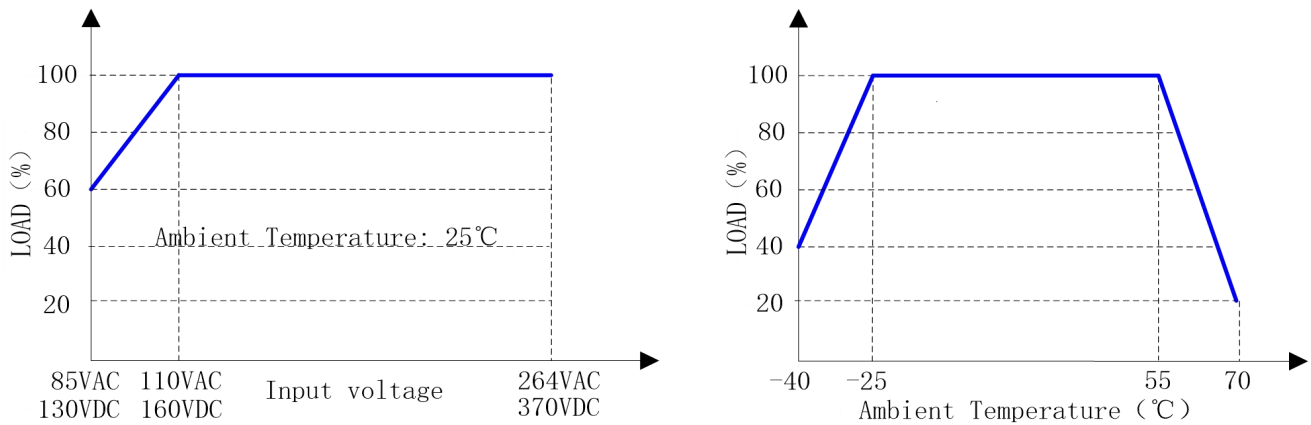
Item	Test Condition / Description	MIN	TYP	MAX
Voltage accuracy		-	±2%	-
Line regulation	100%Io	-	±1.5%	-
Load regulation	10%-100%Io	-	±2%	-
Ripple and noise*	20MHz bandwidth (Peak-peak value)	-	200mV	-
OCP	Output over current protection	≥110%Io, Self recovery		
SCP	Output short circuit protection	Self recovery		
Minimum load		0	-	-
Hold-up time	Vin = 1000VDC, 100%Io	-	10ms	-
Hot plug		Prohibited		
Paralleled working		Prohibited		

Remark *: Oscilloscope probe should be connected with the paralleled combination of a 10uF high frequency low resistance electrolytic capacitor and a 0.1uF ceramic capacitor. An external L-C filter (reference to L2 and C1 in the recommendation circuit) should be added to get lower ripple voltage if necessary.

General Characteristics

Item	Test Condition / Description	MIN	TYP	MAX
Working temperature		-40°C	-	+70°C
Storage temperature		-40°C	-	+85°C
Storage humidity		-	-	95%RH
Switching frequency	Vin = 1000VDC, 100%Io	-	65kHz	-
Isolation voltage	Input to output, 60s, ≤5mA	3000VAC	-	-
MTBF	MIL-HDBK-217F@25°C	215000h	-	-
Weight		-	18g	-
Cooling method		Natural air cooling		

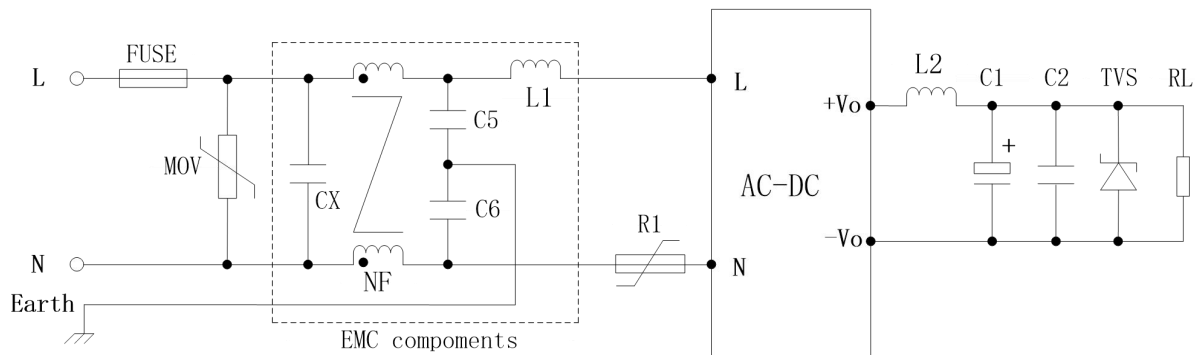
Derating Curves



Comment: Both temperature derating and input voltage derating should be considered.

Application Notes

1. Application circuit recommendation



2. Input part recommendation

Component	Function and description	Recommendation
FUSE	Cut off fault circuit	Required, 1A, time lag type is preferred
R1	Limit the surge current	NTC, 10D-9
MOV	Absorb surge energy	Varistor, 561KD14
CX	EMC components	Safety X1 capacitor, 0.1uF
L1		Differential mode inductor, 330μH
NF		Common mode inductor, 10~30mH
C5, C6		Safety Y1 capacitor, 1nF

3. Output part recommendation

Output voltage	L2	C1	C2	TVS	RL
3.3V	6.8 μ H	100 μ F/16V	1 μ F/25V	SMBJ5.0A	User load
5V				SMBJ7.0A	
9V	10 μ H	100 μ F/25V		SMBJ12A	
12V		100 μ F/25V		SMBJ20A	
15V		68 μ F/25V	SMBJ20A		
24V		47 μ F/50V	1 μ F/50V	SMBJ30A	

Remarks:

- L2: Output filter inductor.
- C1: Output filter electrolytic capacitor, high frequency low resistance electrolytic capacitor is recommended.
- C2: Ceramic capacitor to suppress high frequency noise.
- TVS: Transient suppression diode to protect post-stage circuit (user load).

Notes:

- If not specified, the test condition is ambient temperature 25 $^{\circ}$ C, humidity < 75%, input voltage 230VDC and output rated load.
- All parameters listed in the data sheet are tested according to the company's enterprise standards.
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