

Typical Features

- ◆ Wide input voltage range: 85-265VAC/120-380VDC
- ◆ No load power consumption $\leq 0.3W$
- ◆ Transfer Efficiency 83%(TYP.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over current, over voltage, over temp
- ◆ Isolation voltage: 3000Vac
- ◆ Meet IEC62368/UL62368//EN62368/ test standard
- ◆ PCB mounting
- ◆ Certified by CE, RoHS



Application Field

DA24-220SXXG2N3 Series----- a compact size, high efficient power module offered by Aipu. It features universal input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, good EMC performance. EMC and Safety standard meet international EN55032 ,IEC/EN61000. These series have important application for power, industry, instrument and smart home field. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

Typical Product List

Certificate	Part No.	Output Specifications			Max. Capacitive Load	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load, 220Vac (Typical)
		Power	Voltage1	Current1			
		(W)	Vo(V)	Io(mA)		mVp-p	%
-	DA24-220S3V3G2N3	9.9	3.3	3000	5000	100	75
-	DA24-220S05G2N3	15	5	3000	5000	100	77
-	DA24-220S7V5G2N3	24	7.5	3200	4000	120	80
CE/RoHS	DA24-220S12G2N3	24	12	2000	3000	160	83
-	DA24-220S24G2N3	24	24	1000	600	160	85

Note 1: "*" are models being developing.

Note 2: The typical value of output efficiency is based on module is full loaded and burned-in after half an hour.

Note 3: The fluctuation range of full load efficiency(% ,TYP) in table is $\pm 2\%$, full load efficiency= output power/module's input power.

Input Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Input Voltage Range	AC input	85	220	265	VAC
	DC input	120	310	380	VDC
Input Frequency range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.5	A

	220VAC	/	/	0.3	
Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Input Fuse	-	1A-2A/250VAC slow fusing			
Hot Plug	-	Unavailable			
Remote Control Terminal	-	Unavailable			

Output Specifications

Item		Operating Condition	Min		Typ.	Max	Unit
Voltage Accuracy		Full input voltage range, any load	-		±2.0	±3.0	%
Line Regulation		Nominal load	-			±0.5	%
Load Regulation		Nominal input voltage, 20%~100% load	-			±1.0	%
No Load Power Consumption		Input 115VAC	-		-	0.3	W
		Input 220VAC	-		-		
Minimum Load		Single Output	0		-	-	%
Start up Delay Time		Nominal input voltage (full load)	-		1500	-	mS
Power-off Holding Time		Input 115VAC(full load)			50		mS
		Input 220VAC (full load)	-		150	-	
Dynamic Response	Overshoot range	25%~50%~25%	-10		-	+10	%
	Recovery time	50%~75%~50%	-5.0		-	+5.0	mS
Output Overshoot		Full input voltage range	≤10%Vo				%
Short circuit Protection			Continuous, self-recovery				Hiccup
Temperature Drift		-	-		±0.03%	-	%/°C
Over Current Protection		Input 220VAC	≥130% Io, self-recovery				Hiccup
Over Voltage Proteciton		Output 3.6VDC	-		-	5.5	VDC
		Output 5.0VDC	-		-	7.5	
		Output 12VDC	-		-	18	
		Output 15VDC	-		-	20	
		Output 24VDC	-		-	30	
Ripple & Noise		-	-		80	160	mV
		Note: Ripple & noise is tested by Twisted Pair Method, for details please check “Ripple & Noise Test” at back.					

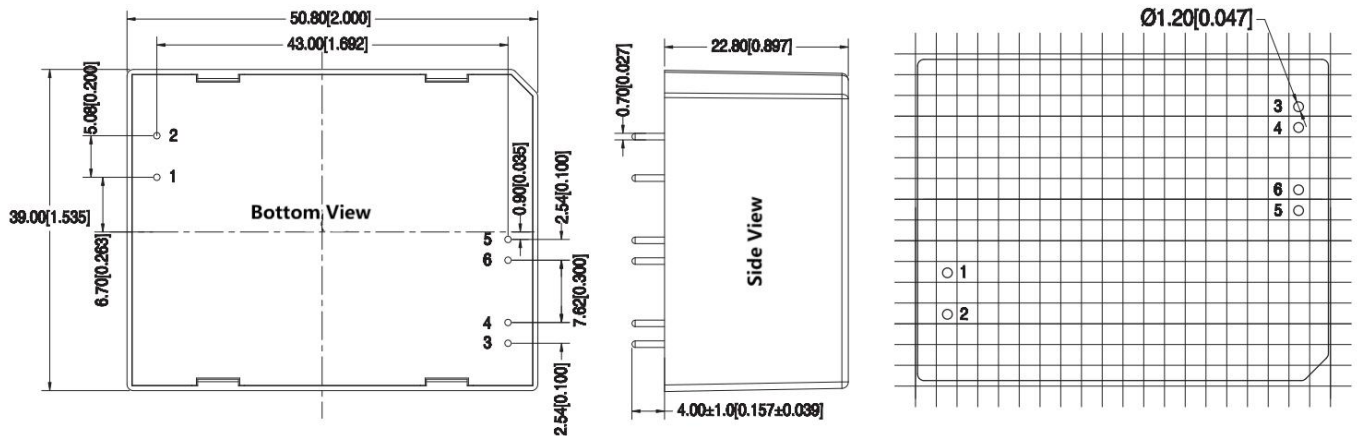
General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave soldering	260±4℃, time 5-10S			
	Manual soldering	360±8℃, time 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current≤5mA	3000	-	-	VAC
Insulation Resistance	Input-Output@ DC500V	100	-	-	MΩ
Safety Standard	-	EN60950、IEC60950			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Safety Class	-	CLASS II			
Class of Case Material		UL94 V-0			
MTBF	-	MIL-HDBK-217F@25℃>300,000H			

EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (See Recommended Circuit on photo 2)
		RE	CISPR22/EN55032	CLASS B (See Recommended Circuit on photo 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (See Recommended Circuit on photo 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (See Recommended Circuit on photo 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Dimension



Note:
Unit:mm[inch]
Pin diameter tolerance:±0.10mm[±0.004 inch]
General tolerance:±1.00mm[±0.039 inch]

Grid 2.54*2.54mm

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

Packing Code

L x W x H

-

50.8 x 39.0 x 22.8 mm

2.000 × 1.535 × 0.897 inch

Pin Specification

Pin	1	2	3,4	5,6
Single(S)	AC(N)	AC(L)	+Vo	-Vo

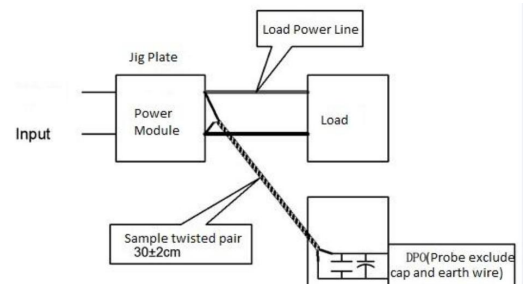
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

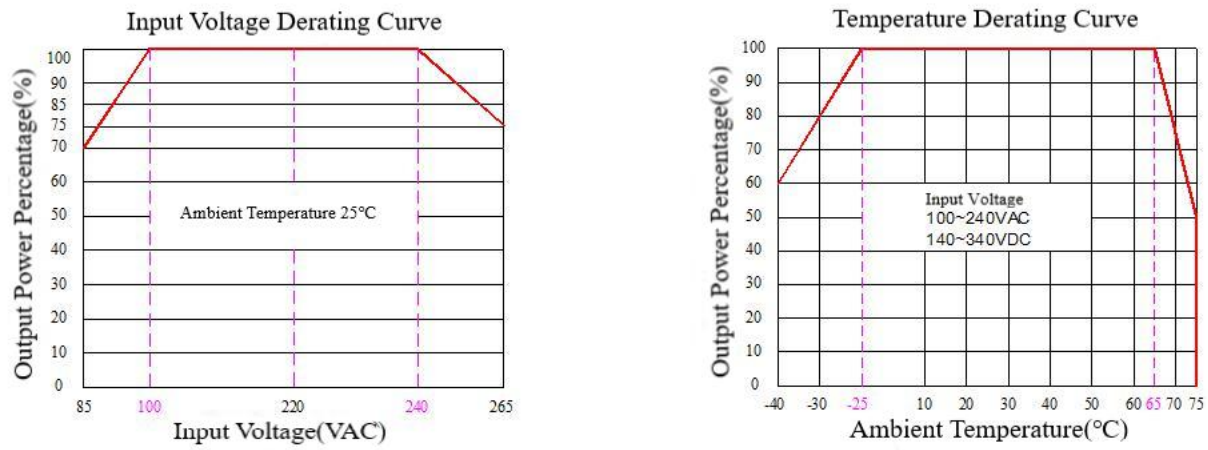
Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



Product Characteristic Curve



Note 1: Input Voltage should be derated based on Input voltage derating curve when it is 85~100VAC/240~265VAC/120~140VDC/340~380VDC.

Note 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Typical Application Circuit and EMC Recommended Circuit

1. Typical Application Circuit

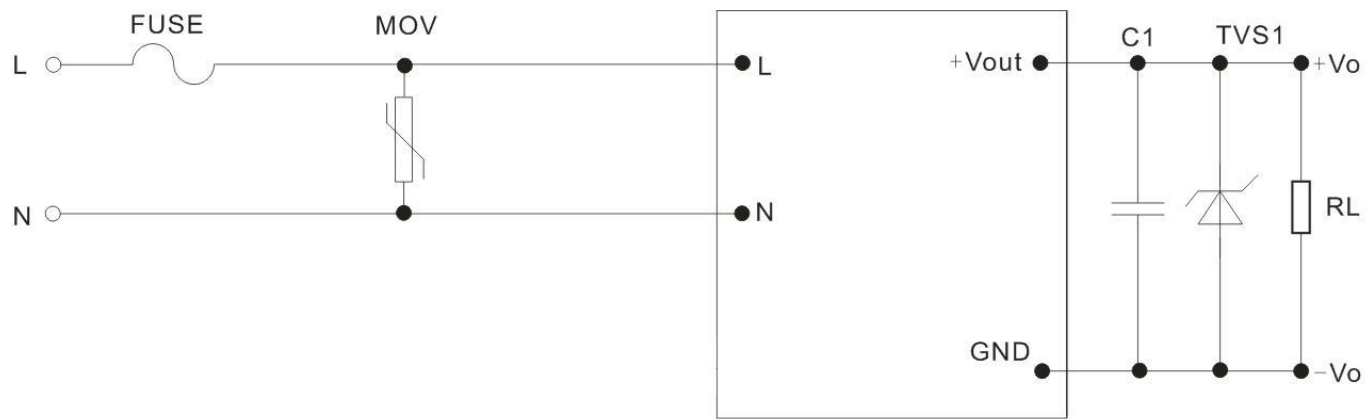


Photo 1

Output Voltage	3.6V	5V	9V	12V	15V	24V	28V
TVS recommended value	SMBJ7.0A	SMBJ7.0A	SMBJ12A	SMBJ20A	SMBJ20A	SMBJ30A	SMBJ43A

Note:

Output capacitor C1 is ceramic capacitor, to filter high frequency noise. TVS tube is recommended to use to protect post-circuit when module is un-normal. Recommend FUSE model:2A/250V slow fusing.

Recommend external MOV voltage dependent resistor, model:14D511K.

2. EMC recommended circuit

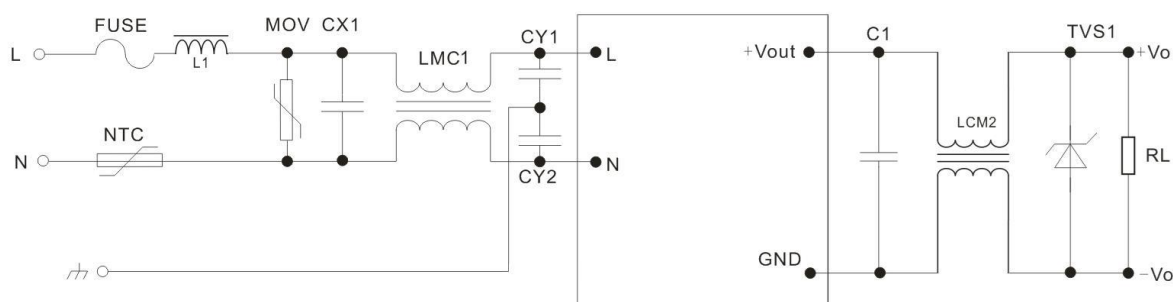


Photo 2

Components	Recommend Value	Components	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC1	15mH, recommend our common mode inductor
FUSE	2A/250V, slow fusing, necessary	LMC2	2mH±20%
CY1, CY2	1000pF/400VAC	L1	3.9mH±10%

Note 1:

1. The product should be used within the specification range, or it will cause permanent damage to it;
2. The input terminal should connect to fuse;
3. If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
4. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of **Ta=25°C**, **humidity<75%** with nominal input voltage and rated output load (pure resistance load);
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
8. We can provide product customization service,
9. Specifications are subject to change without prior notice, please follow up with our website for newest manual.

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