



Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption \leq 0.5W
- ◆ Transfer efficiency (typ. 87%)
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current
- ◆ Isolation voltage: 2500Vac
- ◆ Plastic case, conform to UL94V-0 Class
- ◆ PCB mounting



Application Field

FA24-220SXXG3N3 Series----- a compact size, high efficient power converter offered by Aipu. It features universal input voltage, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance. EMC and Safety standard meet international EN55032,IEC/EN61000. It widely used in power, industrial, instrument, smart home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

Typical Product List

Part No.	Output Specification					Max. Capacitive Load	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load 220Vac (Typical)
	Power	Voltage 1	Current 1	Voltage 2	Current 2			
	(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
FA24-220S12G3N3	24	12.0	2000	-	-	2000	150	85
FA24-220S15G3N3	24	15.0	1600	-	-	2000	80	86
FA24-220S24G3N3	24	24	1000	-	-	800	100	87

Note 1: Ripple&Noise of FA24-220S15G3N3, FA24-220S24G3N3 should be tested with EMC solution recommended circuit, please see photo 1 at back.

Note 2: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 3: "*" is model under developing.

Note 4: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 5: The fluctuation range of full load efficiency(% ,TYP) is $\pm 2\%$, full load output efficiency= total output power/module's input power.

Input Specification

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	/	/	250	mA
	220VAC	/	/	150	



Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended value	-	2A-5A/ 250VAC slow-fusing			
Hot plug	-	Unavailable			
Remote control terminal	-	Unavailable			

Output Specification

Item	Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy	Full input voltage range Any load	Vo1	-	-	±2.0	%
		Vo2	-	-	-	%
Line Regulation	Nominal Load	Vo1	-	-	±2.0	%
		Vo2	-	-	-	%
Load Regulation	Nominal input Voltage 20%~100% load	Vo1	-	-	±2.0	%
		Vo2	-	-	-	%
No load power consumption	Input 115VAC	-	-	0.5	W	
	Input 220VAC	-	-			
Minimum load	Single Output	0	-	-	%	
	Positive Negative Dual output common grounded	-	-	-	%	
	Positive Negative Dual output isolated	-	-	-		
Turn-on Delay Time	Nominal input voltage, full load	-	300	-	mS	
Power-off Holding Time	Input 115VAC (full load)	-	65	-	mS	
	Input 220VAC (full load)	-		-		
Output Overshooting	Full input voltage range (full load)	-	-	10	%	
Dynamic Response	25%~50%~25%	Overshoot range (%) : ≤±5%				%
	50%~75%~50%	Recovery time (mS) : ≤5.0mS				mS
Short Circuit Protection	Input full voltage range	Continuous, Self-recovery				Hiccup
Drift Coefficient	-	-	±0.03%	-	%/°C	
Over Current Protection	Input 220VAC	≥120% Io, Self-recovery				Hiccup
Ripple & Noise	Vo=12.0V				≤150	mV
	Vo=15.0V				≤80	mV



	Vo=24.0V		≤100	
Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.				

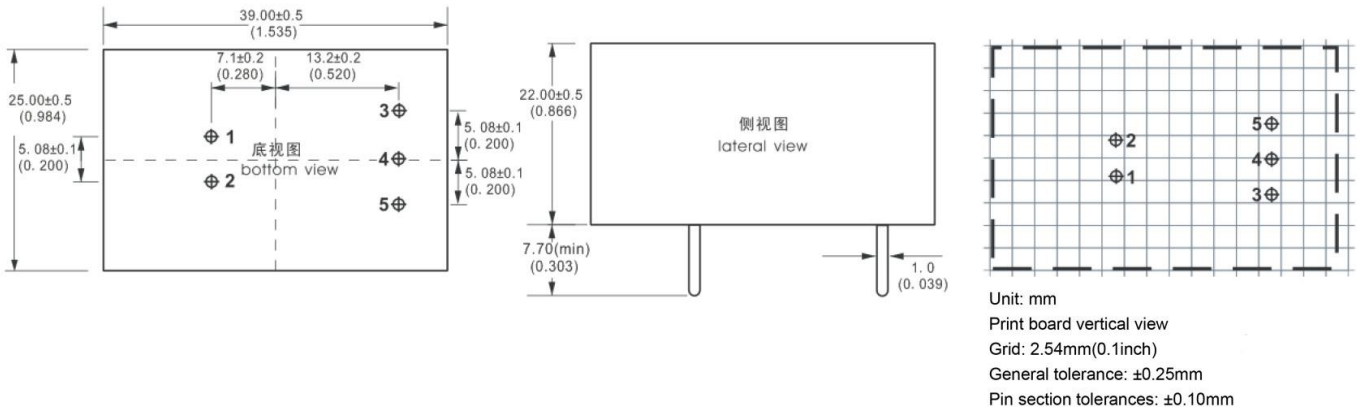
General Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	60	65	70	KHz
Operating Temperature	-	-40	-	+75	°C
Storage Temperature	-	-40	-	+85	
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current ≤5mA	2500	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
MTBF	-	≥300,000H @25°C			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Class of Case Material	-	UL94V-0			

EMC Characteristics

Total Item	Sub Item	Test Standard	Class	
EMC	EMI	CE	CISPR22/EN55032 CLASS B (see recommended circuit Photo 2)	
		RE	CISPR22/EN55032 CLASS B (see recommended circuit Photo 2)	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B
		ESD	IEC/EN61000-4-2	Contact ±4KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B (see recommended circuit Photo 2)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Packing Dimension



Packing Code	L x W x H
G3	39.0 x 25.0 x 22.0 mm

Pin Definition

Pin-out	1	2	3	4	5
Single (S)	AC(N)	AC(L)	GND	NP	+Vo

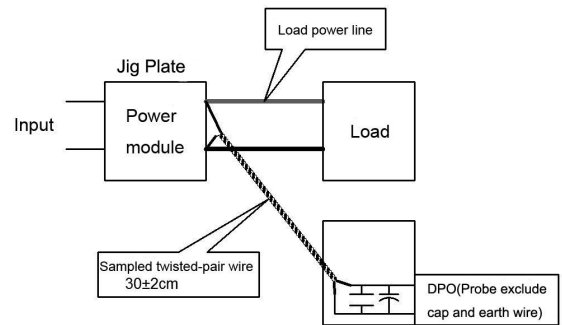
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

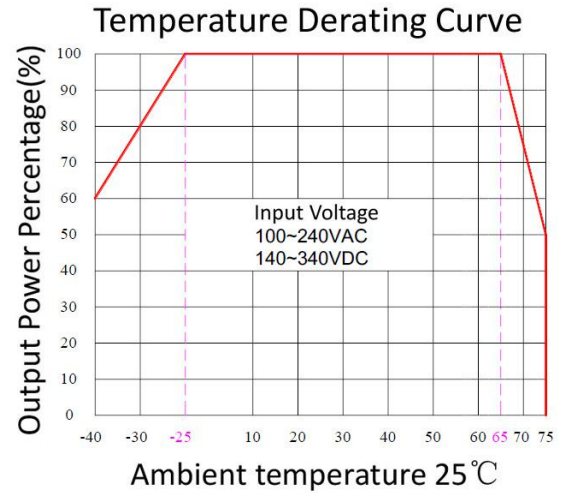
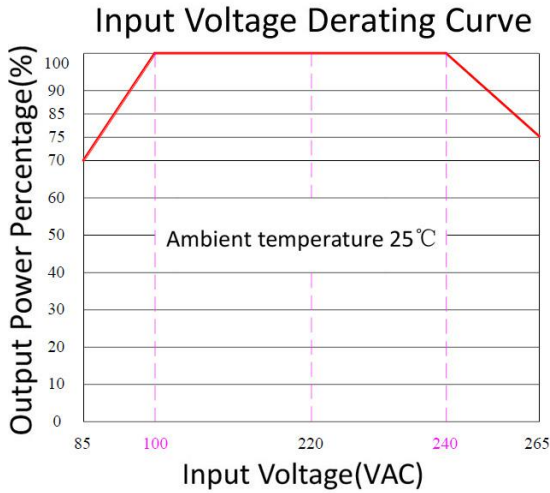
Test Method:

(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 \pm 2 cm sampling line. Power line selected from corresponding diameter wire with insulation according to the flow of output current.

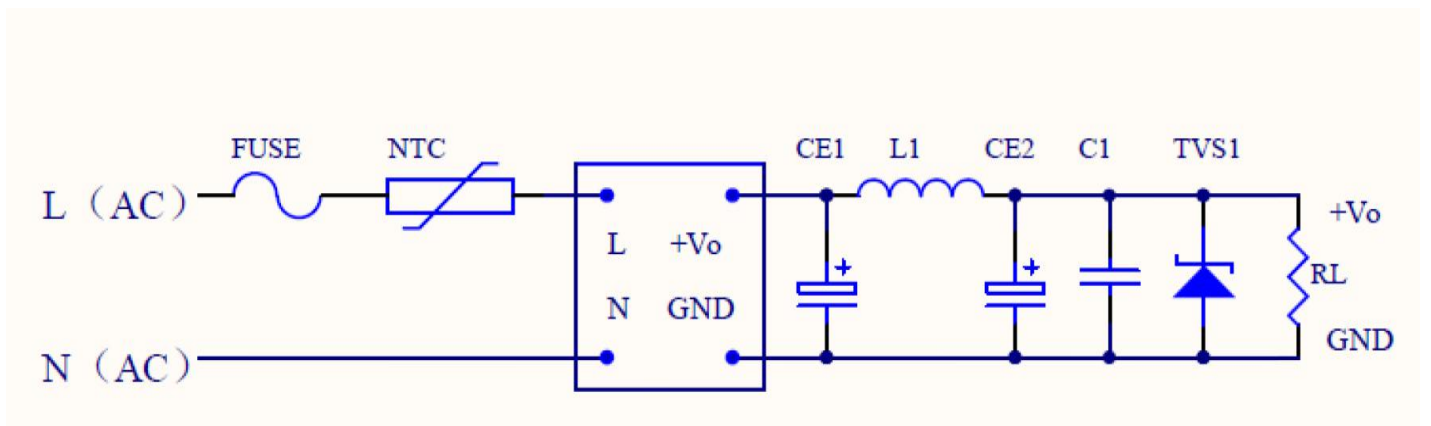


Product Characteristic Curve


Note

1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC /240~265VAC /120~140VDC /340~380VDC.

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

Typical EMC Circuit and Recommended Spec
1. Typical Application Circuit


Part No.	CE1	L1	CE2	TVS1
FA24-220S12G3N3	NC	2uH	470uF/16V	SMBJ14.0A
FA24-220S15G3N3	220uF/25V	5uH	220uF/25V	SMBJ17.0A
*FA24-220S24G3N3	220uF/35V	5uH	220uF/35V	SMBJ26.0A

Note:

Output filter capacitor C2 is electrolytic capacitor, recommend high frequency low resistor electrolytic capacitor, for capacity and current low, please refer to the technical specifications provided by each manufacturer. C2 capacitor withstand voltage should derate to 80%, capacitor C1 is ceramic capacitor, to filter high frequency noise, recommended 0.1uF/50V/1206.

TVS1 tube is a recommend component to protect post-circuit if converter fails. Recommend to external FUSE, Model: 3.15A/250V, slow fusing.

2. EMC solution recommended circuit

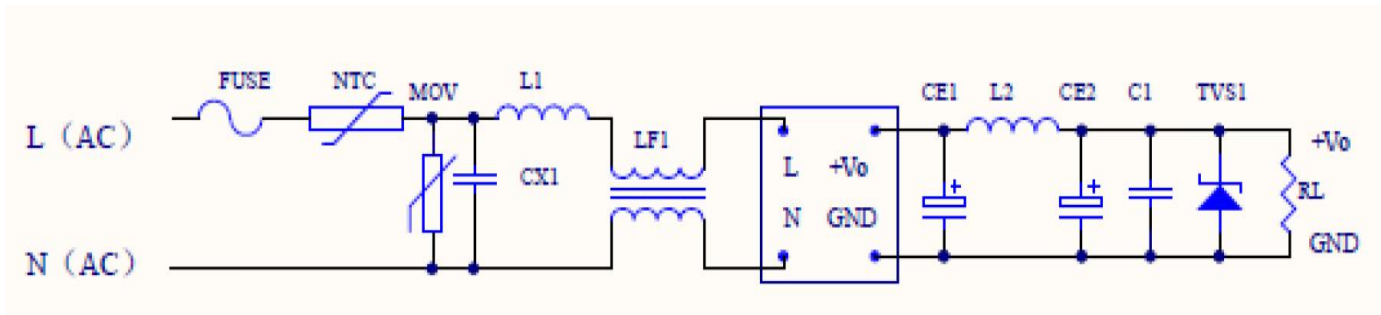


Photo 2, EMC for higher requirement circuit

Component	Products Module	Value
FUSE	3.15A/ 250Vac	3.15A/ 250Vac, slow-fusing, necessary
NTC	5D-9	5D-9
MOV	10D561K	10D561K
CX1	0.47uF/ 275Vac	0.47uF/ 275Vac
L1	6.8uH/ 3.0A	6.8uH/ 3.0A H inductor
LF2	UU9.8 30mH min	30mH/3.0A

Note :

- 1.The product should be used under the specification range, otherwise it will cause permanent damage to it.
- 2.Product's input terminal should connect to fuse;
- 3.If the product is not worked under the load range(below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 4.Unless otherwise specified, data in this datasheet are tested under conditions of Ta=25°C, humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
- 5.All index testing methods in this datasheet are based on our Company's corporate standards
- 6.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;
- 7.We can provide customized product service;
- 8.The product specification may be changed at any time without prior notice.