Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption≤⩽0.5W
- ◆ Transfer efficiency（typ. 87%）
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current
- ◆ Isolation voltage: 2500Vac
- ◆ Meet IEC60950/UL60950/EN60950 test standards
- ◆ Metal shell
- ◆ 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）	u F	mVp-p	%
FA24-220S05G3N3	15	5	3000	-	-	4000	120	79
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: Due to limited space, the above is only a partial list of products. If you need products outside the list, please contact our sales department.

Note 2: "*" represents a model under development.

Note 3: The typical value of output efficiency is based on the product being aged for half an hour at full load.

Note 4: The full load efficiency (%, TYP) in the table fluctuates by ±2%. The full load efficiency is the total output power divided by the input power of the module.

Note 5: The ripple and noise of FA24-220S05G3N3, FA24-220S15G3N3, *FA24-220S24G3N3 need to be tested with the addition of peripherals, see Figure 1 below for details.

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	-	-	0.50	mA
	220VAC	-	-	0.25	
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	Vo	-	±1.0	±2.0	%
Line Regulation	Nominal Load	Vo	-	-	±2.0	%
Load Regulation	Nominal input Voltage 20%~100% load	Vo	-	-	±2.0	%
No load power consumption	Input 115VAC		-	-	0.5	W
	Input 220VAC		-	-		
Minimum load	Single Output		0	-	-	%
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)		-	65	-	
Dynamic Response	25%~50%~25% 50%~75%~50%		Overshoot range（%）：≤±5%			%
			Recovery time（mS）：≤5.0mS			mS
Short Circuit Protection	Full input voltage range		Continuous, Self-recovery			Hiccup
Output Overshooting			≤10%Vo			%
Drift Coefficient	-		-	±0.03%	-	%/℃
Over Current Protection	Full input voltage range		⩾120% Io, Self-recovery			Hiccup
Ripple & Noise	Full input voltage range		-	60	150	mV
	Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.					

General Specifications

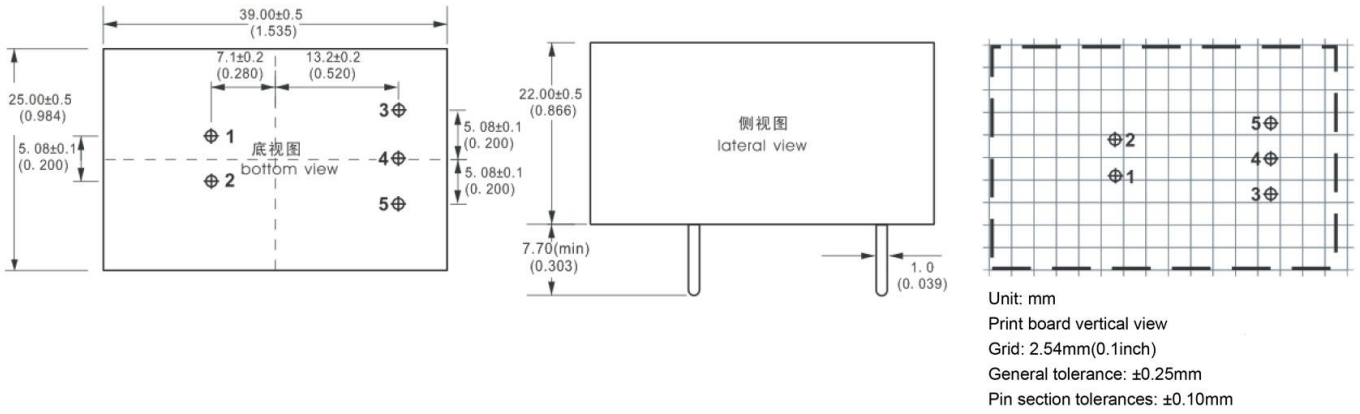
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	60	65	70	KHz
Operating Temperature	-	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	

Soldering Temperature	Wave soldering	260±4℃，time 5-10S			
	Manual welding	360±8℃，time 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output,Test 1min, leakage current ≤5mA	2500	-	-	VAC
	Input-Case, test 1min, leakage current ≤5mA	-	-	-	
	Input-FG, test 1min, leakage current ≤5mA	-	-	-	
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	-	UL94V-0			
MTBF	-	MIL-HDBK-217F@25℃＞300,000H			

EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B （Recommended Circuit 2）
		RE	CISPR22/EN55032	CLASS B （Recommended Circuit 2）
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B （Recommended Circuit 1）
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B （Recommended Circuit 1）
		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, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Packing Dimension



Packing Code	L x W x H	
-	39.0X25.0X22.0 mm	1.535X0.984X0.866inch

Pin Definition

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

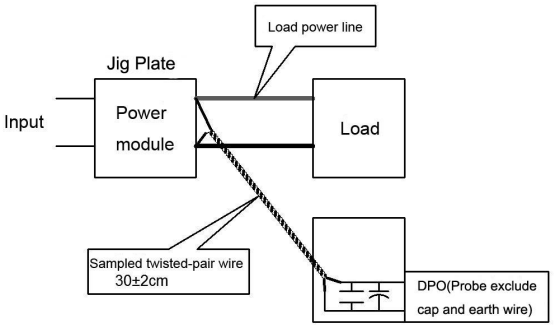
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

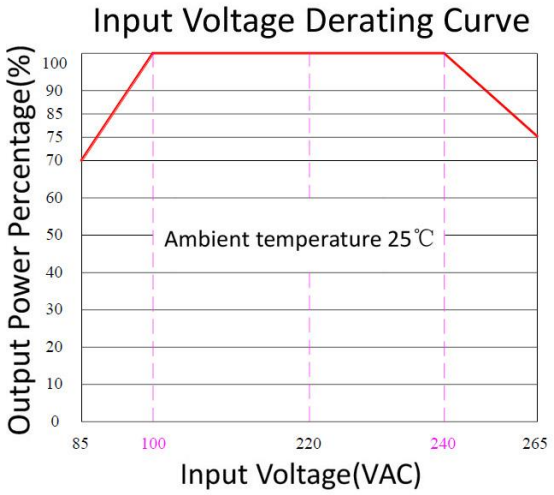
Test Method:

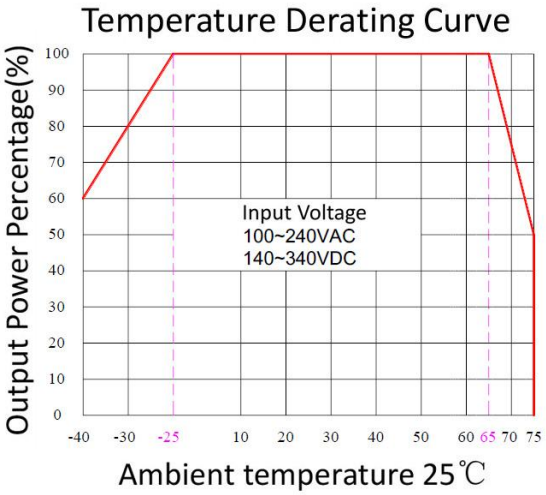
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

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



Product Characteristic Curve





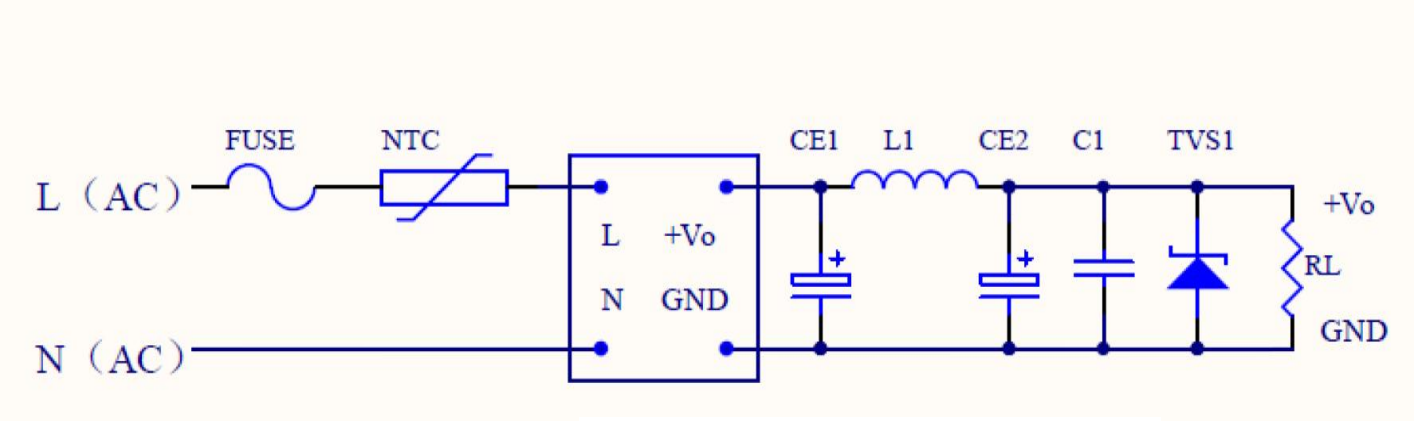
Note

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



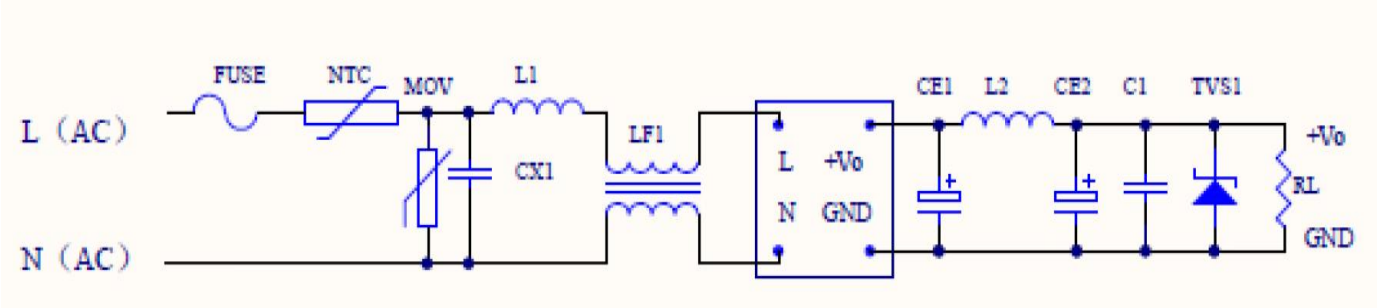
Recommended Circuit 1

Part No.	CE1	L1	CE2	TVS1
FA24-220S05G3N3	-	2uH	470uF/16V	SMBJ7.0A
FA24-220S12G3N3	-	2uH	470uF/16V	SMBJ14.0A
FA24-220S15G3N3	220uF/25V	5uH	220uF/25V	SMBJ17.0A
*FA24-220S24G3N3	220uF/35V	5uH	220uF/35V	SMBJ26.0A

Note 1:

Output filter capacitors CE1 and CE2 are electrolytic capacitors. It is recommended to use high-frequency and low-resistance electrolytic capacitors. For the capacity and current flowing through, please refer to the technical specifications provided by each manufacturer. The capacitor withstand voltage should be derated by at least 80%. C1 is a ceramic capacitor to remove high-frequency noise. It is recommended to use 0.1uF/50V/1206. TVS1 tube protects the subsequent circuit when the module is abnormal. It is recommended to use it. NTC is a thermistor. The recommended specification is 5D-9. It is recommended to connect an external FUSE fuse, model: 3.15A/250V slow break.

2.EMC solution recommended circuit



Recommended Circuit 2

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 2:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. The product input terminal must be connected to a fuse;
3. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
5. Unless otherwise specified, the above data are measured at Ta=25℃, humidity<75%, input nominal voltage and output rated load (pure resistance load);
6. All the above index test methods are based on our company's standards;
7. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard model products will exceed the above requirements. For specific circumstances, please contact our technical personnel directly;
8. Our company can provide product customization;
9. Product specifications are subject to change without prior notice. Please pay attention to the latest manual published on our official website.

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