

Typical Features

- ◆ Wide input voltage range: 85-305VAC/120-430VDC
- ◆ No load power consumption $\leq 0.25W$
- ◆ Transfer Efficiency up to 74%(TYP.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over current
- ◆ Isolation voltage: 4000Vac
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ PCB mounting



Application Field

FA5-220SXXG2N4 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	Voltage	Current			
		(W)	u F	mVp-p			
-	FA5-220S05G2N4	5	5	1000	2000	150	74
	FA5-220S12G2N4	5	12	416	500	120	77
	*FA5-220S24G2N4	5	24	208	300	150	79

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

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

Note 3: "*" is model being developing.

Note 4: 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	305	VAC
	DC input	120	310	430	VDC
Input Frequency range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.12	A
	220VAC	/	/	0.06	
Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	



Leakage Current	-	0.5mA TYP/230VAC/50Hz
Recommended External Input Fuse	-	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 Vo	-	±2.0	±3.0	%
Line Regulation		Nominal load Vo	-	-	±0.5	%
Load Regulation		Nominal input voltage, 20%~100% load Vo	-	*	±1.0	%
No Load Consumption		Input 115VAC	-	-	0.25	W
		Input 220VAC	-	-		
Minimum Load		Single Output	0	-	-	%
Start up Delay Time		Nominal input voltage (full load)	-	500	-	mS
Power-off Holding Time		Input 115VAC (full load)	-	50	-	mS
		Input 220VAC (full load)	-	100	-	
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-	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		Full input voltage range	≥130% Io self-recovery			Hiccup
Ripple & Noise		Full input voltage range	-	60	120	mV
		Tested by twisted pair method, please check "Ripple & Noise Test" at back				

General Specifications

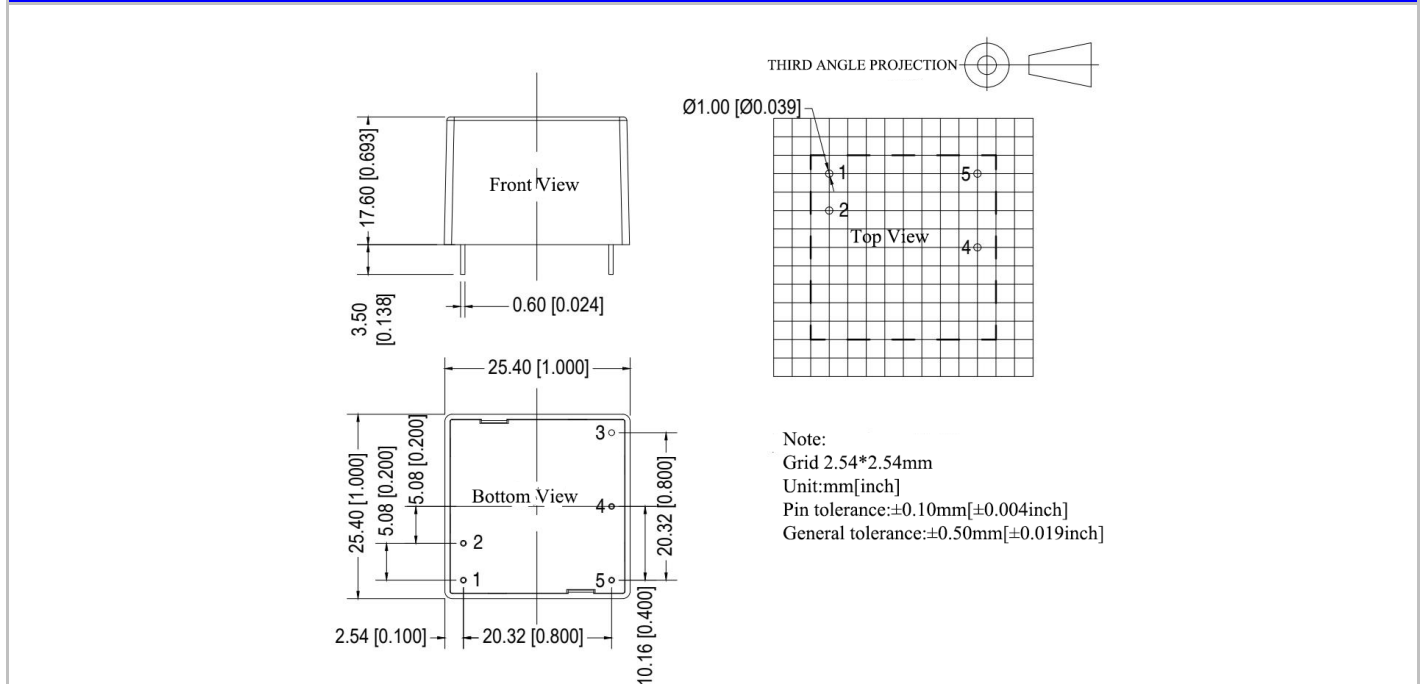
Item		Operating Condition	Min	Typ.	Max	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		-	-40	-	+75	°C
Storage Temperature		-	-40	-	+85	
Soldering Temperature		Wave soldering	260±4°C, time 5-10S			
		Manual soldering	360±8°C, time 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage	4000	-	-	VAC

	I/P-Case	current≤5mA	-	-	-	VAC
	I/P-FG		-	-	-	VAC
Insulation Resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
Safety Standard		-	EN62368, IEC62368			
Vibration		-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Standard		-	CLASS II			
Class of Case Material			UL94 V-0			
MTBF		-	MIL-HDBK-217F @ 25°C > 300,000H			

EMC Characteristics

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

Dimension



Packing Code	L x W x H	
-	25.4X25.4X17.6 mm	1.00X1.00X0.69inch

Pin Specification

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

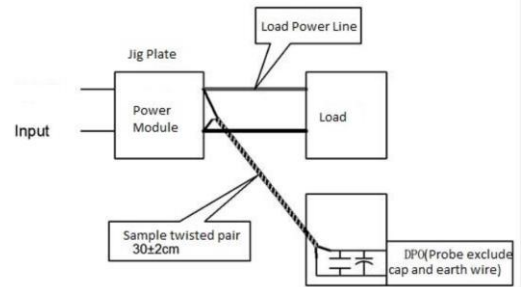
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

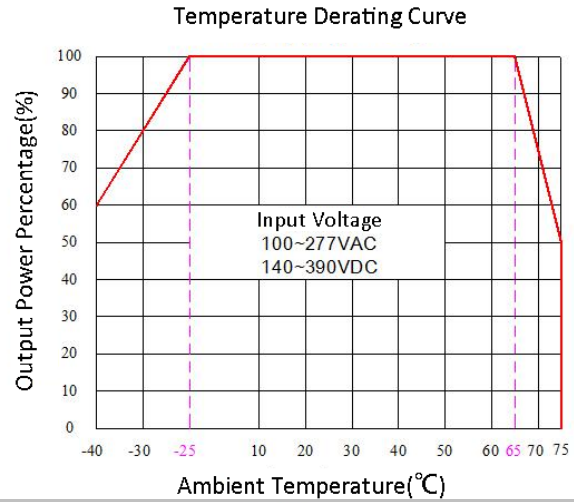
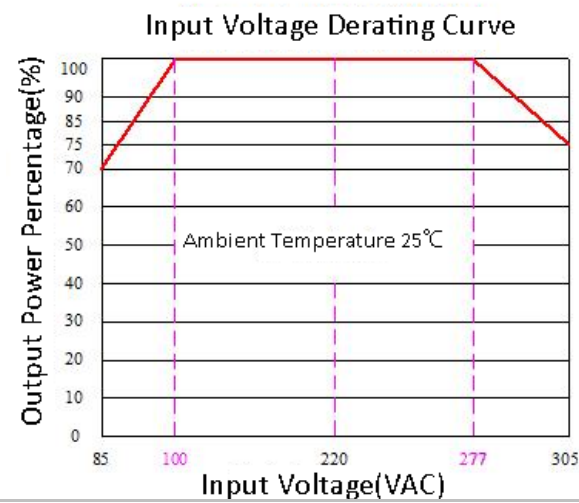
Test Method:

(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/277~305VAC/120~140VDC/390~430VDC.

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

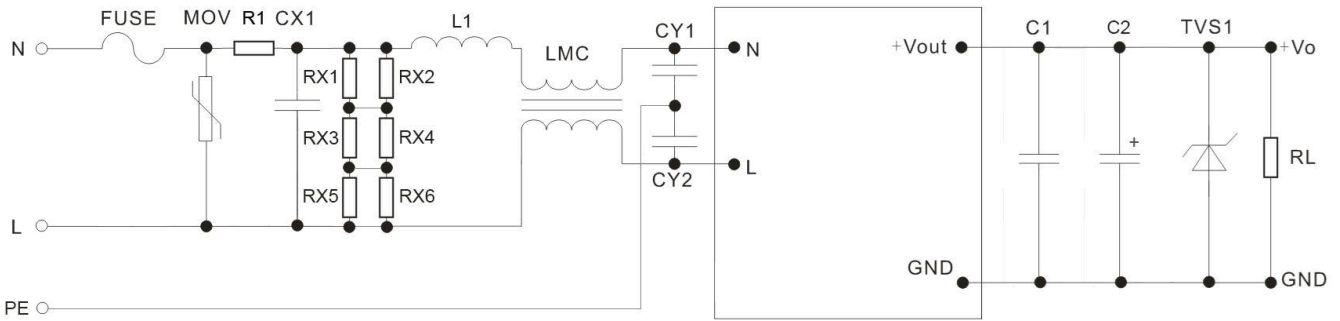


Photo 1

Part no	FUSE (necessary)	MOV	R1	CXY	RX1,RX2, RX3,RX4, RX5,RX6	L1	LMC	CY1, CY2	C1	C2	TVS1
FA5-220S05G2N4	2A/250V (slow fusing)	14D56 1K	33Ω/3 W(wire wound resistor)	334/305 VAC	1206,1.5M	1.2mH /0.3A	20mH	1nF/ 400 VAC	1uF/50V	100uF/ 16V	SMB J7.0 A
FA5-220S12G2N4										68uF/1 6V	SMB J20A
FA5-220S24G2N4										47uF/3 5V	SMB J30A

Note:

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.