



### Typical Features

- ◆ Wide input voltage range: 85-265VAC/120-380VDC
- ◆ No load power consumption ≤ 0.15W
- ◆ Transfer efficiency (typ. 74%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over-current protection
- ◆ Isolation voltage: 4000Vac
- ◆ Conform to IEC62368/UL62368/EN6236 test standard
- ◆ PCB mounting



### Application Field

FA5-220EXXXC2N4 series is a small volume, high efficiency module power supply. This series of module has the advantages of global input voltage range, AC/DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, high safety isolation, and good EMC performance. EMC and safety specifications meet international EN55032 and IEC/EN61000 standards. They are widely used in electric power, industry, instrumentation, smart home and other fields. When the product is used in harsh EMC environment, please refer to the application circuit provided by our company.

### Typical Product List

Certificate	Part No	Output Specifications					Max. Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency@ Full Load, 220Vac (Typical)
		Power	Voltage1	Current1	Voltage2	Current2			
		(W)	Vo1(V)	Io1(m A)	Vo2(V)	Io2(m A)			
-	FA5-220E0505C2N4	5	5	900	5	100	4000/470	100/100	74
	*FA5-220E0512C2N4	5	5	750	12	100	3000/330	100/120	75
	*FA5-220E0524C2N4	5	5	500	24	100	2000/220	100/150	76

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: "\*" are models being developing.

Note 3: The typical value of output efficiency is based on full load and burn-in after half an hour.

Note 4: The fluctuation range of full load efficiency at table(% , TYP) is ±2%, full load efficiency = total 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	/	/	0.10	A
	220VAC	/	/	0.06	
Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	



Leakage Current	-	0.5mA TYP/230VAC/50Hz
External Fuse Recommended Value	-	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	Vo1	-	±2.0	±3.0	%
		Vo2	-	±2.0	±7.0	%
Line Regulation	Nominal load	Vo1	-	-	±0.5	%
		Vo2	-	-	±1.0	%
Load Regulation	Nominal input voltage 20%~100% load	Vo1	-	-	±1.0	%
		Vo2	-	-	±4.0	%
No Load Power Consumption	Input 115VAC		-	-	0.15	W
	Input 220VAC		-	-		
	Dual output Common Ground		10	-	-	%
Start-up Delay Time	Nominal input voltage (full load)		-	2000	-	mS
Power-off Holding Time	Input 115VAC (full load)		-	50	-	mS
	Input 220VAC (full load)		--	100		
Dynamic Response	25%~50%~25%		-5.0	-	+5.0	%
	50%~75%~50%		-	5.0	-	mS
Output Overshoot	Full input voltage range		≤10%Vo			%
Short Circuit Protection			Continuous, Self-recovery			Hiccup
Temperature Coefficient	-	-	±0.03%	-	%/°C	
Over Current Protection	Input nominal voltage		≥130% Io self-recovery			Hiccup
Ripple & Noise	-		-	50	150	mV
	Note: Ripple & Noise is tested by twisted pair method, for details please see(Ripple& Noise Test) at back.					

**General Specifications**

Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C

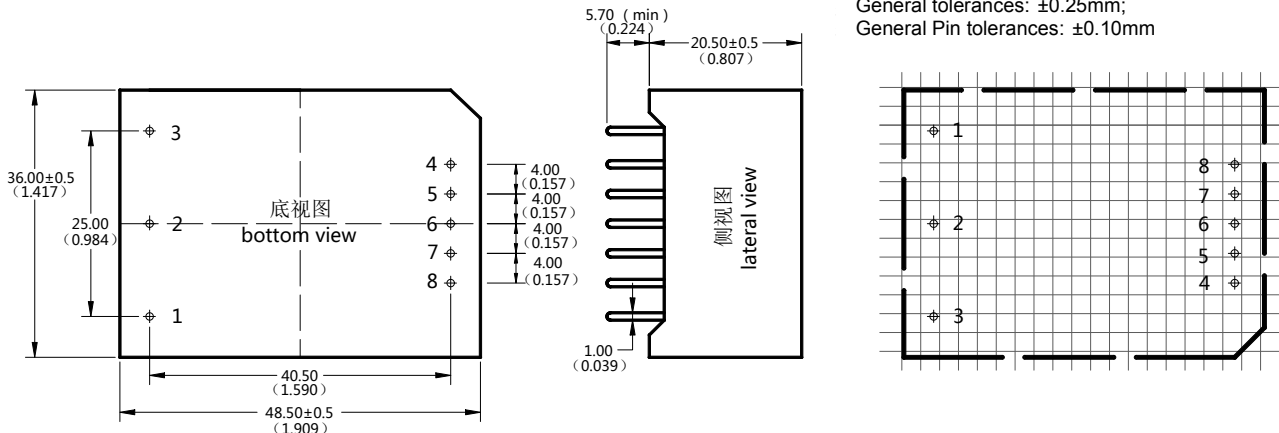


Storage Temperature	-	-40	-	+105	
Soldering Temperature	Wave-soldering	260±4℃, timing 5-10S			
	Manual-soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output Test 1min, leakage current≤5mA	4000	-		VAC
Insulation Resistor	Input-Output@DC500V	100	-		MΩ
Safety Standard	-	EN62368、IEC62368			
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
		RE	CISPR22/EN55032	CLASS B
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B(recommend circuit see photo1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (recommend circuit see photo1)
		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

**Dimension**



Unit: mm(inch);  
Printed board vertical view;  
Grid:2.54mm(0.1inch);  
General tolerances: ±0.25mm;  
General Pin tolerances: ±0.10mm

Packing Code	L x W x H	
C2A	48.5 x 36.0 x 20.5 mm	1.909 × 1.417 × 0.807inch

**Pin Definition**

Pin	1	2	3	4	5	7	8
Single(S)	FG	AC(N)	AC(L)	+Vo2	-Vo2	+Vo1	-Vo1

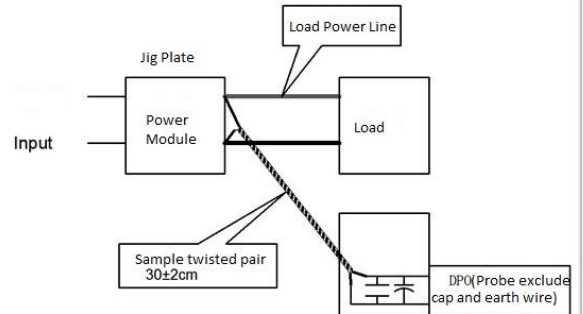
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

**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.

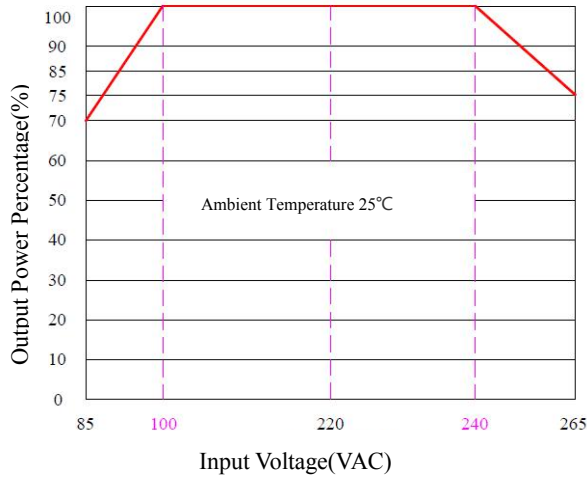
(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



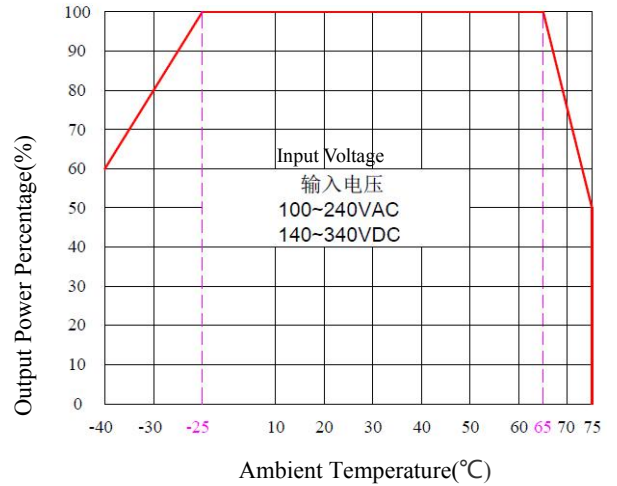


**Product Characteristic Curve**

Input Voltage Derating Curve



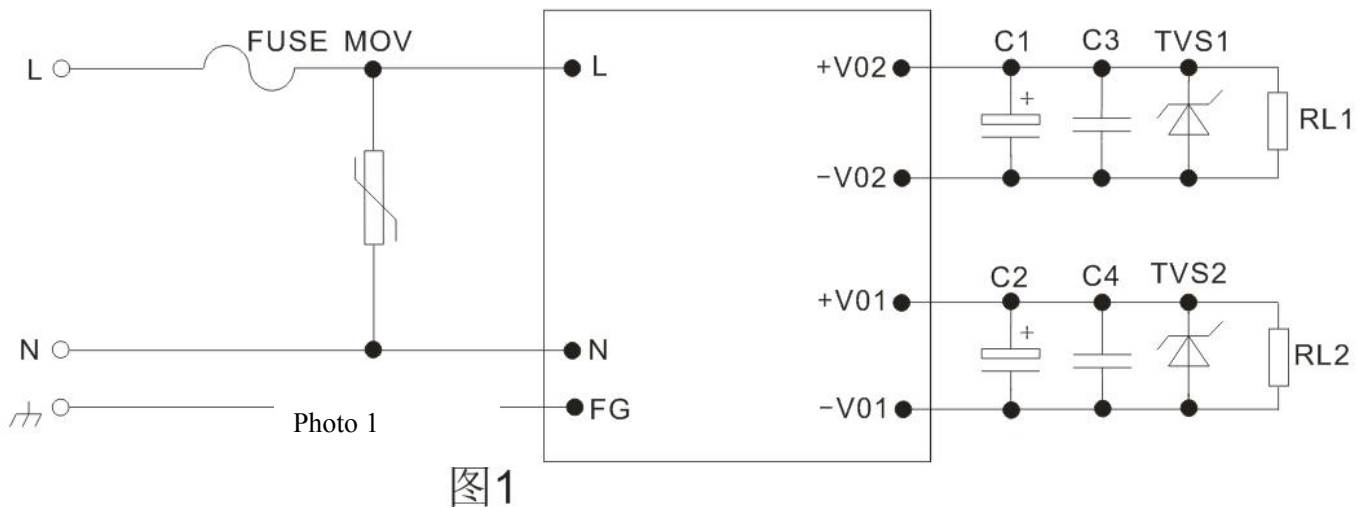
Temperature Derating Curve



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 EMC Application Circuit and Recommended Parameters**



2. EMC Recommended Circuit (If has higher request for EMC)

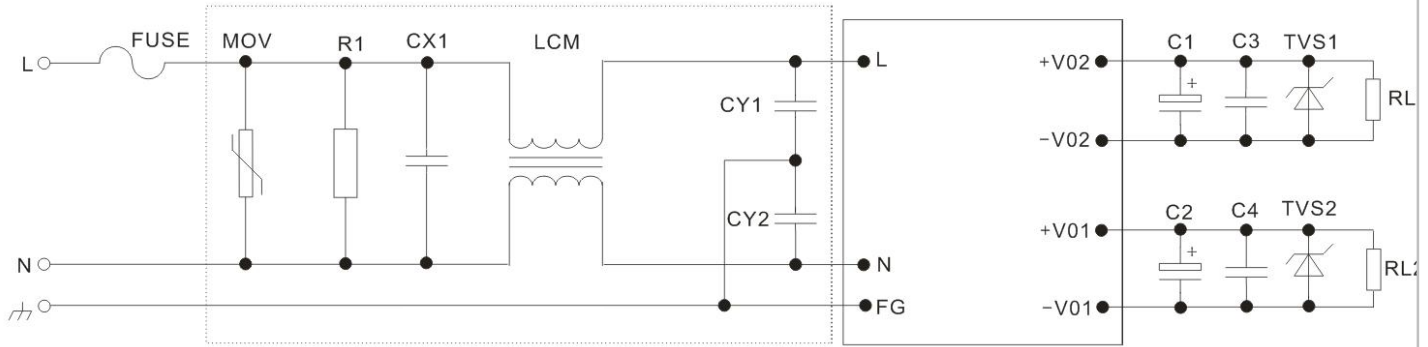


Photo 2: EMC recommended circuit

FUSE	Recommended 1A,250Vac(necessary)	CY1,CY2	1nF/400VAC	TVS1	Note 1
MOV	14D511K	C1	47uF	TVS2	Note 1
CX1	0.1uF/275Vac	C2	220uF		
LCM	15mH-30mH	C3,C4	0.1uF/50v		

Note 1:

- 1) C1,C2 choose high frequency low impedance electrolytic capacitor, withstand voltage is 1.5 times more than output voltage;
- 2) C3,C4 choose 0.1uF ceramic chip capacitor, withstand voltage is 1.5 times more than output voltage;
- 3) TVS1,TVS2 are TVS tube: 5V output recommend: SMBJ7.0A, 9V output recommend: SMBJ12.0A; 12V output recommend: SMBJ20.0A; 15V output recommend: SMBJ20.0A; 24V output recommend: SMBJ30.0A; 48V output recommend: SMBJ64.0A;

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 operated under the minimum 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.