Typical Features

- ◆ Wide input voltage range: 85-265VAC/120-380VDC
- ◆ No load power consumption≤0.30W
- ◆ Transfer efficiency (typ.74%)
- ◆ Switching Frequency：65KHz
- ◆ Protections: short circuit, over-current protection
- ◆ Isolation voltage: 4000Vac
- ◆ Conform to IEC62368/UL62368/EN62368 test standard
- ◆ PCB mounting

Application Field

FA5-220E05XXC2N4 Series *---- 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 IEC62368/UL62368/EN6236 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)	u F	mVp-p	%
-	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	800/470	100/150	77

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 full load and burn-in after half an hour.

Note 3: 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	±8.0	%
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		-	-	0.30	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% 50%~75%~50%		-5.0	-	+5.0	%
			-	5.0	-	mS
Output Overshoot	Full input voltage range		≤10%Vo			%
Short Circuit Protection			Continuous, Self-recovery			Hiccup
Temperature Coefficient	-		-	±0.03%	-	%/℃
Over Current Protection	Input nominal voltage		≥130% Io self-recovery			Hiccup
Ripple & Noise	Full input voltage range		-	50	150	mV
	Note: Ripple & Noise is tested by twisted pair method, for details please see(Ripple& Noise Test) at back.					

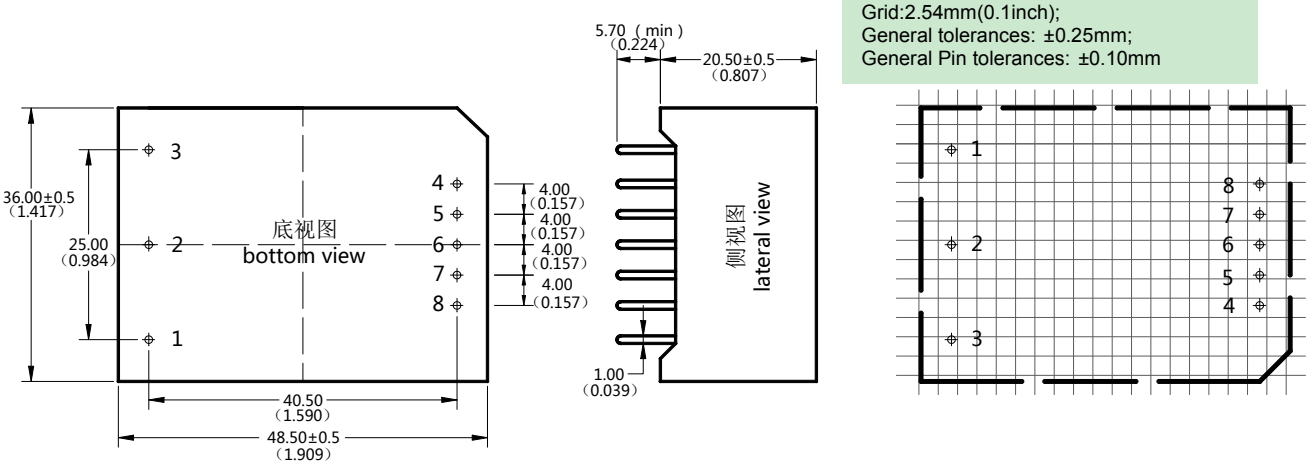
General Specifications

Item		Operating Condition	Min	Typ.	Max	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		-	-40	-	+75	℃
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	I/P-O/P	Input-Output Test 1min, leakage current≤5mA	4000	-	-	VAC
	I/P-Case		-	-	-	
	I/P-FG		-	-	-	
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 (Recommend Circuit 1)
		RE	CISPR22/EN55032	CLASS B (Recommend Circuit 1)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (Recommend Circuit 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (Recommend 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

Dimension



Packing Code	L x W x H	
-	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

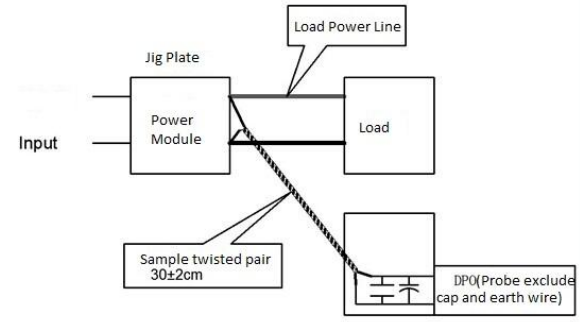
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

Test Method:

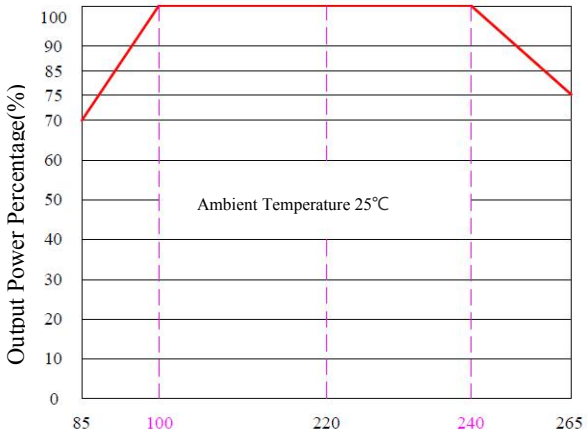
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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.

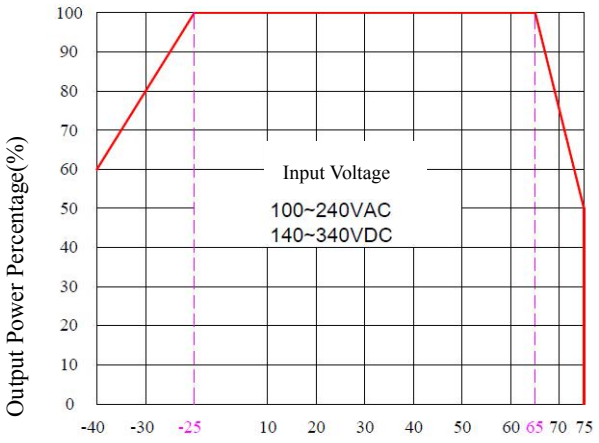


Product Characteristic Curve

Input Voltage Derating Curve



Temperature Derating Curve

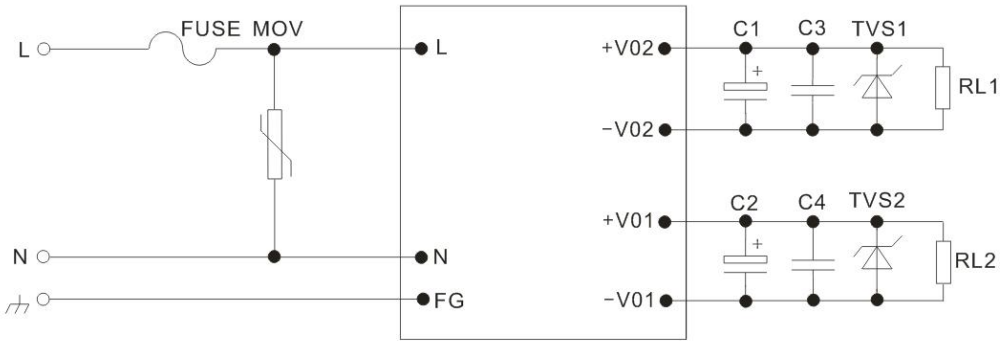


Note 1: Input Voltage should be derated based on input voltage derating curve when it is 85~100VAC/240~265VAC/120~140VDC/ 340~380VDC.

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

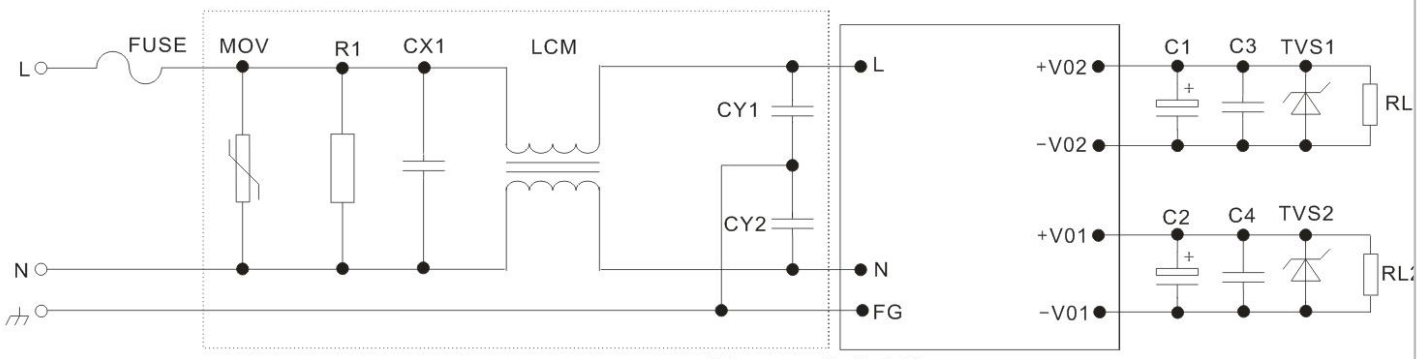
Typical EMC Application Circuit and Recommended Parameters

1. Typical Application Circuit



Recommended Circuit 1

2.EMC Recommended Circuit（Use under conditions with high EMC requirements）



Recommended Circuit 2

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℃, 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.

Guangzhou Aipu Electron Technology Co., Ltd
Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.
Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821
E-mail: sales@aipu-elec.com Website: https://www.aipupower.com