Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption≤0.3W
- ◆ Transfer efficiency (typ. 73%)
- ◆ Switching frequency: 65KHz
- ◆ Output short circuit, over current protection
- ◆ Isolation voltage: 4000Vac
- ◆ 4000m altitude application
- ◆ Meet IEC62368/UL62368/EN62368 test standards
- ◆ PCB mounting

Application Field

FA5-220HXXXXXXC2N3 Series*-----is a small size, high efficiency module power supply provided by Aipu to customers. This series of power supplies 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 the international EN55032 and IEC/EN61000 standards. This series of products are widely used in many fields such as power, industry, instrumentation and smart home. When the product is used in an environment with relatively harsh electromagnetic compatibility, please refer to the application circuit provided by our company.*

Typical Product List

Part No.	Output Specification					Max. Capacitive Load	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load 220Vac (Typical)
	Power	Vo1	Io1	Vo2/ Vo3	Io2/ Io3			
	(W)	(V)	(mA)	(V)	(mA)	(uF)	mVp-p	%
FA5-220H050505C2N3	5	5	800	±5	100	2000/470	100/100	70
FA5-220H051212C2N3	5	5	600	±12	100	1000/220	100/120	73
FA5-220H052424C2N3	5	5	600	±24	50	1000/68	100/150	75

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

Note 3: 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.

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	/	/	0.10	A
	220VAC	/	/	0.06	

Surge Current	115VAC		/	/	10	A
	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 Specification

Item		Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, balanced load	Vo1	-	±2.0	±3.0	%
			Vo2/Vo3		±2.0	±8.0	%
Line Regulation		Nominal Load	Vo1	-	-	±0.5	%
			Vo2/Vo3	-	-	±1.0	%
Load Regulation		Nominal input Voltage 20%~100% load	Vo1	-	-	±1.0	%
			Vo2/Vo3	-	-	±4.0	%
No load power consumption		Input 115VAC		-	-	0.3	W
		Input 220VAC		-	-		
Minimum load		Main road isolation, dual auxiliary roads share the same ground		10	-	-	%
Turn-on Delay Time		Nominal input voltage, full load		-	1000	-	mS
Power-off Holding Time		Input 115VAC (full load)		-	50	-	mS
		Input 220VAC (full load)		-	100	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%		-5.0	-	+5.0	%
	Recovery time			-	5.0	-	mS
Output Overshoot		Full input voltage range		≤10%Vo			%
Short Circuit Protection				Continuous, Self-recovery			Hiccup
Drift Coefficient		-		-	±0.03%	-	%/℃
Over Current Protection		Nominal input voltage		⩾120% Io, Self-recovery			Hiccup
Noise & Ripple		Full input voltage range		-	50	150	mV
		Note: The ripple and noise test method adopts the twisted pair test method. The specific test method and matching can be seen later (Ripple & Noise Test Instructions).					

General Specifications

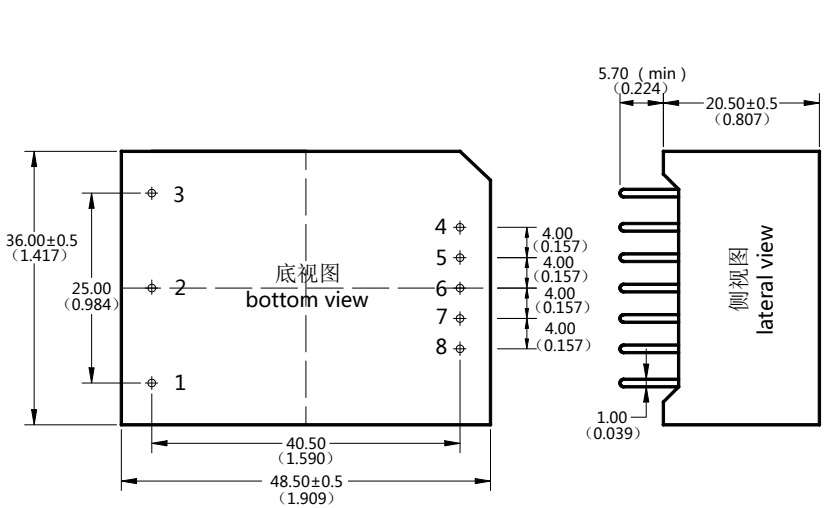
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+105	℃

Storage Temperature	-		-40	-	+110	℃
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	3000	-	-	VAC
	Input-Case		-	-	-	
	Input-FG		-	-	-	
Insulation Resistance	Input-Output	@DC500V	100	-	-	MΩ
Safety Standard	-		EN62368、IEC62368			
Vibration	-		10-55Hz,10G,30Min, along X,Y,Z			
Safety Class	-		CLASS Ⅱ			
Class of Case Material	-		UL94 V-0			
MTBF	-		MIL-HDBK-217F@25℃＞300,000H			

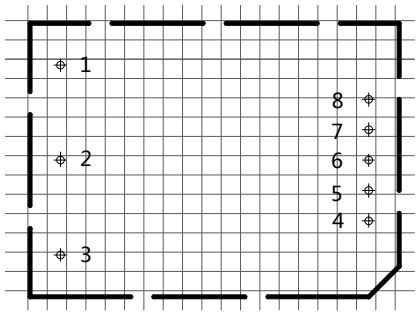
EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (Recommended Circuit 2)
		RE	CISPR22/EN55032	CLASS B (Recommended Circuit 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 ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	Line to line ±2KV / line to ground ±4KV Perf.Criteria B (Recommended Circuit 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



Unit: mm
Printed board vertical view
Lattic spacing: 2.54mm (0.1 inch)
Unmarked dimension tolerance ±0.25mm
Unmarked pin tolerance ±0.10mm



Packing Code	L x W x H	
-	48.5X36.0X20.5 mm	1.909X1.417X0.807inch

Pin Definition

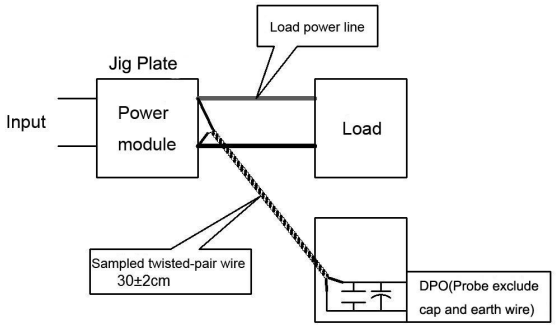
Pin-out	1	2	3	4	5	6	7	8
Triple(H)	FG	AC（N）	AC（L）	+Vo2	COM	-Vo2	+Vo1	-Vo1

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

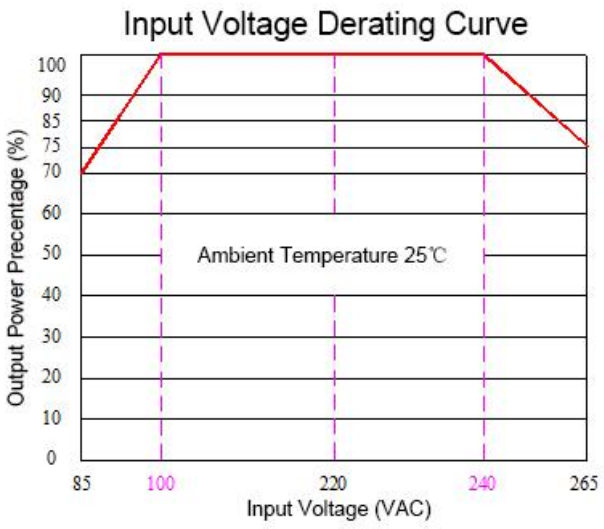
Test Method:

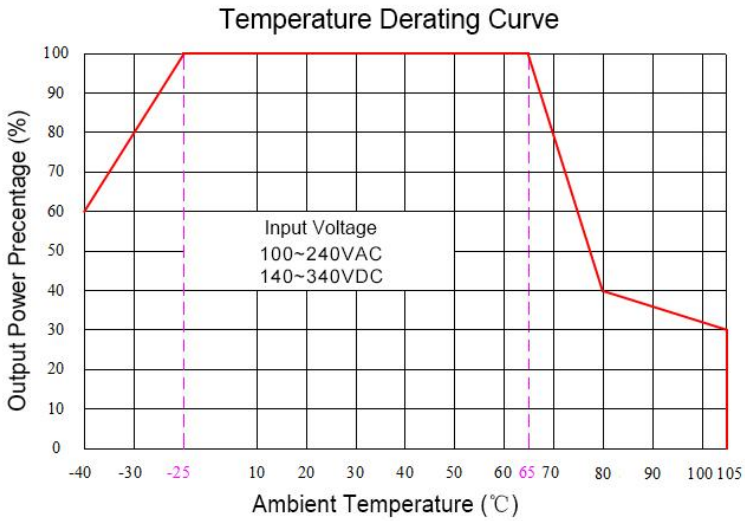
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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





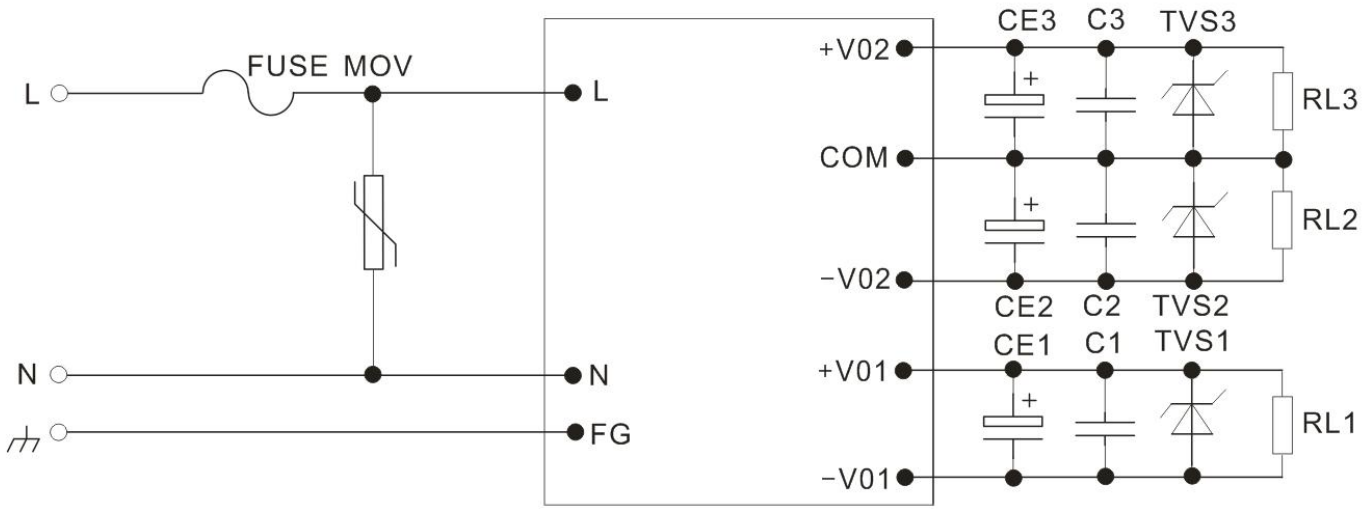
Note

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.

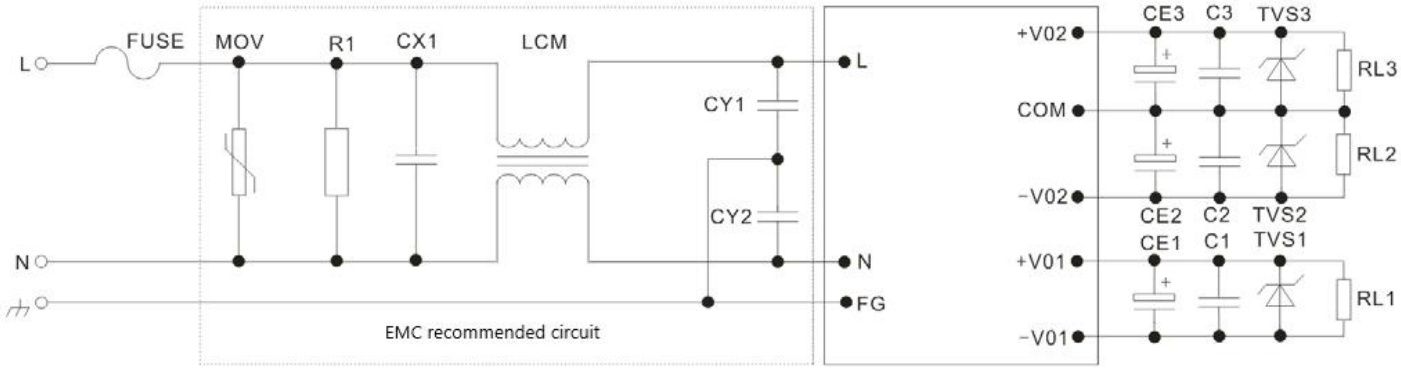
Typical EMC Circuit and Recommended Spec

1. Typical Application Circuit



Recommended Circuit 1

2.EMC Recommended Circuit (for use under high EMC requirements)



Recommended Circuit 2

FUSE	Recommended value 1A,250Vac（necessary）	CY1，CY2	1nF/400VAC
MOV	14D511K	CE1,CE2,CE3	Note 1
CX1	0.1uF/275Vac	C1,C2,C3	0.1uF/50V
LCM	15mH-30mH,0.3A	TVS1,TVS2,TVS3	Note 1

Note 1:

1) CE1, CE2, CE3 select high-frequency low-impedance electrolytic capacitors with a capacitance value less than the capacitive load, and the withstand voltage value is more than 1.5 times the output voltage;

2) C1, C2, C3 select 0.1uF ceramic chip capacitors, and the withstand voltage value is more than 1.5 times the output voltage;

3) TVS1, TVS2, TVS3 are TVS tubes; 5V output recommended: SMBJ7.0A, 9V output recommended: SMBJ12.0A, 12V output recommended: SMBJ20A, 15V output recommended: SMBJ20.0A, 24V output recommended: SMBJ30.0A, 48V output recommended: SMBJ64A.

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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