

Typical Features

- ◆ Wide input voltage range 85-265VAC/120-380VDC
- ◆ No load power consumption $\leq 0.15W$
- ◆ Efficiency 78% (Typ.)
- ◆ Switching Frequency 55KHz
- ◆ Short circuit, over-current & over voltage protections
- ◆ Isolation voltage 4000Vac
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ Conform to CE/RoHS regulations
- ◆ Enclosed plastic case flame class UL94-V0
- ◆ PCB DIP mounting



Application Field

FA5-220E05XXC2D3 Series ---- Compact size, high efficiency modular power supplies with global adapted input voltage range (both AC & DC available), low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of electric power, industrial, instrument, smart home devices, etc. The additional circuit for EMC is recommended in this data sheet for the application with high EMC requirement.

Typical Product List

Certificate	Part No	Output Specifications					Max. Capacitive Load	Ripple & Noise Max 20MHz	Efficiency @Full Load 220Vac
		Power	Voltage1	Current1	Voltage2	Current2			
		(W)	Vo1(V)	Io1(mA)	Vo2(V)	Io2(mA)			
-	FA5-220E0512C2D3	5	5	750	12	100	3000/100	80/100	77
	FA5-220E0524C2D3	5	5	600	24	100	2000/100	80/100	78

Note 1: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: The full load efficiency should be in $\pm 2\%$ of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3: Please contact Aipu sales for other output voltages requirements in this series but not in this table.

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	-	-	0.13	A
	220VAC	-	-	0.07	
Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	

No Load Power Consumption	Input 115VAC	-	-	0.15	W
	Input 220VAC	-	-		
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Fuse	-	1A/250VAC Time-delay fuse			
Hot-plug	-	Unavailable			
Remote Control	-	Unavailable			

Output Specifications

Item		Operating Condition		Min	Typ.	Max	Unit
Voltage Accuracy		Full input voltage range, any load	Vo1	-	±1.0	±2.0	%
			Vo2		±3.0	±5.0	%
Line Regulation		Nominal load	Vo1	-	-	±0.5	%
			Vo2	-	-	±1.5	%
Load Regulation		Nominal input voltage, 20%~100% load	Vo1	-	-	±1.0	%
			Vo2	-	-	±3.0	%
Minimum load		Dual outputs isolated		10	-	-	%
Turn-on Delay Time		Nominal input voltage, full load		-	100	-	mS
Power-off Hold-up Time		Input 115VAC (full load)		-	10		mS
		Input 220VAC (full load)		-	60	-	
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
Temperature Coefficient		-		-	±0.03%	-	%/°C
Over Current Protection		Full input voltage range		≥120% Io, self-recovery			Hiccup
Over Voltage Protection		Output 5VDC		≤6.5			VDC
		Output 12VDC		≤18			
		Output 15VDC		≤20			
		Output 24VDC		≤30			
Ripple & Noise		-		-	50	100	mV
		Note: The ripple and noise are tested by the twisted pair method according to the following Test Instruction in the datasheet.					

General Specifications

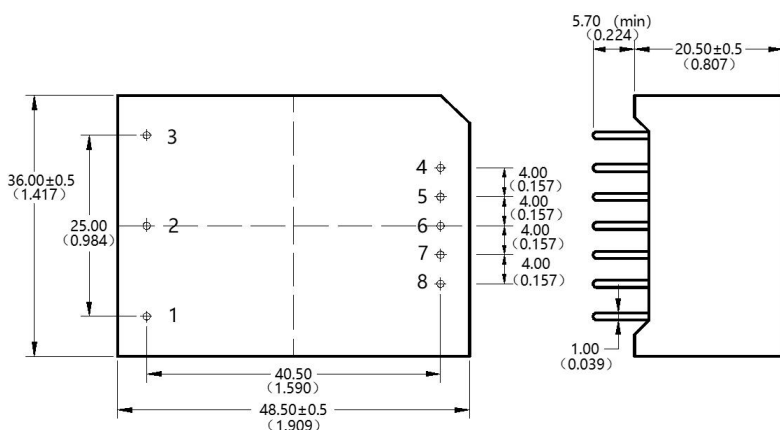
Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	55	-	KHz
Operating Temperature	Refer to the temperature derating graph	-40	-	+75	°C

Storage Temperature	-	-40	-	+85	°C
Soldering Temperature	Wave-soldering	260±4°C, timing 5-10S			
	Manual-soldering	360±8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	Input-Output @DC500V	100	-	-	MΩ
Safety Standard	-	EN62368/IEC62368			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS II			
Case Flame Class	-	UL94 V-0			
MTBF	MIL-HDBK-217F@25°C	>300,000H			

EMC Performance

Total Item	Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR22/EN55032 CLASS B
		RE	CISPR22/EN55032 CLASS B
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B (with the Recommend Circuit -Figure 1)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B (with the Recommend Circuit -Figure 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 interruptions	IEC/EN61000-4-11 0%~70% Perf.Criteria B

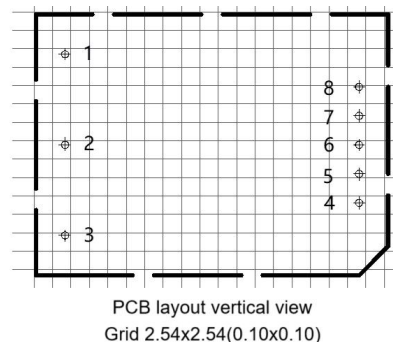
Mechanical Dimensions



Unit: mm(inch)

Pin diameter tolerance ±0.10(±0.004)

General tolerance ±0.25(±0.010)

PCB layout vertical view
Grid 2.54x2.54(0.10x0.10)

Package Code	Dimensions L x W x H	
C2	48.50 x 36.00 x 20.50 mm	1.909 × 1.417 × 0.807 inch

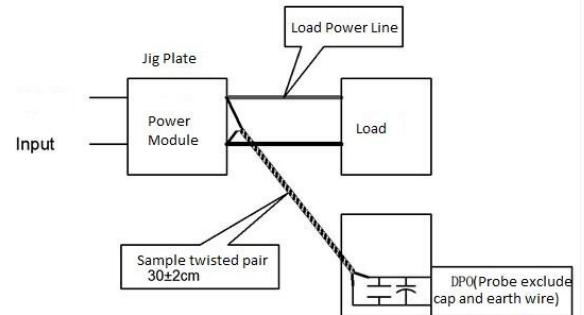
Pin-out Function Description

Pin No.	1	2	3	4	5	7	8
Dual output	FG	AC(N)	AC(L)	+Vo2	-Vo2	+Vo1	-Vo1

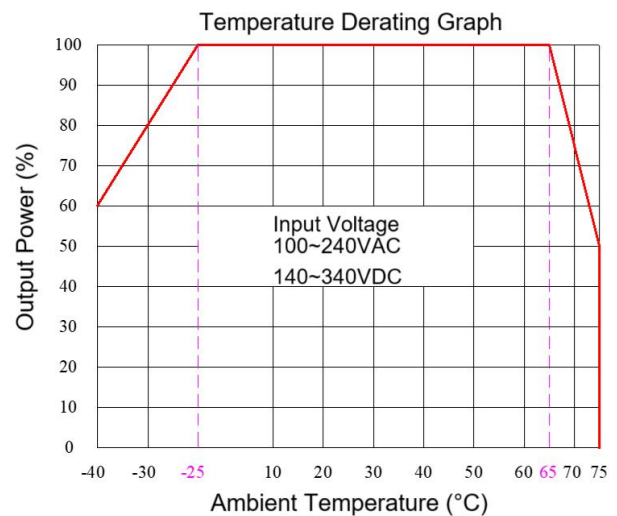
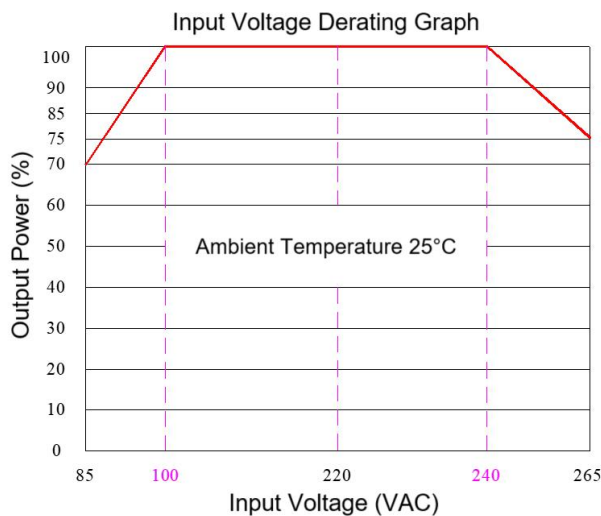
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.

2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be started after input power on.



Product Characteristic Graph



Note 1 - The output power should be derated based on the input voltage derating graph at 85~100VAC/240~265VAC/120~140VDC/340~380VDC.

Note 2 - This product should operate at a natural air condition, please contact us if it need be used at a closed space.

Typical EMC Circuit for Application

Recommended Circuit Diagram

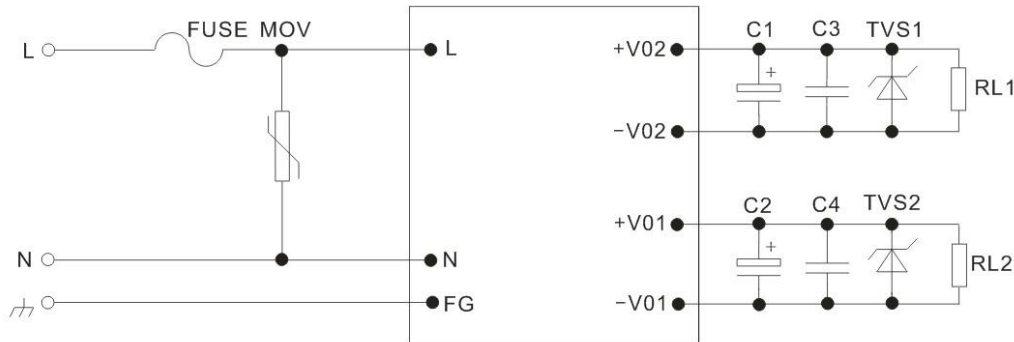


Figure 1

Note:

1. 1A/250Vac time-delay fuse is recommended.
2. 10D511K Varistor is recommended for MOV.
3. High frequency low impedance electrolytic capacitors are recommended for C1 & C2 which capacitance less than the Max capacitive load and withstand voltage more than 1.5x of the output voltage.
4. 0.1uF SMD capacitors are recommended for C3 & C4 which withstand voltage should be more than 1.5x of the output voltage.
5. TVS1,TVS2: SMBJ7.0A for 5V output; SMBJ12.0A for 9V output; SMBJ20.0A for 12V & 15V outputs; SMBJ30.0A for 24V output; SMBJ64.0A for 48V output.

Application Notice

1. The products should be used according to the specifications in this datasheet, otherwise it could be permanently damaged.
2. A fuse should be connected at input.
3. The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance in this datasheet cannot be guaranteed if it works at over-load condition.
5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25°C, humidity<75%RH, nominal input voltage and rated load (pure resistance load).
6. All values or indicators in this datasheet had been tested based on Aipupower test specifications.
7. The specifications are specially for the parts listed in this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
8. Aipupower can provide customization service.
9. The product specifications may be modified without prior notice. Please refer to the published data sheet at Aipupower website.

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