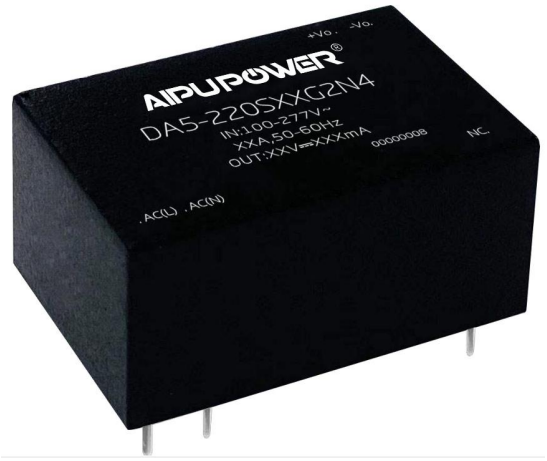


Typical Features

- ◆ Wide input voltage range: 85-305VAC/120-430VDC
- ◆ No load power consumption $\leq 0.25W$
- ◆ Transfer Efficiency up to 82%(TYP.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over current, over temperature
- ◆ Isolation voltage: 4000Vac
- ◆ Fully enclosed plastic case, UL94 V-0 standard
- ◆ PCB mounting



Application Field

DA5-220SXXG2N4 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)	Vo(V)	Io(mA)			
-	DA5-220S05G2N4	5	5	1000	3000	100	73
	DA5-220S12G2N4	5	12	416	300	100	79
	DA5-220S15G2N4	5	15	333	200	120	79
	DA5-220S24G2N4	5	24	208	47	150	82

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: The fluctuation range of full load efficiency(%TYP) in table is $\pm 2\%$, full load efficiency= output power/module's input power.

Note 4: Ripple & Noise is tested by twisted pair method, details please refer to Ripple & Noise test at back.

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	/	/	0.15	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
Input capacitors CE1,CE2		3.3uF/450V
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	±5.0	%
Line Regulation	Nominal load	Vo	-	-	±3.0	%
Load Regulation	Nominal input voltage, 20%~100% load	Vo	-	-	±5.0	%
No Load Consumption	Input 115VAC	-	-	0.25	W	
	Input 220VAC	-	-			
Minimum Load	Single Output	10	-	-	%	
Start up Delay Time	Nominal input voltage (full load)	-	600	-	mS	
Power-off Holding Time	Input 115VAC (full load)	-	50	-	mS	
	Input 220VAC (full load)	-	70	-		
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	Input 220VAC	≥120% Io self-recovery			Hiccup	

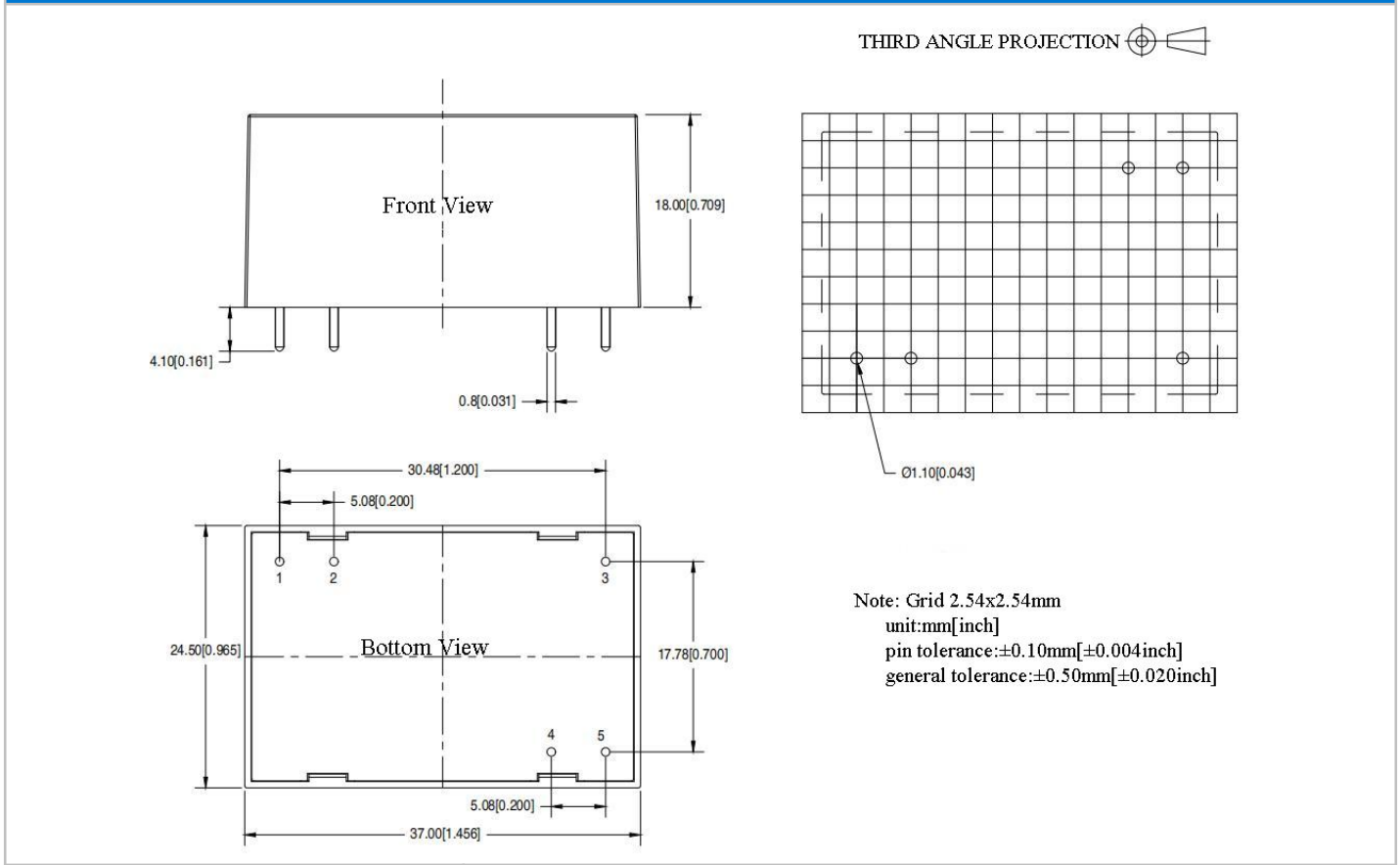
General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+105	°C
Storage Temperature	-	-40	-	+110	
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 current≤5mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P @ DC500V	100	-	-	MΩ
Safety Standard	-	EN62368, IEC62368			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Safety Standard	-	CLASS II			
Class of Case		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 A		
			CISPR22/EN55032	CLASS B (Recommended Circuit 1)		
		RE	CISPR22/EN55032	CLASS A		
			CISPR22/EN55032	CLASS B (Recommended Circuit 1)		
	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (Recommended Circuit 1)	
		CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (Recommended 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	
-	37.0X24.5X18mm	1.457 × 0.965× 0.7.09 inch

Pin Specification

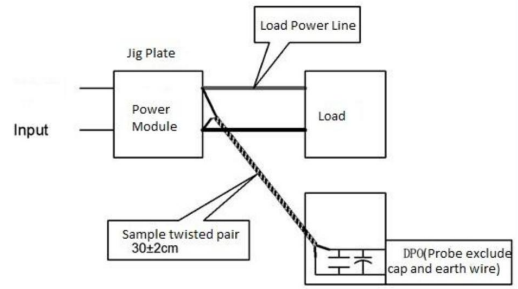
Pin	1	2	3	4	5
Single(S)	AC(L)	AC(N)	NP	+Vo	-Vo

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

Test Method:

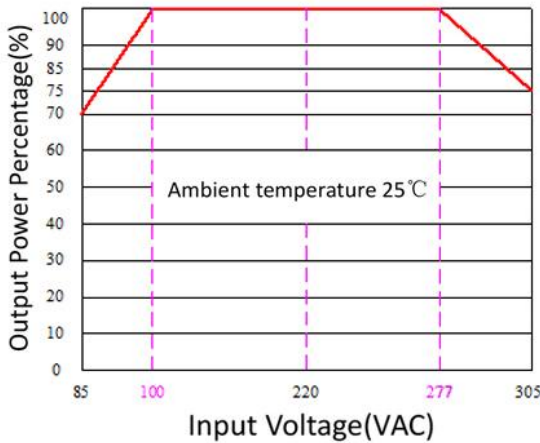
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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.

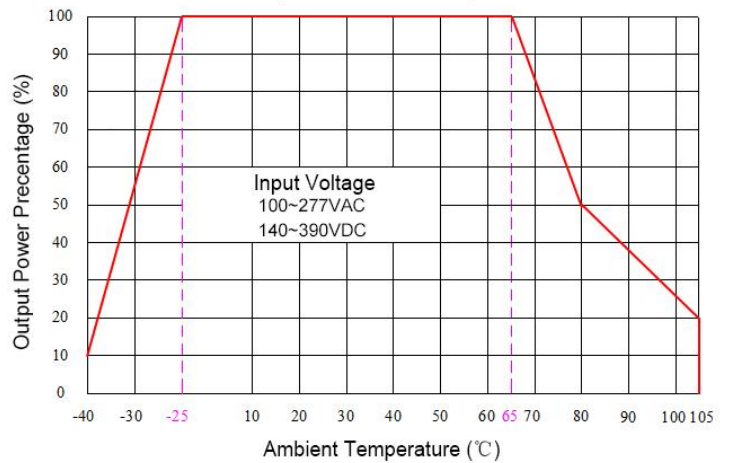


Product Characteristic Curve

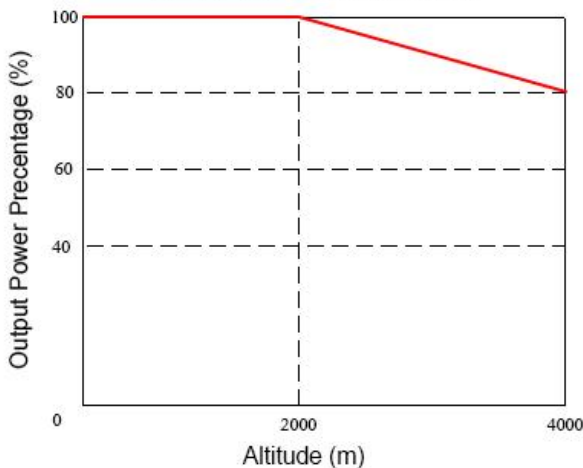
Input Voltage Derating Curve



Temperature Derating Curve



Altitude Derating 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

1. Typical Application Circuit

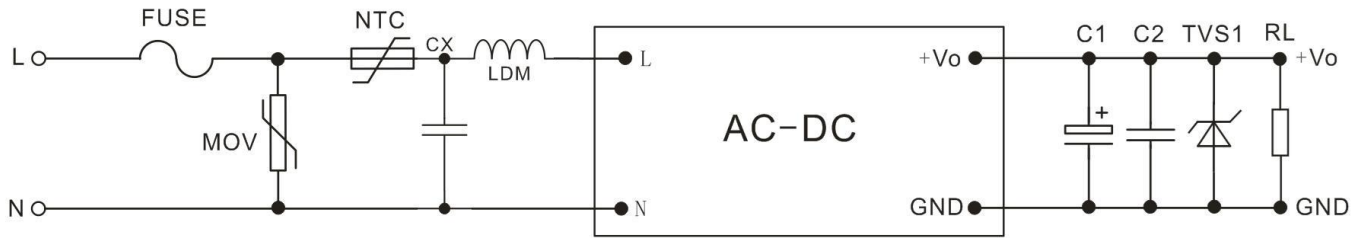


Photo 1

- 1) FUSE, is recommended to use a 2A~250Vac,slow-fusing, square type;
- 2) MOV, or varistor, recommended model is 10D561K;
- 3) NTC1 is a thermistor, recommended model is 5D-11, to protect the module from damage in lightning surge;
- 4) CX is an X capacitor, recommended model is 104K, 275V;
- 5) LDM is a differential mode inductor, with an inductance of 2mH or more;
- 6) C1 selects a high-frequency low-impedance electrolytic capacitor with a capacitance value lower than the capacitive load, and the withstand voltage is more than 1.5 times the output voltage;
- 7) C2 selects a 0.1uF ceramic chip capacitor, with a withstand voltage of more than 1.5 times the output voltage;
- 8) TVS1 is a TVS diode; recommended for 5V output: SMBJ7.0A, for 9V output: SMBJ12.0A, for 12V output:SMBJ20A, for 15V output:SMBJ20.0A, for 24V output: SMBJ30.0A, and for 48V output: SMBJ64A.

Note 1:

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 latest manual.

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