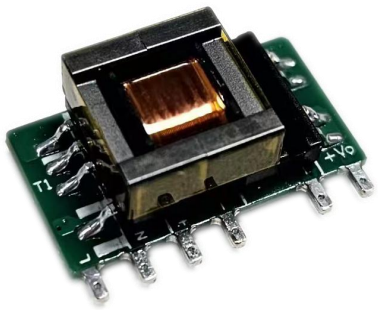
Typical Features

- Wide input voltage range 85-418VAC/100-591VDC
- No load power consumption ≤0.3W@220VAC
- Efficiency 74%(Typ.)
- Switching frequency 65KHz
- Short circuit & over-current protections
- Isolation voltage 3600VAC
- Compliant with IEC/EN62368/UL62368
- Conform to CE
- Mini size open frame, industry level design
- PCB SIP mounting



Application Field

DA5-300SXXGA9N4 series *--- Mini size open frame AC-DC power supplies with global adapted input voltage range (both AC and 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, Industry, Instrument, and Smart household devices, etc. The additional circuit diagram for EMC is recommended in this data sheet for the application with higher EMC requirement.*

Typical Product List

Certificate	Part No.	Output Specifications			Capacitive Load @220VAC	Ripple & Noise 20MHz	Efficiency @ Full Load/220VAC
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)	u F (Max)	mVp-p (Max)	% (Typ.)
-	DA5-300S05GA9N4	5	5	1000	2000	120	74
	DA5-300S12GA9N4	5	12	416	400	120	78
	*DA5-300S24GA9N4	5	24	208	200	120	80

Note 1: The * marked part has been developed in process.

Note 2: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 3: The full load efficiency should be in ±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 4: The ripple and noise are tested by the twisted pair method according to the test instruction in the datasheet.

Note 5: 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	418	VAC
	DC input	100	310	591	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.15	A

	220VAC	-	-	0.10	A
Surge Current	115VAC	-	-	11	A
	220VAC	-	-	21	
No-load power consumption	Input 115VAC	-	-	0.30	W
	Input 220VAC	-	-		
External fuse recommended	-	1A/400VAC, Time-delay fuse (necessary)			
Leakage current	-	0.25mA TYP / 230VAC/50HZ			
Hot-plug	-	NA			
Remote Control	-	NA			

Output Specifications

Item		Operating Condition	Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range,10-100% load The converter can work stably at ≤10% load	-	±2.0	±8.0	%
Line Regulation		Rated Load	-	±1.0	±3.0	%
Load Regulation		Nominal input voltage, 20%~100% load	-	±1.0	±5.0	%
Minimum Load		Single Output	10	-	-	%
Turn-on Delay Time		Nominal input voltage, full load	-	600	-	mS
Power-off Hold up Time		Input 115VAC, full load	-	50	-	
		Input 220VAC, full load	-	80	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-5.0	-	+5.0	mS
Output Over-shoot		Full input voltage range	≤10%Vo			%
Short circuit protection			Continuous, self-recovery			Hiccup
Drift Coefficient		-	-	±0.03%	-	%/℃
Over Current Protection		Input 220VAC	≥110% Io, self-recovery			Hiccup

General Specifications

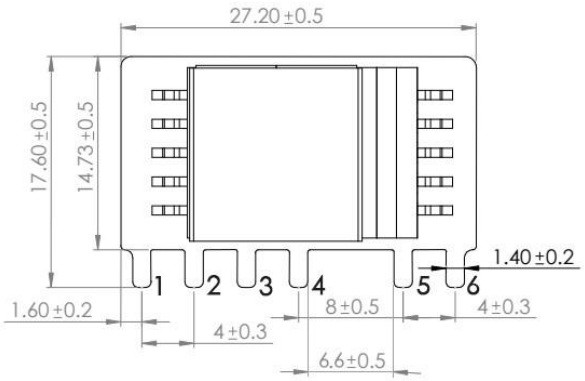
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	Refer to the Temperature Derating Graph	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4℃，Time 5-10S			
	Manual-soldering	360±8℃，Time 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current ≤5mA	3600	-	-	VAC
Insulation Resistance	Input-Output, @ DC500V	100	-	-	MΩ

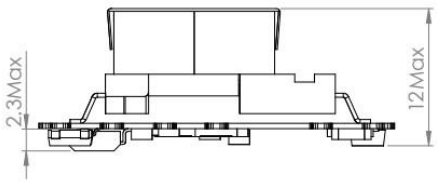
Safety Standard	-	IEC/EN62368
Vibration	-	10-55Hz,10G, 30 Min, along X,Y,Z
Safety Class	-	Class II
MTBF	-	MIL-HDBK-217F 25℃＞300,000H

EMC Performances

Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR22/EN55022	CLASS B (with the Recommend Circuit 2)
		RE	CISPR22/EN55022	CLASS B (with the Recommend Circuit 2)
	EMS	RS	IEC/EN 61000-4-3	10V/m Perf. Criteria B (with the Recommend Circuit 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf. Criteria B (with the Recommend Circuit 2)
		ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV Perf. Criteria B
		Surge	IEC/EN 61000-4-5	±1KV Perf. Criteria B
		EFT	IEC/EN 61000-4-4	±2KV Perf. Criteria B
		Voltage Dips & Interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Mechanical Dimensions





Unit: mm
General tolerance: ±1.0
The components layout is only for reference, any deviation from the actual unit should be accepted.

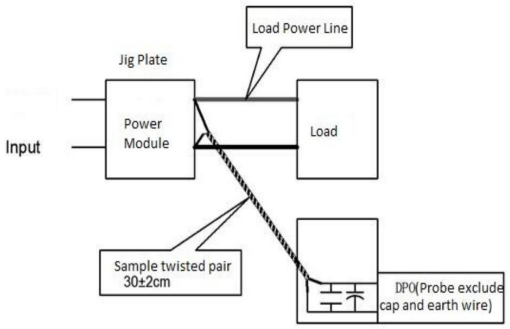
Package Code	Dimensions (L x W x H)	
-	27.2 X 17.6 X 12.0 mm	1.071 X 0.693 X 0.472 inch

Pin Function Description

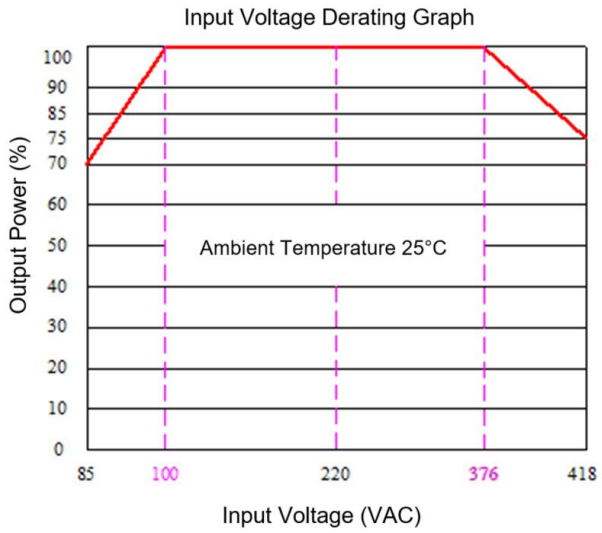
Pin No.	1	2	3	4	5	6
Single output	AC(L)	AC(N)	+Vcap	-Vcap	-Vout	+Vout

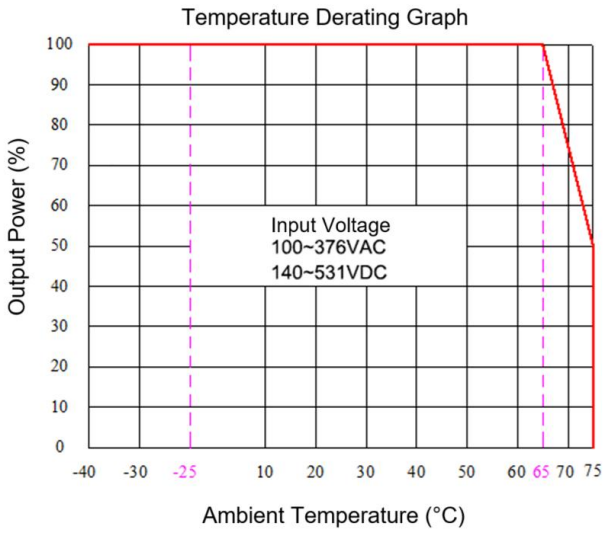
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz Bandwidth)

1) The Ripple & noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitors 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 start after input power on.



Product Characteristics Graphs





Note 1: The output power should be derated based on the input voltage derating graph at 85~100VAC/376~418VAC & 120~140VDC/531~591VDC.

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

Recommended Circuits Diagrams for Application

1, Typical Application Circuit Diagram

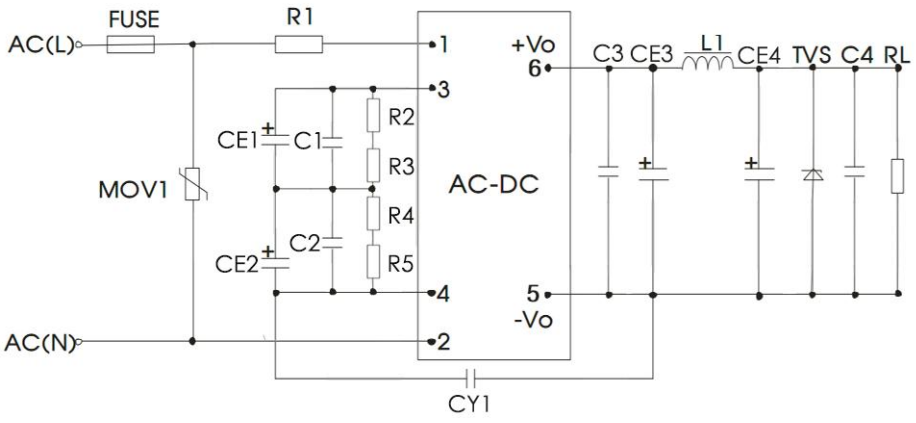


Figure - Circuit 1

Recommended parameters

Part No	CE1, CE2 (*)	CE3 (*Solid state Capacitor)	L1(*)	CE4(* Electrolytic capacitor)	C1, C2	C3, C4	TVS1
DA5-300S05GA9N4	33uF/400V	470uF/16V	2.2uH/5A	100uF/16V	0.1uF/630V	0.1uF/50V	SMBJ7.0A
DA5-300S12GA9N4		220uF/16V		47uF/25V			SMBJ20A
DA5-300S24GA9N4		220uF/35V		47uF/35V			SMBJ30A

Note:

1) The * marked components are necessary for the application, not optional.
2) 1A/400Vac time-delay fuse is recommended, necessary.
3) 14D751K is recommended for MOV1, necessary.
4) 12Ω/3W wire-wound resistor is recommended for R1, necessary.
5) R2, R3, R4 & R5 are the voltage-balance resistors, 1M/1206 recommended, all are necessary.
6) Y capacitor(1nF/400VAC) is recommended for CY1, necessary.

2, Recommended circuit diagram for EMC

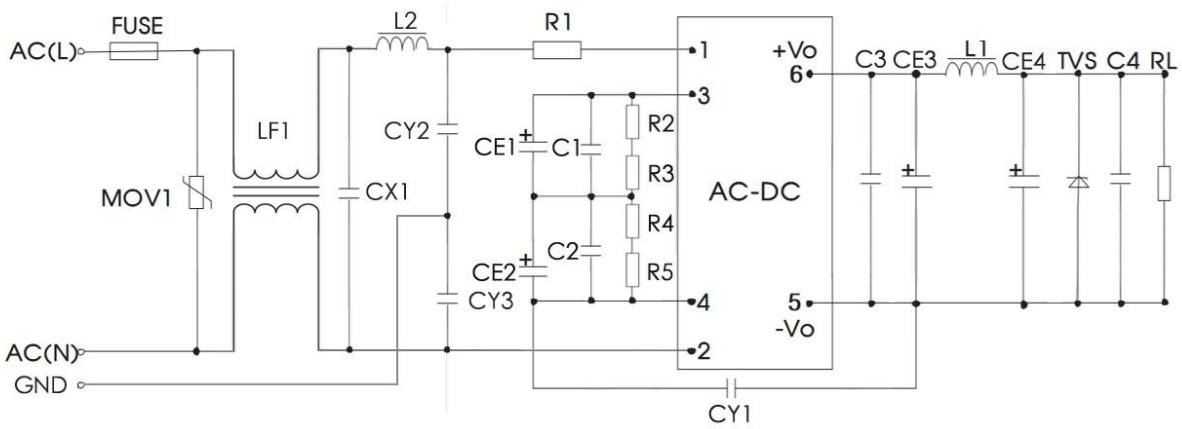


Figure - Circuit 2

Note:

1) 1A/500Vac time-delay fuse is recommended, necessary not optional.
2) 14D751K is recommended for MOV1, necessary.
3) 12Ω/3W wire-wound resistor is recommended for R1, necessary.
4) Y capacitors(1nF/400VAC) are recommended for CY1, CY2 & CY3, all are necessary.
5) X capacitor(0.1uF/480VAC) is recommended for CX1.
6) 30mH/0.5A common mode choke is recommended for LF1.
7) 1.2mH/0.2A drum choke is recommended for L2.
8) For ESD protection, discharge needles are recommended together with R6, R7, R8, R9, R10 bleeder resistors (50MΩ/1206) connected in parallel with CY1.

All other components are same recommended as the typical application circuit solution.

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℃, humidity<75%RH, nominal input voltage and rated 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 data sheet, 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.

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

