

Typical Features

- ◆ Wide input voltage range: 85-305VAC/70-430VDC
- ◆ No load power consumption $\leq 0.40W$
- ◆ Efficiency 73%(TYP.)
- ◆ Short circuit & over current protections
- ◆ Mini-size open-frame, high efficiency & reliability
- ◆ Industrial-grade technology design
- ◆ PCB mounting
- ◆ Operating temperature: -40~+85°C



Application Field

A03-C1SXXM Series----- Mini size, high efficiency power supplies offered by Aipu. This series of power supplies present multi-advantages of global input voltage range, both AC/DC available, low ripple, low temperature rise, low standby power consumption, high efficiency & reliability and good EMC performance. They can be widely used in the fields of electricity power, industry, instrumentation and smart home etc. Additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.

Typical Product List

Certificate	Part No.	Output Specifications			Max. Capacitive Load 230Vac	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load/230Vac (Typical)
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)	uF	mVp-p	%
-	A03-C1S05M	1	5	200	500	150	57
-	A03-C1S12M	3	12	250	330	150	73

There is no insulation between input and output, ground protection is needed against electric shock.

Note 1: The ripple and noise are tested by the twisted pair method. For details understood, please refer to the Ripple & Noise test Instructions in this manual.

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(%Typ.) should be in $\pm 2\%$ of the typical value in this table. The efficiency =output power/input power.

Input Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Input Voltage Range	AC input	85	220	305	VAC
	DC input	70	310	430	VDC
Input Frequency range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.12	A
	277VAC	-	-	0.06	
Surge Current	115VAC	-	25	-	
	277VAC	-	40	-	
Recommended External Fuse	-	1A/300VAC Time-delay fuse (Not optional)			
Hot Plug	-	Unavailable			

Output Specifications

Item	Operating Condition		Min	Typ.	Max	Unit
Voltage Accuracy	Full input voltage range, 10%~100% load	Vo=5V	-	±1.5	-7~+3	%
		Vo=12V	-	±2.5	-5~+8	
Line Regulation	Rated load	Vo=5V	-	±1.5	-	
		Vo=12V	-	±1.0	-	
Load Regulation	Rated input voltage, 10%~100% load	Vo=5V	-	±2.5	-	
		Vo=12V	-	±2.0	-	
No Load Consumption	Input 230VAC	Vo=5V	-	-	0.3	W
		Vo=12V	-	-	0.4	
Minimum Load	Single Output		10	-	-	%
Turn on Delay	Input 230VAC (full load)		-	1000	-	mS
Power-off Hold up Time	Input 230VAC (full load)		-	80	-	
Output Overshoot			≤10%Vo			%
Short circuit Protection	Full input voltage range		Continuous, self-recovery			Hiccup
Over Current Protection			≥110% Io, self-recovery			
Temperature Drift	-		-	±0.12%	-	%/°C

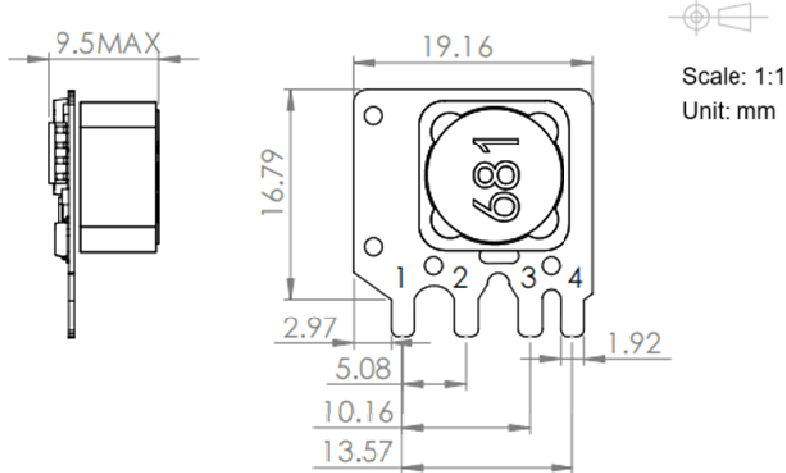
General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Operating Temperature	-	-40	-	+85	°C
Storage Temperature	-	-40	-	+105	
Soldering Temperature	Wave soldering	260±4°C, time 5-10S			
	Manual soldering	360±8°C, time 4-7S			
Relative Humidity	-	-	-	95	%RH
Safety Standard	-	EN/IEC62368/UL62368			
MTBF	-	MIL-HDBK-217F@25°C > 1000,000H			

EMC Performances

Total Item	Sub Item	Test Standard	Performance/Class			
EMC	EMI	CE	CISPR22/EN55032	CLASS A (Recommended Circuit 1)		
		RE		CLASS B (Recommended Circuit 2)		
	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria A (Recommended Circuit 2)	
		CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria A (Recommended Circuit 2)	
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV	Perf.Criteria B (Recommended Circuit 1)	
		Surge	IEC/EN61000-4-5	line to line ±1KV	Perf.Criteria B (Recommended Circuit 1)	
		EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B (Recommended Circuit 1)	
				±4KV	Perf.Criteria B (Recommended Circuit 2)	
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70%	Perf.Criteria B (Recommended Circuit 2)	

Mechanical Dimensions



Tolerance:
 $0 < L \leq 1 \pm 0.3$ $1 < L \leq 5 \pm 0.5$
 $5 < L \leq 20 \pm 0.8$ $20 < L \leq 50 \pm 1$
 $50 < L \leq 150 \pm 1.5$ $150 < L \leq 400 \pm 2$

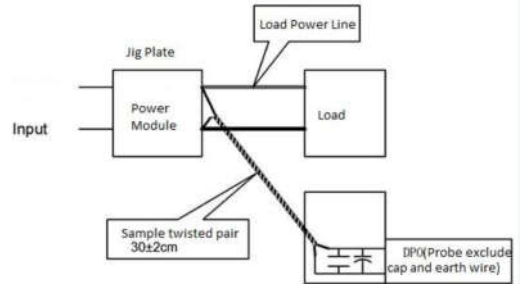
Packing Code	L x W x H	
-	19.16X19.7X9.50 mm	0.754X0.776X0.374 inch

Pin definition

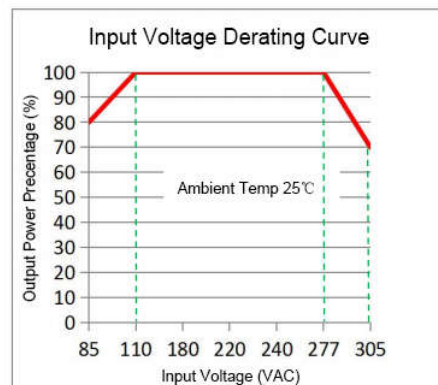
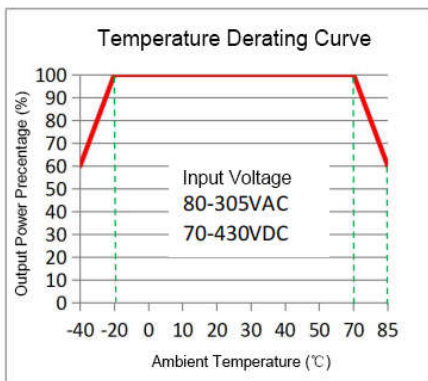
Pin	1	2	3	4
Single (S)	AC(L)	+V(CAP)	AC(N)/-Vo	+Vo

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

- 1) 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 capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set on the Sample Mode.
- 2) Please refer to the output ripple noise test diagram. The convertor 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 Performance Curve

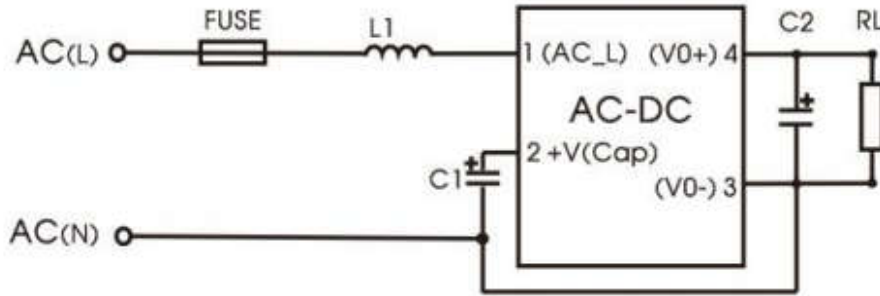


Note 1: The power supply output power should respect the Derating Curve when the input voltage at 85~100VAC/277~305VAC/120~140VDC/390~430VDC.

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

Recommended circuits for application

1. Typical Application Circuit



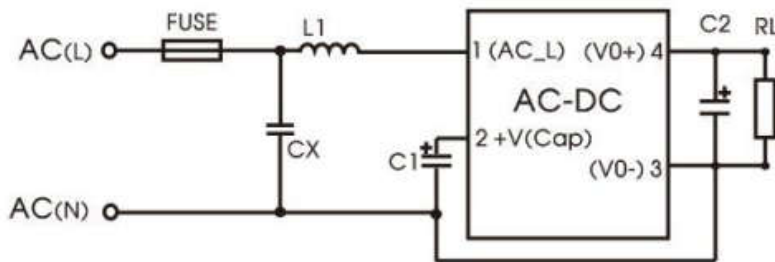
Recommended Circuit 1

FUSE	L1	C1	C2
1A/300VAC, Time-delay fuse	1.2mH	10uF/400V(165-264VAC)	220uF/16V
		10uF/450V(165-305VAC)	
		22uF/400V(85-264VAC)	
		22uF/450V(85-305VAC)	

Note:

- C1 is the input filter electrolytic capacitor (must be externally connected). 22uF is needed to meet the surge immunity index.
- C2 is the output filter electrolytic capacitor (must be externally connected). A high-frequency low-resistance electrolytic capacitor or a solid-state capacitor is recommended.

2. Recommended Circuit for better EMC performance



Recommended Circuit 2

FUSE	CX	L1	C2	C1
1A/300VAC, Time-delay fuse	0.1uF/310VAC	1.2mH	220uF/16V	10uF/400V(165-264VAC)
				10uF/450V(165-305VAC)
				22uF/400V(85-264VAC)
				22uF/450V(85-305VAC)

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

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