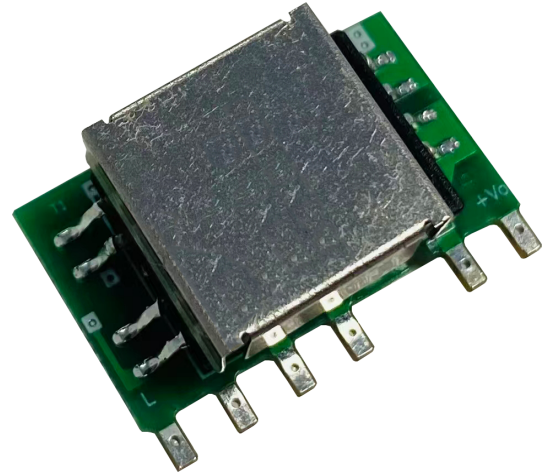


Typical Features

- ◆ Wide input voltage range 85-305VAC/70-430VDC
- ◆ No load power consumption ≤ 0.3W
- ◆ Efficiency up to 78%(TYP.)
- ◆ Switching Frequency 65KHz
- ◆ Short circuit and over current protections
- ◆ Isolation voltage 3600Vac
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ Conform to CE
- ◆ Mini size open-frame, industrial level design
- ◆ PCB mounting



Application Field

A05-C4SXXD Series----- a compact size, high efficiency power supply module provided by Aipu. It has the advantages of universal input voltage range both AC and DC available, low ripple, low temperature rise, low standby power consumption, high efficiency & reliability, safety isolated and good EMC performance. EMC conforms to EN55032 & EN61000. This series products can be widely used for Electric power, Industry, Instrument and Smart home fields. The 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 uF	Ripple& Noise 20MHz (Max) mVp-p	Efficiency@ Full Load, 220Vac (Typical) %
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)			
-	A05-C4S03D	3.3	3.3	1000	2000	100	68
	A05-C4S05D	5	5	1000	2000	100	74
	A05-C4S09D	5	9	556	1000	120	76
	A05-C4S12D	5	12	416	68	120	78
	A05-C4S12V1D	5	12.1	416	68	120	78
	A05-C4S15D	5	15	333	68	120	78
	A05-C4S24D	5	24	208	47	120	80

Note 1: * 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 (Refer to the Ripple & Noise test instruction)

Note 5 Please contact with Aipu sales for other output voltages requirement in this series but not in this table.

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	-	-	0.15	A
	220VAC	-	-	0.10	
Surge Current	115VAC	-	-	11	
	220VAC	-	-	21	
Leakage Current	-	0.25mA TYP/230VAC/50Hz			
Recommended External Fuse	-	1A-3A/300VAC Time-delay fuse			
Hot Plug	-	Unavailable			
Remote Control Terminal	-	Unavailable			

Output Specifications

Item	Operating Condition	Min	Typ.	Max	Unit	
Voltage Accuracy	Full input voltage range, 10-100% load	3.3V	-	±2.0	±8.0	%
		Others	-	±2.0	±6.0	%
Line Regulation	Rated load	Vo	-	±1.0	±2.0	%
Load Regulation	Rated input voltage,	Vo	-	±1.0	±5.0	%
No Load Power Consumption	Input 115VAC	-	-	0.3	W	
	Input 220VAC	-	-			
Minimum Load	Single Output	10	-	-	%	
Turn-on Delay Time	Rated input voltage (full load)	-	600	-	mS	
Power-off Hold up Time	Input 115VAC (full load)	-	50	-	mS	
	Input 220VAC (full load)	-	80	-		
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+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	≥110% Io, self-recovery			Hiccup	

General Specifications

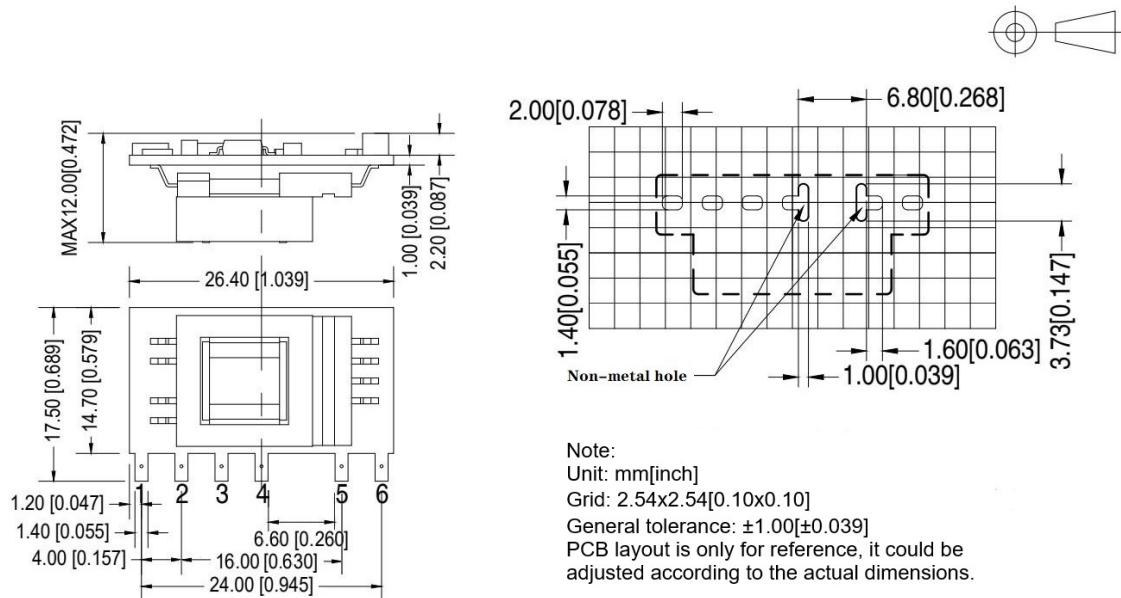
Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+105	°C
Storage Temperature	-	-40	-	+110	
Soldering Temperature	Wave soldering	260±4°C, time 5-10S			

		Manual soldering	360±8°C, time 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage current ≤5mA	3600	-	-	VAC
Insulation Resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
Safety Standard		-	EN/IEC62368			
Vibration		-	10-55Hz,10G,30 Min, along X,Y,Z			
Safety Standard		-	CLASS II			
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 (with the Recommended Circuit 2)
		RE	CISPR22/EN55032	CLASS B (with the Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with the Recommended Circuit 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with the Recommended Circuit 2)
		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

Mechanical Dimensions



Packaging Code	L x W x H	
-	26.4 x 17.5x 12.0 mm	1.039 × 0.689× 0.472 inch

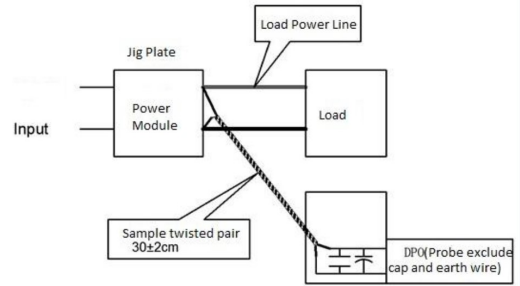
Pin function definition

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

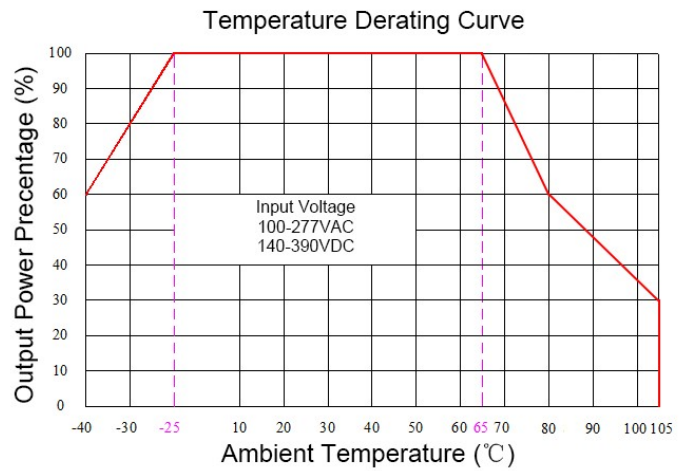
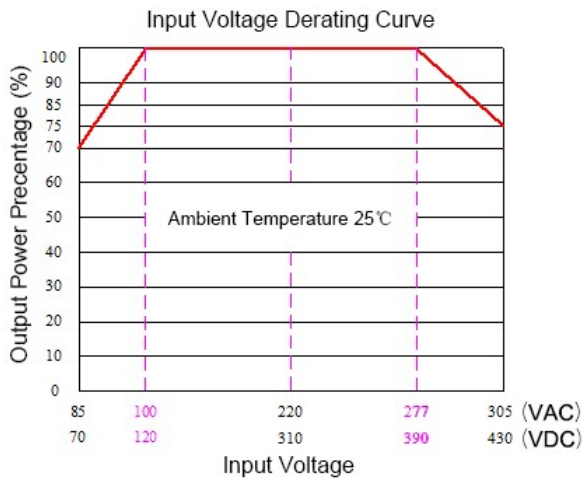
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz bandwidth)

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 at the Sample Mode.

2) The output ripple noise 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 Performance Curve

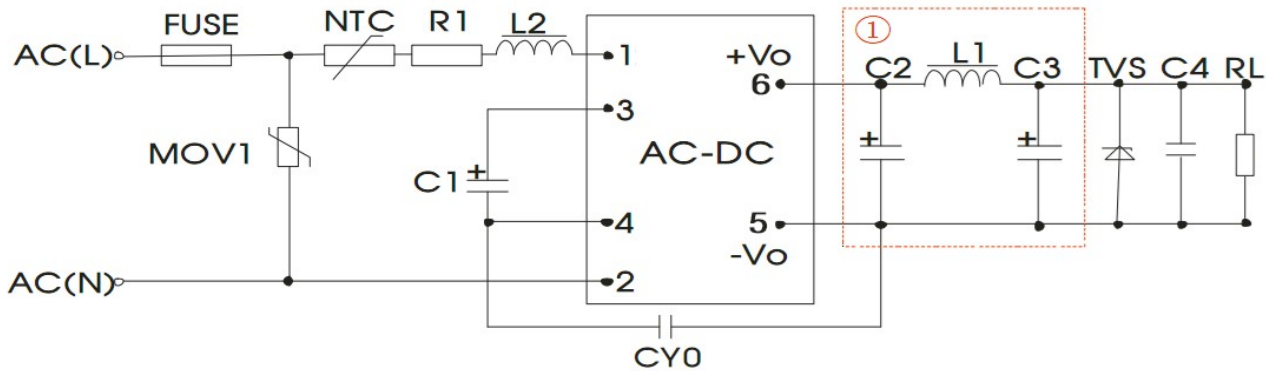


Note 1: The output power should be derated based on the input voltage derating curve at 85~100VAC/277~305VAC/70~120VDC/390~430VDC.

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

Recommended Circuits for Application

1. Typical Application Circuit



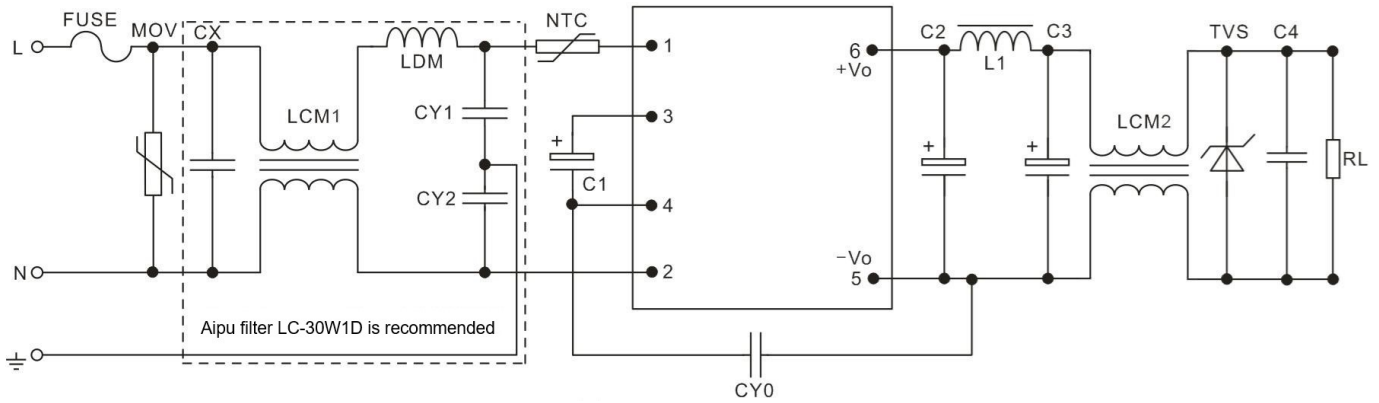
Circuit 1
(Note ① is π Type filter)

Product Number	C1 (*1)	C2 (*1)	L1 (*2)	C3 (*1)	C4	L2	NTC	CY0	FUSE (*2)	TVS Tube
A05-C4S3V3D	22uF /450V	470uF/10V	2.0uH	100uF/10V	0.1uF/5 0V	4.7mH	5D-9	102M/ 400V	1A/ 300V	SMBJ7.0A
A05-C4S05D		470uF/10V		100uF/10V						SMBJ7.0A
A05-C4S09D		220uF/16V		220uF/16V						SMBJ12A
A05-C4S12D		220uF/16V		68uF/16V						SMBJ20A
A05-C4S12V1D		220uF/16V		68uF/16V						SMBJ20A
A05-C4S15D		220uF/35V		68uF/35V						SMBJ20A
A05-C4S24D		100uF/35V		47uF/35V						SMBJ30A

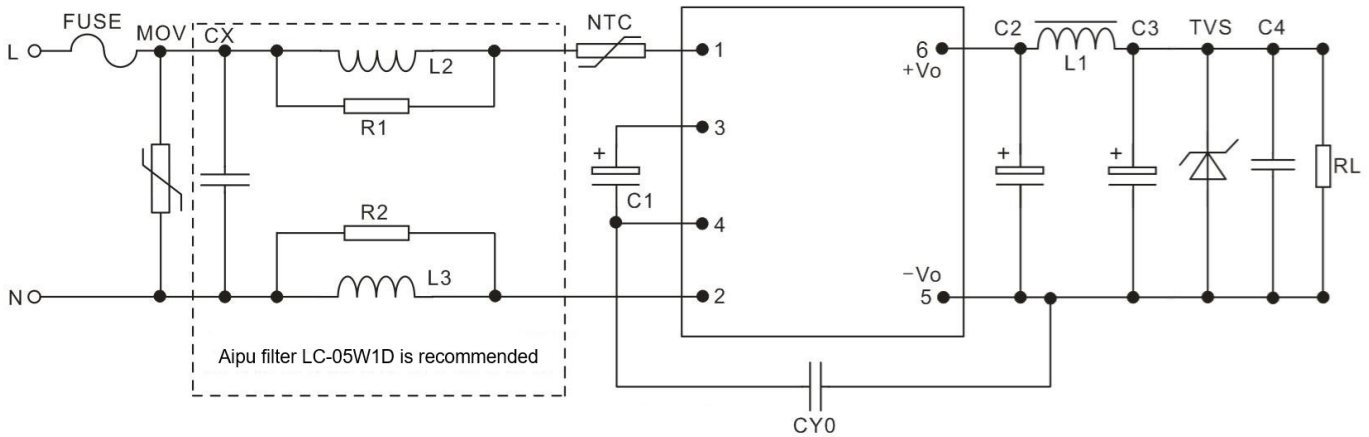
Note *1, External E-cap is necessary, not optional.

Note *2, The component is necessary, not optional.

2. EMC recommended circuit (for higher EMC requirement)



Circuit 2-1



Circuit 2-2

FUSE	Recommend 1A, 300V (Necessary)	NTC	5D-9
MOV	10D561K	CY1, CY2	1nF/400VAC
CX	Recommended 0.22uF/310Vac	LDM	330uH, 0.3A
LCM1	40mH min	L2,L3	Color ring inductor 1mH, 0.3A
LCM2	40mH min	R1, R2	Resistor 2.2K, above 1/8W

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 connected at input.
3. The product performance in this manual cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance 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°C, 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 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.
9. The product specifications may be modified without prior notice. Please refer to the published data sheet at Aipupower website.

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