Typical Features

- Wide Input Range: 176-418 VAC / 248-591 VDC
- No-Load Power Consumption ≤0.25W
- Efficiency: 84% (Typ)
- Operating Temperature: -40° C to +75° C
- Switching Frequency: 65KHz
- Protection types: Short-circuit, overcurrent protection
- Isolation Voltage: 4000VAC
- Maximum operating altitude: 4000m
- Complies with CE certification
- Safety Class: CLASS II

Application Fields

FA15-300SXXG2N4 Series---*Aipu's high-efficiency modular power supply for customers.This series features a global Input Voltage Range, AC/DC dual-use capability, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, and high safety isolation. It finds extensive applications in power systems, industrial equipment, instrumentation, smart home systems, and more. When deployed in environments with challenging electromagnetic compatibility, refer to the application circuits provided by our company.*

Product Selection Guide

Certification	Part No.	Input Voltage Range		Output Specifications			Max. Capacitive Load 220VAC (MAX)	Ripple & Noise 20MHz (MAX)	Rated Voltage Full Load Output Efficiency (Typ)
		Nominal Value (VAC)	Range Value (VAC)	Power P(W)	Voltage Vo(VDC)	Current Io(mA)	uF	mVp-p	%
-	FA15-300S05G2N4	220	176-418	15	5	3000	6000	70	78
-	FA15-300S12G2N4				12	1250	4000	120	84
-	FA15-300S12V3G2N4				12.3	1220	3000	120	84
-	FA15-300S24G2N4				24	625	2000	120	85

Note 1: Typical output efficiency values are based on the product operating at full load for 30 minutes.

Note 2: The full-load efficiency (%, TYP) in the table has a fluctuation range of ±2%. Full-load efficiency is calculated as the total output power divided by the module's input power.

Note 3: Due to space limitations, the above represents only a partial product list. For products not included in the list, please contact our Sales Department.

Input Characteristics

Test Item	Test Conditions	Minimum	Typical	Maximum	Unit
Input Voltage Range	AC Input	176	220	418	VAC
	DC Input	248	310	591	VDC
Input Frequency	-	47	50	63	Hz
Standby Power Consumption	176VAC	-	-	0.25	W
	220VAC				
Input Current	176VAC	-	-	0.20	A
	220VAC	-	-	0.18	
Inrush Current	176VAC	-	-	18	
	220VAC	-	-	21	
Leakage Current	-	0.25mA TYP/230VAC/50Hz			
Hot Swap	-	Not supported			
Recommended External Fuse Rating	-	2A/600VAC slow blow fuse			
Remote Control Pin (Ctrl)	-	No Remote Control (CNT)			

Output Characteristics

Test Item		Test Conditions		Minimum	Typical	Maximum	Unit
Output Voltage Accuracy		Full Input Voltage Range Any Load	Vo	-	±2.0	±3.0	%
Linear Regulation Rate		Nominal load	Vo	-	±0.5	±1.0	%
Load Regulation		Nominal Input Voltage, 20%-100% rated load	Vo	-	±0.5	±1.0	%
Ripple & Noise		5%-100% load, 20MHz bandwidth	Vo	-	-	120	mVp-p
		Note: The ripple and noise test method employs the parallel-line test method. For specific testing procedures and configurations, refer to the subsequent section (Ripple & Noise Test Specifications).					
Dynamic Response	Overshoot Magnitude	25%~50%~25% 50%~75%~50%		-5.0	-	+5.0	%
	Recovery Time			-	-	5.0	ms
Minimum Load		Single-channel output		0	-	-	%
Temperature Coefficient		-		-	-	±0.03	%/°C
Start-up delay time		Input 176VAC (Full Load)		-	-	2000	ms
		Input 220VAC (Full Load)		-	-		
Power Failure Hold Time		Input 176VAC (Full Load)		-	50	-	ms
		Input 220VAC (Full Load)		-	80	-	
Output Start-Up Overvoltage		Input Voltage Range		≤10			%Vo
Short-circuit protection				Sustained, Self-recovery			Hiccup
Output Over-current Protection (OCP)		Input 220VAC		130% Io	-	170%Io	Hiccup

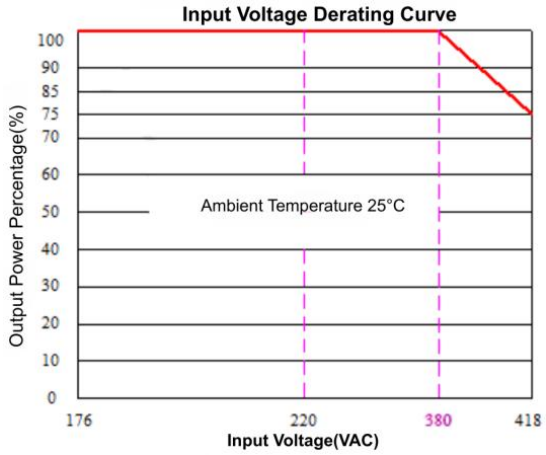
General Characteristics

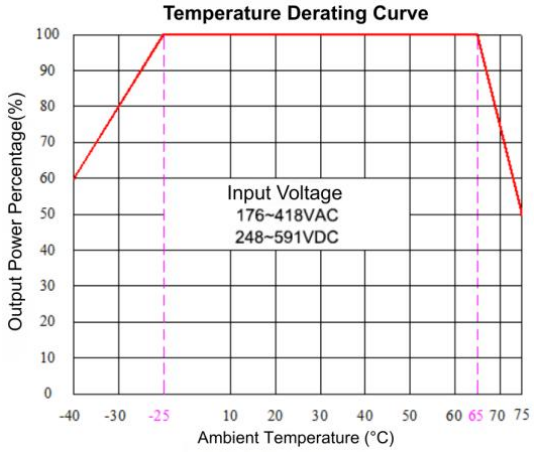
Test Item		Test Conditions		Minimum	Typical	Maximum	Unit
Switching Frequency		-		61	65	73	kHz
Operating Temperature		Refer to the Derating Curve for derated operation		-40	-	+75	°C
Storage Temperature		-		-40	-	+85	°C
Soldering Temperature		Wave soldering		260±4°C, duration 5-10 seconds			
		Manual Soldering		360±8°C, time 4-7 seconds			
Relative Humidity		-		10	-	90	%RH
Isolation Voltage	Input-Output	Tested for 1 minute, leakage current less than 5mA		4000	-	-	VAC
Insulation Resistance	Input-Output	Apply 500VDC		100	-	-	MΩ
MTBF		MIL-HDBK-217F 25°C		300	-	-	K hours
Enclosure Rating		-		UL94V-0			
Vibration		-		10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Rating		-		CLASS II			
Weight/Dimensions		Package Model	Weight (Typ)	Dimensions L x W x H			
		-	58g	52.4 x 27.2 x 24.0 mm		2.063 × 1.071 × 0.945 inch	

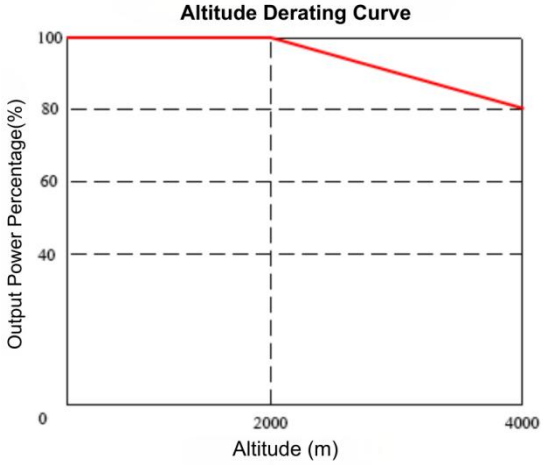
Electromagnetic Compatibility Characteristics

Component		Sub-item	Technical Standard	Performance Criteria
EMC	EMI	CE	CISPR 32/EN 55032	CLASS B (Recommended circuit shown in Figure 2)
		RE	CISPR32/EN55032	CLASS B (Recommended circuit shown in Figure 2)
	EMS	ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV Performance Criteria B
		Radiated Immunity	IEC/EN 61000-4-3	10V/m Performance Criteria A
		EFT	IEC/EN 61000-4-4	±2KV Performance Criteria B
		Surge Immunity	IEC/EN 61000-4-5	Line to Line ±1KV Performance Criteria B
		CS	IEC/EN 61000-4-6	3 Vr.m.s. Performance Criteria A
		Power Frequency Magnetic Field Immunity	IEC/EN 61000-4-8	10 A/m Performance Criteria A
		Voltage Dips and Interruptions and Short Interruptions Immunity	IEC/EN 61000-4-11	0%-70% Performance Criteria B

Product Characteristic Curve







Note 1: Input voltage is 380~418VAC/537~591VDC. Temperature derating must be applied based on the input voltage Derating Curve.

Note 2: This product is suitable for use in environments with natural convection cooling. For use in enclosed environments, please contact our company.

Typical Application Circuit Diagram and Recommended EMC Parameters

1. Typical Application Circuit

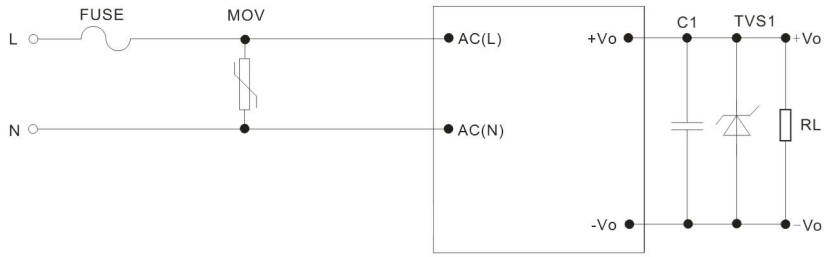


Figure 1

Output Voltage	5V	12V/12.3V	24V
TVS Tube Recommended Value	SMBJ7.0A	SMBJ20A	SMBJ30A

Note:

Output capacitor C1 is a ceramic capacitor to eliminate high-frequency noise. The TVS diode protects downstream circuits during module malfunctions and is recommended for use. An external fuse is recommended, model: 2A/600V slow-blow. An external MOV varistor is recommended, model: 14D751K.

2. EMC Solutions and Recommended Circuit

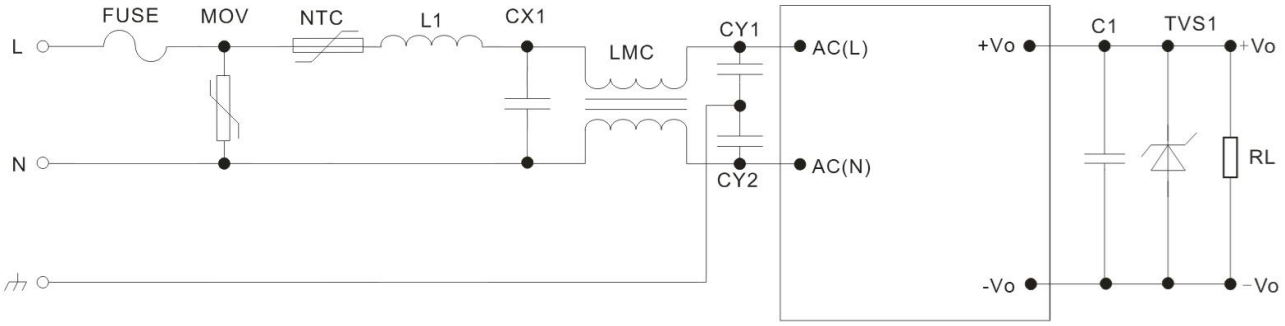
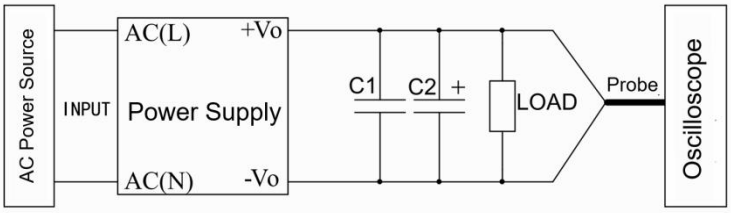


Figure 2

Component Model	Recommended Value	Component Model	Recommended Value
MOV	14D751K/4500A	NTC	5D-9
CX1	X2/104K/530VAC	LMC	UU9.8, 25mH, 0.5A
FUSE	2A/500V, slow-blow, must be connected	CY1, CY2	Y1/102M/400VAC
L1	330uH, 0.5A		

Ripple & Noise Test Specifications (Parallel Line Method, 20MHz Bandwidth)

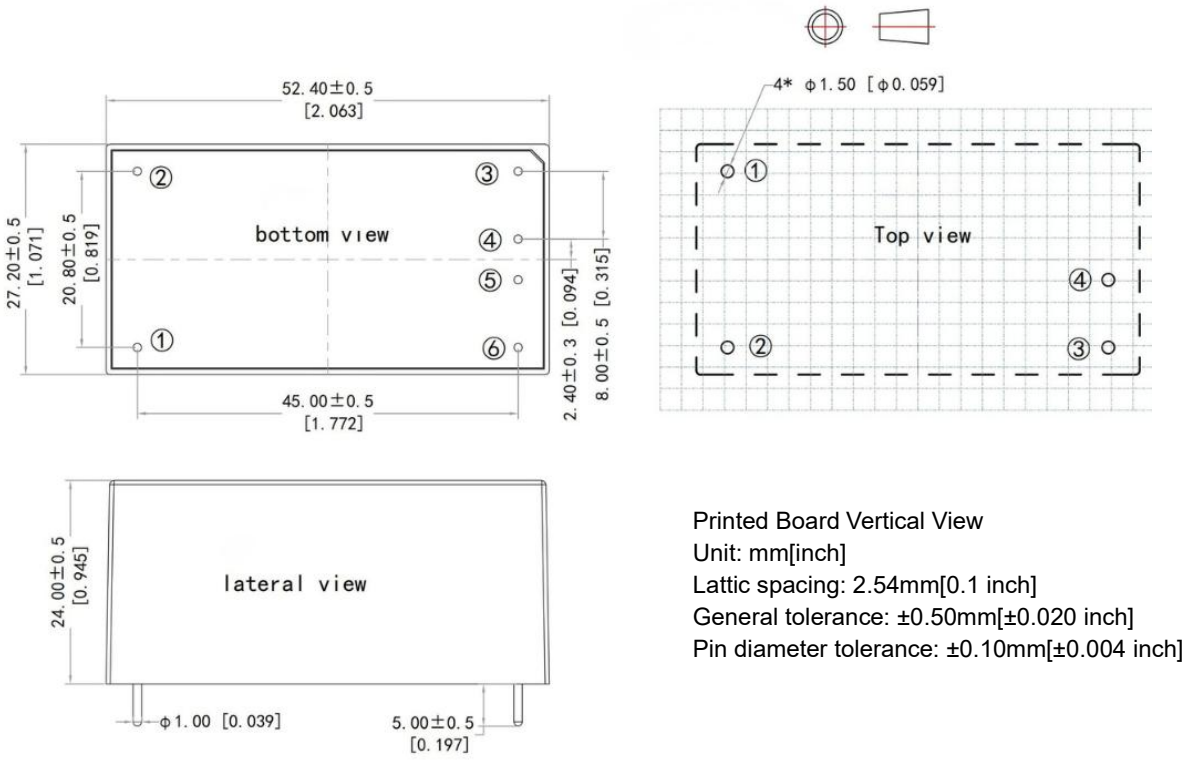
Test Method:



1、 Ripple and noise testing employs a parallel-line connection. The oscilloscope bandwidth is set to 20MHz with 100M bandwidth. Remove the probe cap and ground clip from the probe. Connect C1 (0.1uF ceramic capacitor) and C2 (10uF high-frequency low-ESR electrolytic capacitor) in parallel at the probe tip. Use the Sample sampling mode on the oscilloscope.

2. Output Ripple Noise Test Diagram: Connect the module power supply input to the input power source. The power output connects to the electronic load via a fixture board. For testing, sampling is performed directly from the power supply output port using a dedicated sampling line. Power lines should be insulated wires with appropriate wire gauges selected based on the output current.

Dimensions



Printed Board Vertical View
Unit: mm[inch]
Lattic spacing: 2.54mm[0.1 inch]
General tolerance: ±0.50mm[±0.020 inch]
Pin diameter tolerance: ±0.10mm[±0.004 inch]

Pin Definitions

Pin No.	1	2	3	4	5	6
Function	AC(L)	AC(N)	-Vo	+Vo	NP	NP
	AC Line	AC Neutral	Output Negative	Output Positive	No Pin	No Pin

Note:

1. The product must be used within its specified parameters; otherwise, permanent damage may occur.
2. When operating below the minimum required load, product performance cannot be guaranteed to meet all Performance

Specifications listed in this manual;

3. If the product operates beyond its load range, compliance with all Performance Specifications in this manual cannot be guaranteed;

4. Unless otherwise specified, all data above is measured at Ta=25°C, humidity <75%, Nominal Input Voltage, and rated output load (resistive load);

5. All testing methods for the above specifications comply with our company's standards;

6. The Performance Specifications listed above apply to the product models specified in this manual. Non-standard models may exceed certain requirements; please contact our technical personnel directly for specific details.

7. Customized products are available upon request;

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