AC/DC Converter

FA15-220SXXF2D4(-T)(-TS) Series

Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption≤0.35W
- ◆ Transfer efficiency (typ. 86%)
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current
- ◆ Isolation voltage: 4000Vac
- ◆ Pass CE, RoHS certificate
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ Plastic case, conform to UL94 V-0
- ◆ PCB mounting, chassis mounting, din-rail mounting available

Application Field

FA15-220SXXF2D4 Series**-----** *a compact size, high efficient, approved by CE, RoHS power converter offered by Aipu. It features universal input voltage, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance. EMC and Safety standard meet international EN55032, IEC/EN61000. It widely used in power, industrial, instrument, smart home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.*

Typical Product List

Certificate	Model	Output Specification			Max. Capacitive Load	Ripple& Noise 20MHz (Max.)	Efficiency@ Full Load, 220Vac (TYP.)
		Power	Voltage	Current			
		(W)	Vo1(V)	Io1(m A)	u F	mVp-p	%
CE/RoHS	FA15-220S3V3F2D4	10	3.3	3000	2000	80	70
CE/RoHS	FA15-220S05F2D4	15	5	3000	1000	80	74
CE/RoHS	FA15-220S09F2D4	15	9	1667	1000	80	82
CE/RoHS	FA15-220S12F2D4	15	12	1250	800	80	84
CE/RoHS	FA15-220S15F2D4	15	15	1000	800	100	85
-	FA15-220S20F2D4	15	20	750	800	100	85
CE/RoHS	FA15-220S24F2D4	15	24	625	500	100	86

Note 1: -T is a wiring package, -TS is a rail package, and the rail width is 35mm;

Note 2: The typical value of output efficiency is based on the product being aged for half an hour at full load;

Note 3: The full load efficiency (%, TYP) in the table fluctuates by ±2%, and the full load efficiency is the total output power divided by the input power of the module;

Note 4: Due to limited space, the above is only a partial list of products. If you need products outside the list, please contact our sales department.

Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	265	VAC
	DC Input	120	310	380	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.35	A
	220VAC	-	-	0.25	
Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended value	-	1A-2A/250VAC slow-fusing			
Hot plug	-	Unavailable			
Remote control terminal	-	Unavailable			

Output Specification

Item		Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, Any load	Vo	-	±2.0	±3.0	%
Line Regulation		Nominal Load	Vo	-	-	±0.5	%
Load Regulation		Nominal input Voltage, 20%~100% load	Vo	-	-	±1.0	%
No load power consumption		Input 115VAC		-	-	0.35	W
		Input 220VAC		-	-		
Minimum load		Single Output		0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)		-	1000	-	mS
Power-off Holding Time		Input 220VAC (full load)		-	200	-	mS
Dynamic Response	Over shoot range	25%~50%~25% 50%~75%~50%		-10.0	-	+10.0	%
	Recovery time			-5.0	-	+5.0	mS
Output Overshooting		Full input voltage range		≤10%Vo			%
Short Circuit Protection				Continuous, Self-recovery			Hiccup
Drift Coefficient		-		-	±0.03%	-	%/℃
Over Current Protection		Full input voltage range		⩾120% Io, Self-recovery			Hiccup
Ripple & Noise		-		-	50	100	mV
		Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.					

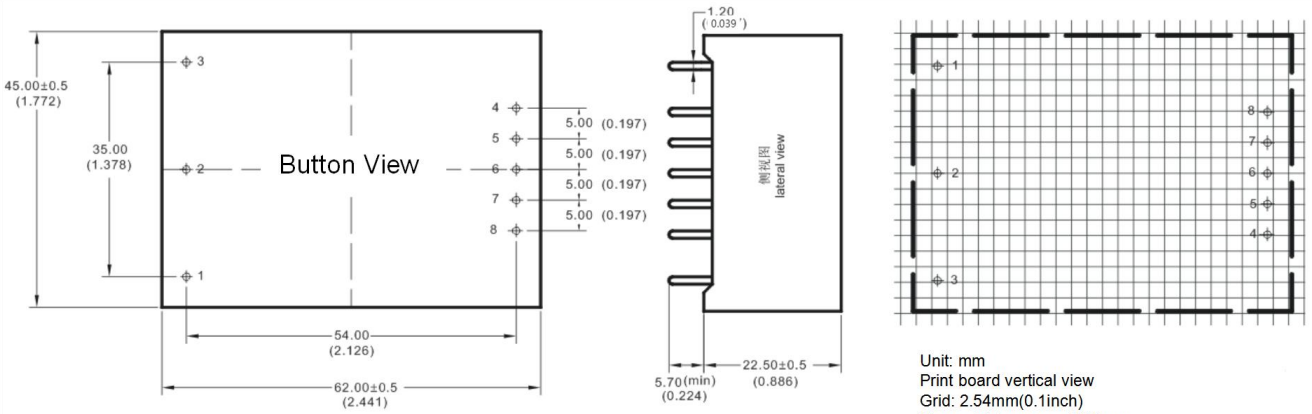
General Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4℃, timing 5-10S			
	Manual-soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output,Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN62368、IEC62368			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Safety Class	-	CLASS Ⅱ			
Class of Case Material	-	UL94 V-0			
MTBF	-	MIL-HDBK-217F@25℃＞300,000H			

EMC Characteristics

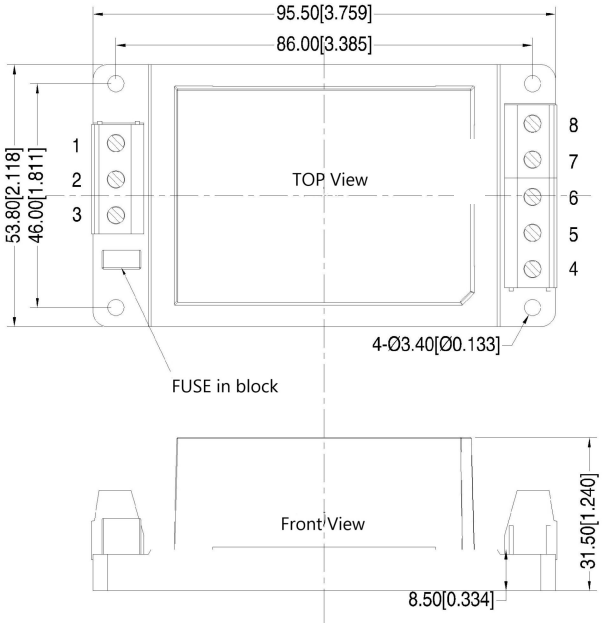
Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B
		RE	CISPR22/EN55032	CLASS B
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (Recommended Circuit 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (Recommended Circuit 1)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria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

F2 Packing Dimension

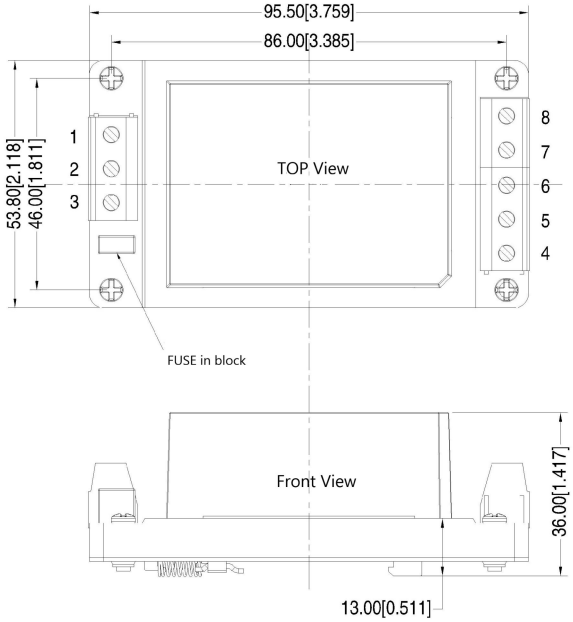


Unit: mm
Print board vertical view
Grid: 2.54mm(0.1inch)
General tolerance: ±0.25mm
Pin section tolerances: ±0.10mm

F2-T Packing Dimension



F2-TS Packing Dimension



Packing Code	L x W x H	
F2	62.0 x 45.0 x 22.5 mm	2.441 × 1.772 × 0.885inch
F2-T	96.0 x 53.8 x 31.5 mm	3.780 x 2.118 x 1.240 inch
F2-TS	96.0 x 53.8 x36.0 mm	3.780 x 2.118 x 1.417 inch

Pin Definition

Pin-out	1	2	3	4	8
Single(S)	FG	AC(N)	AC(L)	+Vo	-Vo

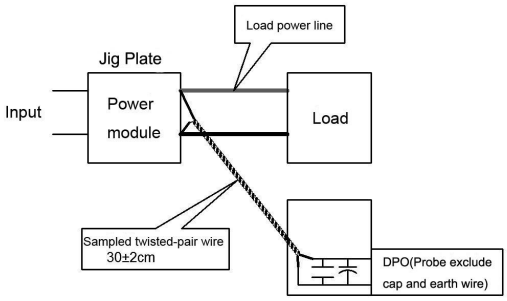
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

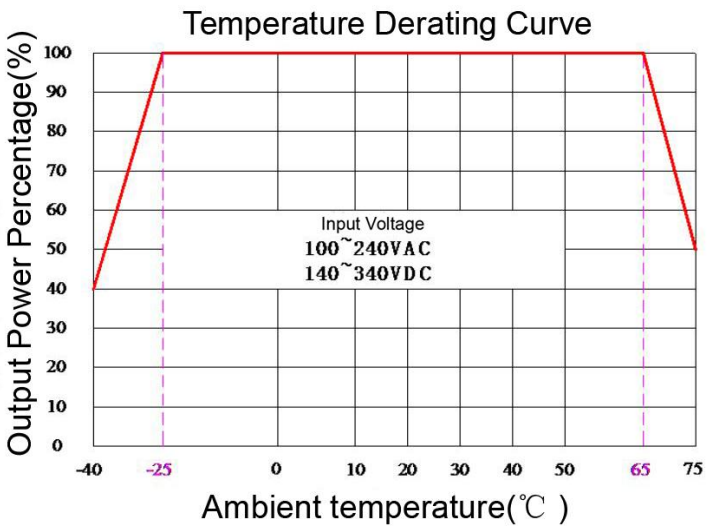
Test Method:

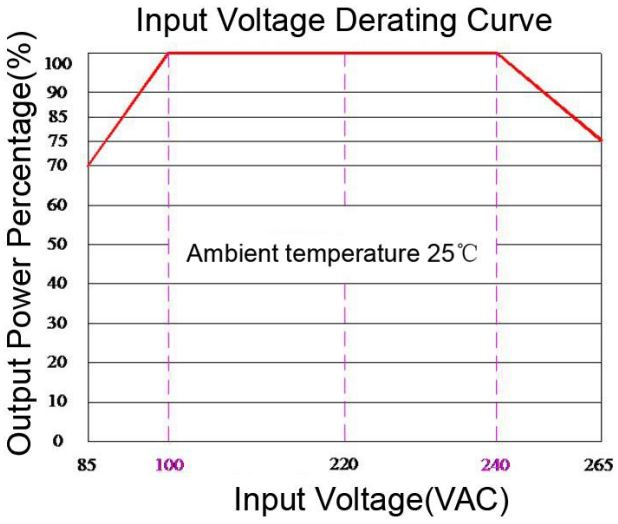
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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





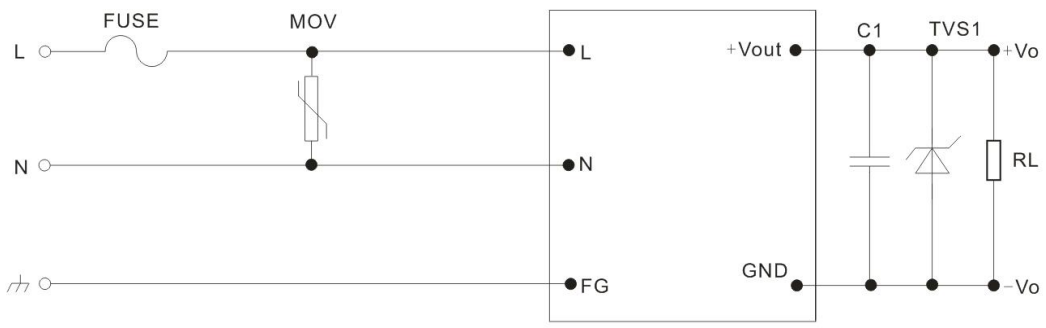
Note

1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC /240~265VAC /120~140VDC /340~380VDC.

2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Typical EMC Circuit and Recommended Spec

1. Typical Application Circuit



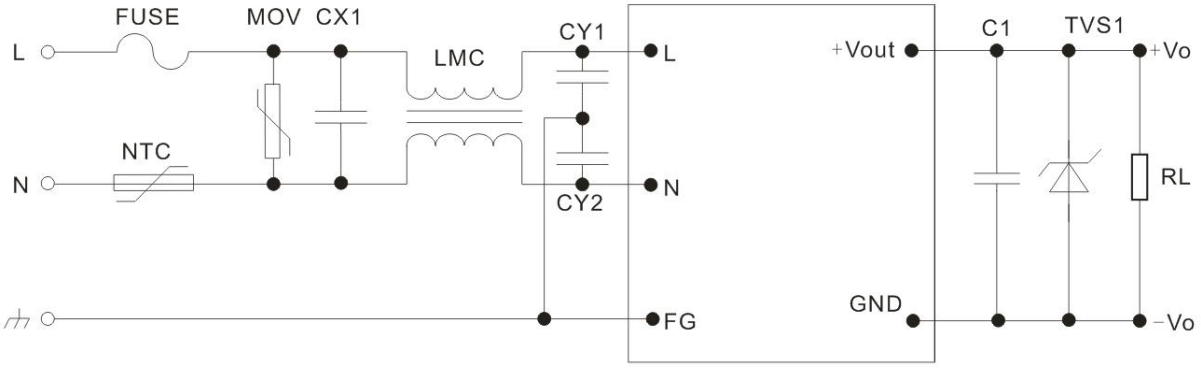
Recommended Circuit 1

Output voltage	5V	9V	12V	15V	24V	48V
TVS tube recommended value	SMBJ7.0A	SMBJ12A	SMBJ20A	SMBJ20A	SMBJ30A	SMBJ64A

Note:

Output capacitor C1 is ceramic capacitor, to filter high frequency noise. TVS tube is a recommend component to protect post-circuit if converter fails. Recommend to external FUSE, Model:2A/250V, slow fusing. Recommend to connect with external MOV voltage dependent resistor, model:14D511K.

2.EMC solution recommended circuit



Recommended Circuit 2

Component	Recommended Value	Component	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC	15mH, recommended to use our common mode inductor
FUSE	2A/250V, slow-fusing, necessary		
CY1、CY2	1000pF/400VAC		

Note :

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. The product input terminal must be connected to a fuse;
3. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
5. Unless otherwise specified, the above data are measured at Ta=25℃, humidity<75%, input nominal voltage and output rated load (pure resistance load);
6. All the above index test methods are based on our company's standards;
7. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard model products will exceed the above requirements. For specific circumstances, please contact our technical personnel directly;
8. Our company can provide product customization;
9. Product specifications are subject to change without prior notice. Please pay attention to the latest manual published on our official website.

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