



Typical Features

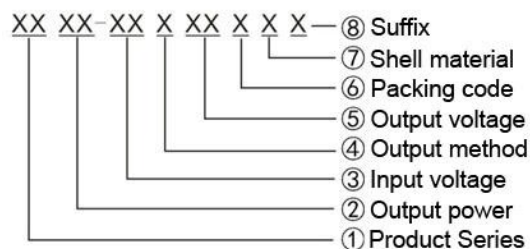
- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No load power consumption \leq 0.35W
- ◆ Transfer efficiency (typ. 87%)
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current, Over Voltage, Over Temperature
- ◆ Isolation voltage: 4000Vac
- ◆ Meet IEC60950/UL60950/EN60950
- ◆ Confirm to CE、RoHS
- ◆ Plastic case, conform to UL94V-0 Class
- ◆ PCB mounting



Application Field

FA20-220SXXF2 Series----- a compact size, high efficient, meet CE standard 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.

Product Named Method



Typical Product List

Certif icate	Part No.	Output Specification					Max. Capacitiv e Load	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load 220Vac (Typical)
		Power	Voltage 1	Current 1	Voltage 2	Current 2			
		(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
/	FA20-220S05F2	17.5	5	3500	-	-	8000	50	78
	FA20-220S09F2	20	9	2220	-	-	5000	80	80
	FA20-220S12F2	20	12	1666	-	-	4000	80	83
	FA20-220S15F2	20	15	1333	-	-	3000	80	84
	FA20-220S18F2	20	18	1110	-	-	2000	100	85
	FA20-220S24F2	20	24	833	-	-	1000	120	86



FA20-220S28F2	20	28	714	-	-	700	120	86
FA20-220S48F2	20	48	416	-	-	500	120	87

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2: "*" is model under developing.

Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 4: The fluctuation range of full load efficiency(%,TYP) is $\pm 2\%$, full load output efficiency= total output power/module's input power.

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	/	/	0.48	A
	220VAC	/	/	0.28	
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	Vo1	-	± 1.0	± 2.0	%
		Vo2	-	-	-	%
Line Regulation	Nominal Load	Vo1	-	-	± 0.5	%
		Vo2	-	-	-	%
Load Regulation	Nominal input Voltage 20%~100% load	Vo1	-	-	± 1.0	%
		Vo2	-	-	-	%
No load power consumption	Input 115VAC	-	-	0.35	W	
	Input 220VAC	-	-			
Minimum load	Single Output	0	-	-	%	
	Positive Negative Dual output common grounded	-	-	-	%	
	Positive Negative Dual output isolated	-	-	-		



Turn-on Delay Time	Nominal input voltage, full load	-	800	-	mS
Power-off Holding Time	Input 115VAC (full load)	-	30	-	mS
	Input 220VAC (full load)	-	100	-	
Dynamic Response	25%~50%~25%	Overshoot range (%) : $\leq \pm 10$			%
	50%~75%~50%	Recovery time (mS) : ≤ 5.0			mS
Output Overshooting	Full input voltage range	$\leq 10\%V_o$			%
Short Circuit Protection		Continuous, Self-recovery			Hiccup
Drift Coefficient	-	-	$\pm 0.03\%$	-	%/°C
Over Current Protection	Full input voltage range	$\geq 120\% I_o$ Self-recovery			Hiccup
Over Voltage Protection	Output 5.0VDC	≤ 7.5			VDC
	Output 12VDC	≤ 18			
	Output 15VDC	≤ 20			
	Output 24VDC	≤ 30			
Ripple & Noise	-	-	50	100	mV
	Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.				

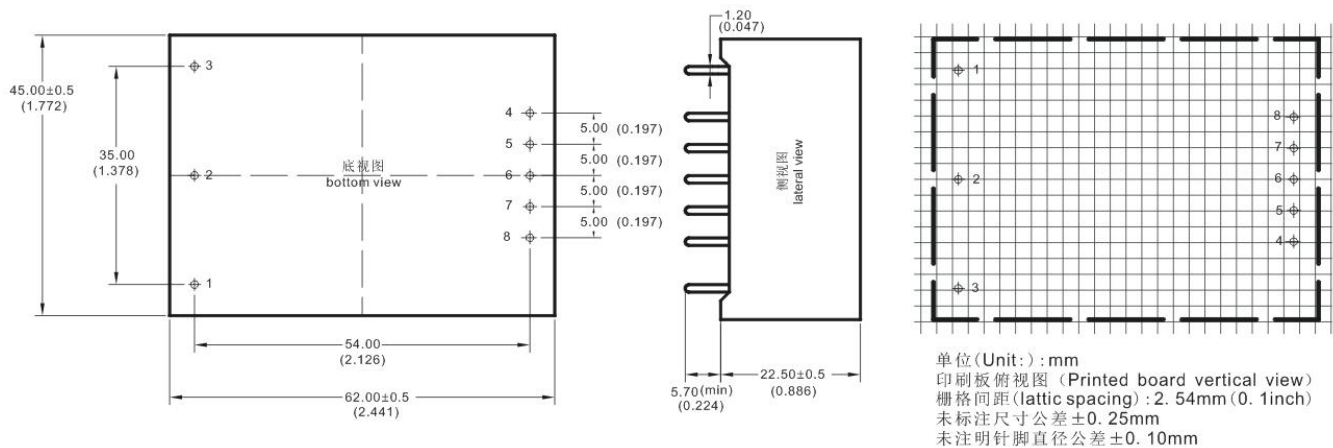
General Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260 \pm 4°C, timing 5-10S			
	Manual-soldering	360 \pm 8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current $\leq 5mA$	4000	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN60950、IEC60950			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS II			
Class of Case Material	-	UL94V-0			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			

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EMC Characteristics

Total Item	Sub Item	Test Standard	Class	
EMC	EMI	CE	CLASS B (see recommended circuit Photo 2)	
		RE	CLASS B (see recommended circuit Photo 2)	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit Photo 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit Photo 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

Packing Dimension


Packing Code

L x W x H

F2

62.0 x 45.0 x 22.5 mm

2.441 x 1.772 x 0.885inch

Pin Definition

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

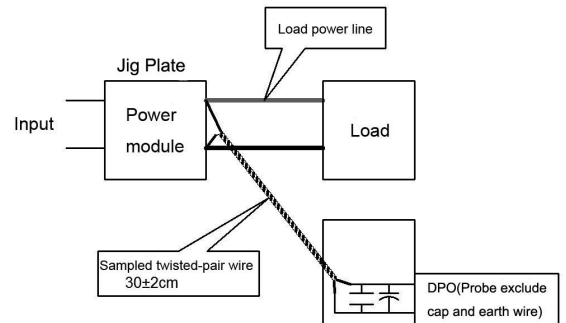
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

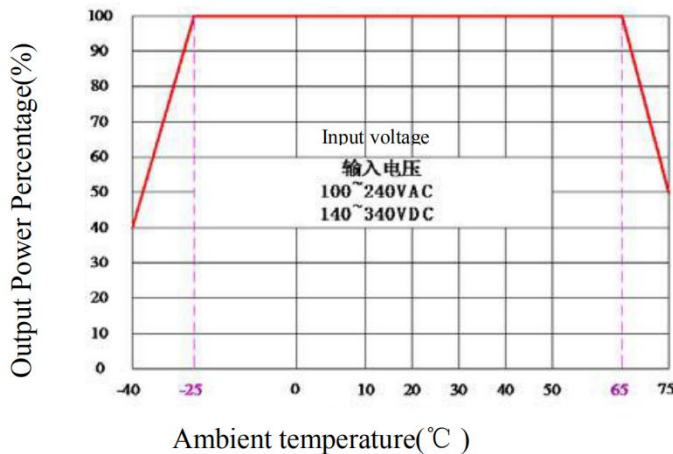
Test Method:

(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.

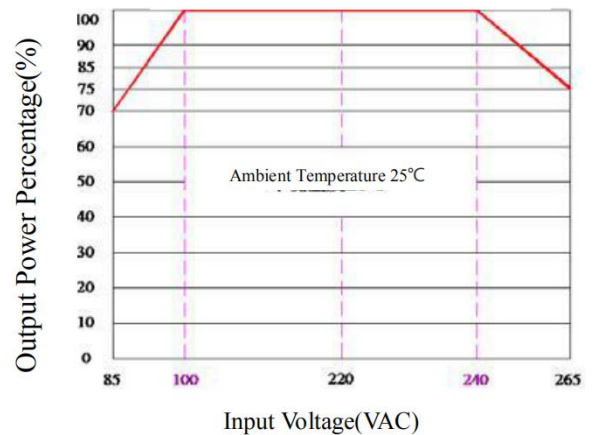
(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line. Power line selected from corresponding diameter wire with insulation according to the flow of output current.


Product Characteristic Curve

Temperature Derating Curve



Input Voltage Derating 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

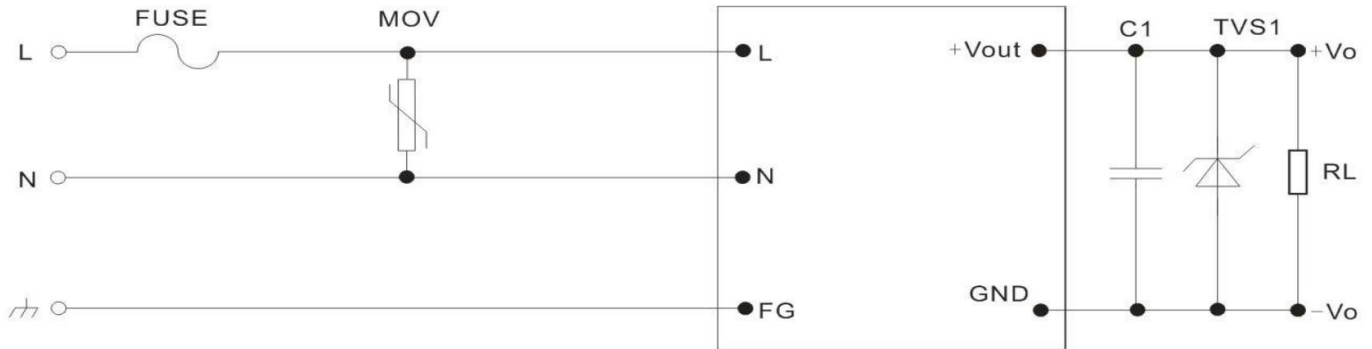


Photo 1

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 external MOV voltage dependent resistor, model:14D511K.

2. EMC solution recommended circuit

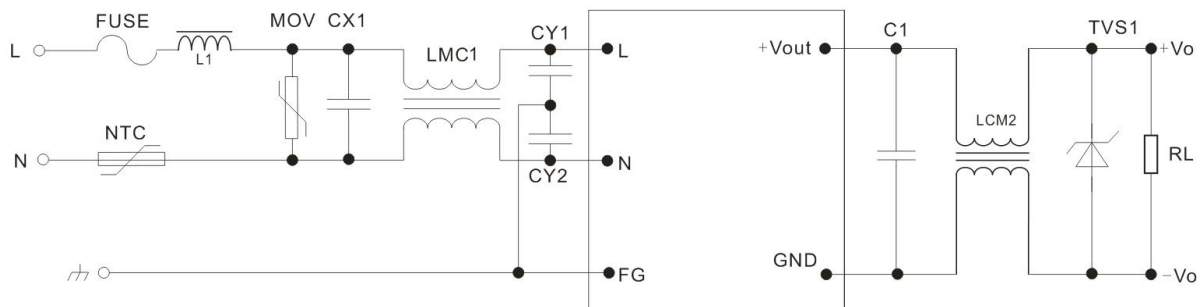


Photo 2

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	LMC2	2mH±20%
CY1、CY2	1000pF/400VAC	L1	3.9mH±10%



Note :

- 1.The product should be used under the specification range, otherwise it will cause permanent damage to it.
- 2.Product's input terminal should connect to fuse;
- 3.If the product is not worked under the load range(below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 4.Unless otherwise specified, data in this datasheet are tested under conditions of $T_a=25^{\circ}\text{C}$, humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
- 5.All index testing methods in this datasheet are based on our Company's corporate standards
- 6.The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
- 7.We can provide customized product service;
- 8.The product specification may be changed at any time without prior notice.