Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption≤≤0.35W
- ◆ Transfer efficiency (typ. 83%)
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current, Over Voltage, Over Temperature
- ◆ Isolation voltage: 4000Vac
- ◆ Meet IEC60950/UL60950/EN60950 test Standard
- ◆ Plastic case, meets flammability UL94 V-0
- ◆ PCB mounting, Chassis mounting, Din-rail mounting available

Application Field

FA20-220SXXF2D4(-T)(-TS) Series**----- *a compact size, high efficient 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	Part No.	Output Specification			Max. Capacitive Load	Ripple& Noise 20MHz (MAX)	Efficiency@ Full Load 220Vac (Typical)
		Power	Voltage	Current			
		（W）	Vo（V）	Io（m A）	u F	mVp-p	%
-	FA20-220S3V6F2D4	20	3.6	5500	7000	160	74
	FA20-220S05F2D4	17.5	5	3500	4000	140	77
	FA20-220S09F2D4	20	9	2222	3000	140	81
	FA20-220S12F2D4	20	12	1666	2000	140	83
	FA20-220S15F2D4	20	15	1333	2000	140	83
	FA20-220S24F2D4	20	24	833	800	140	85
	FA20-220S28F2D4	20	28	714	700	140	86

Note 1: Suffix ”-T”for chassis mounting, “-TS” for DIN-Rail mounting, Rail width is: 35mm;

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 ±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	/	/	0.5	A
	220VAC	/	/	0.3	
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	±4.0	%
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		10	-	-	%
Turn-on Delay Time		Nominal input voltage, full load		-	1500	-	mS
Power-off Holding Time		Input 115VAC (full load)		-	50	-	mS
		Input 220VAC (full load)		-	150	-	
dynamic response	Overshoot amplitude	25%~50%~25% 50%~75%~50%		-10	-	+10	%
	Recovery time			-	5.0	-	mS
Output Overshoot		Full input voltage range		≤10%Vo			%
Short Circuit Protection				Continuous, Self-recovery			Hiccup
Drift Coefficient		-		-	±0.03%	-	%/℃
Over Current Protection		Input 220VAC		≥120% Io, Self-recovery			Hiccup
Over Voltage Protection		Output 3.6VDC		≤5.5			VDC
		Output 5.0VDC		≤7.5			
		Output 9VDC		≤13.5			

	Output 12VDC	≤18	
	Output 15VDC	≤20	
	Output 24VDC	≤30	
	Output 28VDC	≤36	

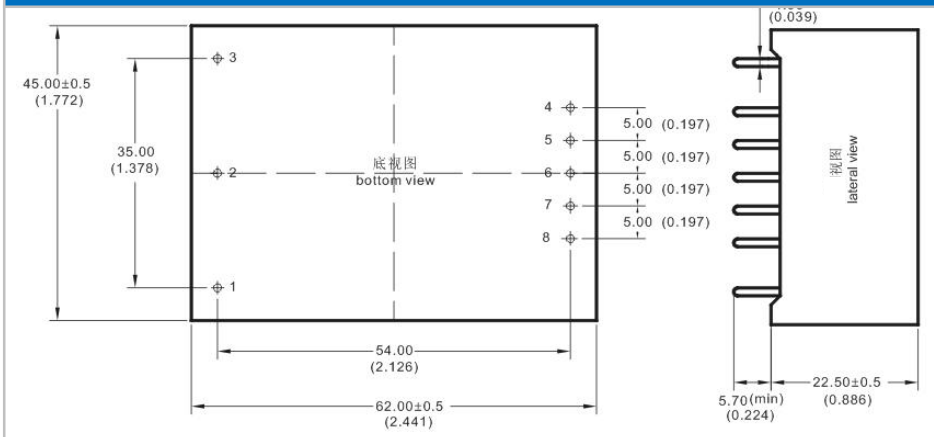
General Specifications

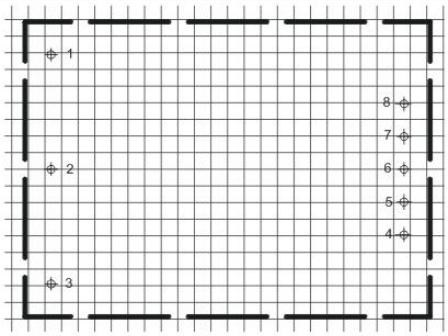
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4℃,timing 5-10S			
	Manual-soldering	360±8℃,timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN60950、IEC60950			
Vibration	-	10-55Hz,10G,30Min,along X,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 (Recommended circuit 2)
		RE	CISPR22/EN55032	CLASS B (Recommended circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (Recommended circuit 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (Recommended circuit 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	line to line ±2KV / line to ground ±4KV Perf.Criteria B (Recommended circuit 2)
		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

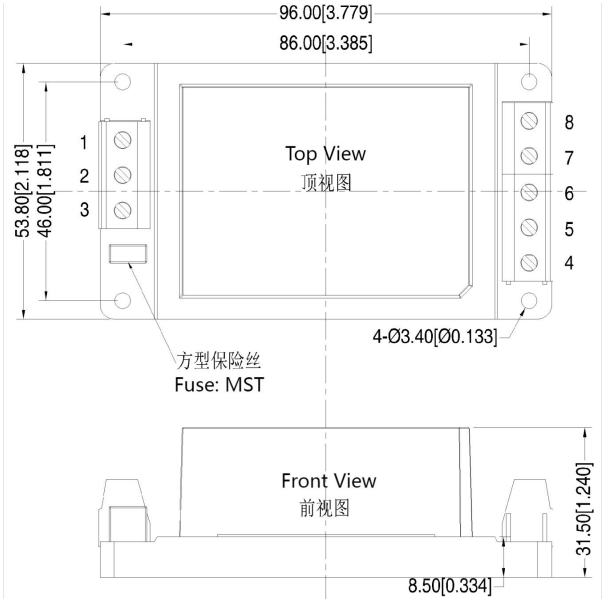
F2 Packing Dimension

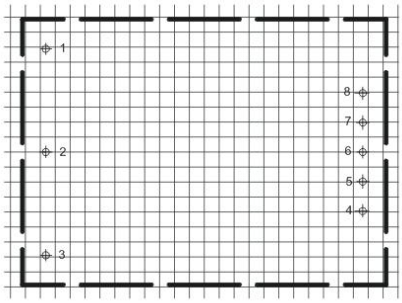




单位(Unit:):mm
印刷板俯视图(Printed board vertical view)
栅格间距(lattic spacing):2.54mm(0.1inch)
未标注尺寸公差±0.25mm
未注明针脚直径公差±0.10mm

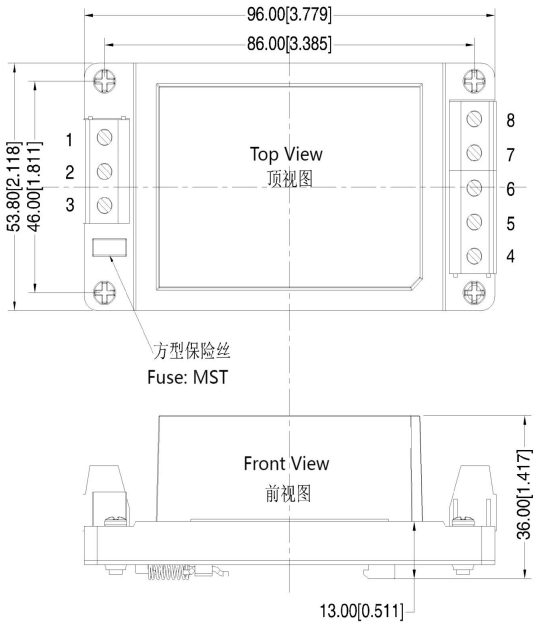
F2-T Packing Dimension

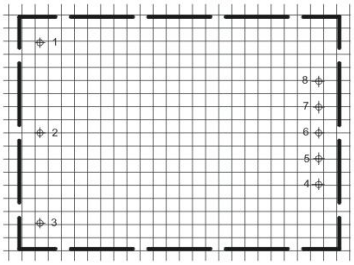




单位(Unit:):mm
印刷板俯视图(Printed board vertical view)
栅格间距(lattic spacing):2.54mm(0.1inch)
未标注尺寸公差±0.50mm
未注明针脚直径公差±0.10mm

F2-TS Packing Dimension





单位(Unit:):mm
印刷板俯视图(Printed board vertical view)
栅格间距(lattic spacing):2.54mm(0.1inch)
未标注尺寸公差±0.50mm
未注明针脚直径公差±0.10mm

Package 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 × 2.118 × 1.240inch
F2-TS	96.0 x 53.8 x 36.0 mm	3.780× 2.118 × 1.417inch

Pin Definition

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

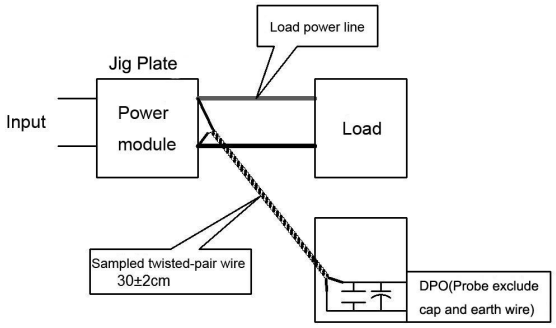
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

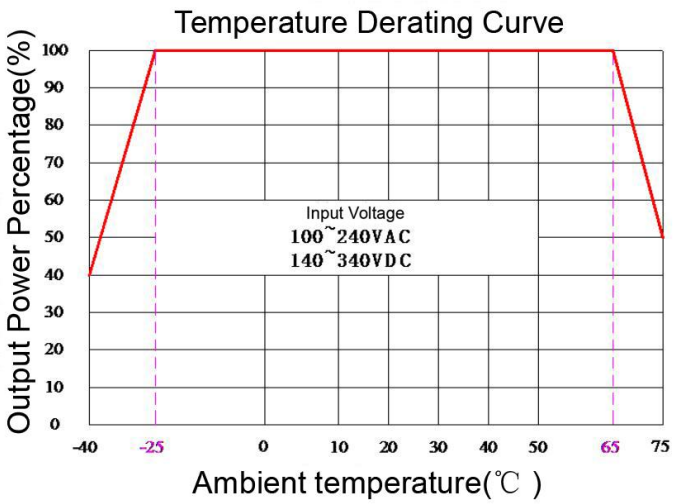
Test Method:

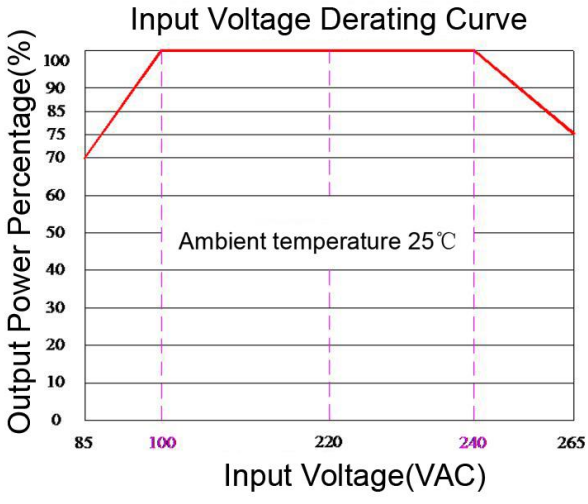
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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





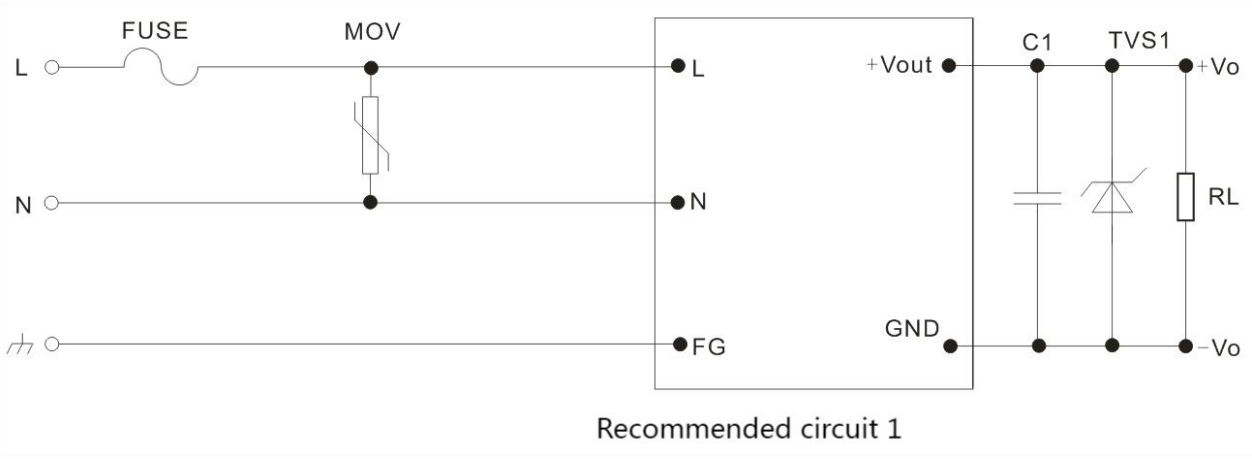
Note

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



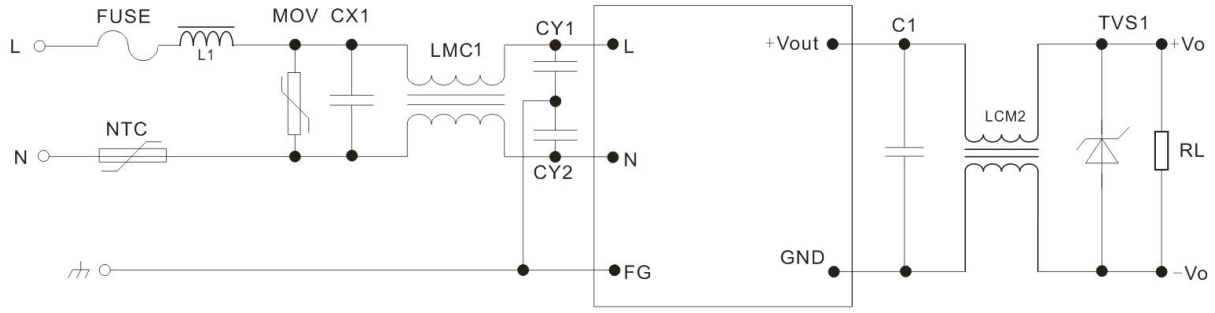
Recommended circuit 1

Output voltage	3.6V	5V	9V	12V	15V	24V	28V
TVS recommended value	SMBJ7.0A	SMBJ7.0A	SMBJ12A	SMBJ20A	SMBJ20A	SMBJ30A	SMBJ43A

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



Recommended circuit 2

Component	Recommended Value	Component	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC 1	15mH, recommended to use our common mode inductor
FUSE	2A/250V, slow-fusing, necessary	LMC 2	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 **Ta=25℃**, **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.

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