



RoHS

### Key features

- Universal input :85-264 VAC, 50/60 Hz
- Low Ripple and noise
- Over load protection ,short circuit protection
- High efficiency, high density, fine quality and low price
- Industrial design
- Lower power, RoSH , no-load loss < 0.75W
- 100% test and work
- 3 Years product warranty

SP15 series--a super small size modular AC/DC power supply offered by Zhongyiguang. This series of power supply is global, ac/dc input voltage range, low power consumption, high efficiency, high reliability, safety isolation, etc. Safe and reliable products, surge resistance is superior, the EMC and safety specifications meet the IEC/EN61000-4, CISPR22 / EN55022, UL60950 and EN60950 standards.

### Electrical specifications

Model	Input voltage	Output Power(W)	Output voltage(V)	Output current(A)	Ripple(mv)	Efficiency (%)
SP15-S03	85 ~ 264VAC (70 ~ 370VDC)	9.9	250mA / 115VAC 140m A / 230VAC	3	50	68
SP15-S05		15		3	50	74
SP15-S09		15		1.6	50	76
SP15-S12		15		1.25	50	78
SP15-S15		15		1.0	50	79
SP15-S24		15		0.625	50	81

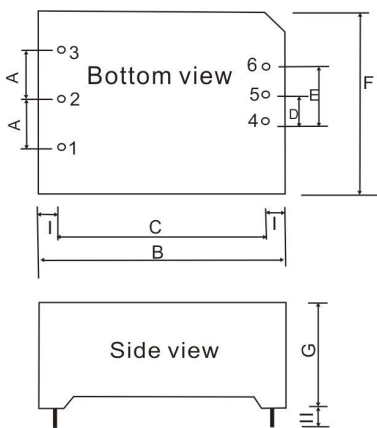
### General features

Output	Output voltage accuracy	±2.0%
	Source effect	±1.0%
	Load effect	±1.0%
	Starting time (TYP)	20ms/230VAC      50ms/115VAC at full load
	Output hold time (TYP)	40ms/230VAC      15ms/115VAC at full load
Input	Input voltage range	85 ~ 264VAC ( 70 ~ 370VDC )
	Input frequency range	47 ~ 440Hz
	Input current ( TYP)	250mA / 115VAC      140m A / 230VAC
	Inrush current ( TYP)	Cold Boot 20 A / 115 VAC      40 A / 230 VAC
	Recommended values for External Fuses	T2A / 250Vac      (disconnected slowly)
	Leakage current ( TYP)	< 1mA at 230VAC/50Hz
Protection	Short circuit protection: automatic recovery after troubleshooting ;	
	Over-current protection, 110%--150% load, automatic recovery after troubleshooting.	
Work	Operating Temperature	—40 ~ +70 °C (≥40°C, 0.22W/°C derating )
	Humidity	85% .RH max



environment	Storage Temperature	-40 ~ +85, 10 ~ 95% RH
	Temperature coefficient	0.03%/ (0~ 50°C)
	Vibration coefficient	10~500Hz,2G10min./1cycle, 60min.each along X,Y,Z axes
Safety and EMC (Note:3)	Safety Standard	UL1012,EN60950,UL60950
	I/O-Isolation voltage	I/P-O/P:3.0KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	Isolation resistance	I/P-O/P,I/P-FG,O/P-FG:>100M Ohms/500VDC 25°C 70% RH
	EMI / RFI conducted	EN55011, EN55022 (CISPR22)
	ESD	IEC/EN 61000-4-2 level 4 8kV/15kV ( Note: See the application circuit for details )
	RF	IEC/EN 61000-4-3 ( Note: See the application circuit for details )
	EFT	IEC/EN 61000-4-4 level 4 4kV ( Note: See the application circuit for details )
	SURGE	IEC/EN 61000-4-5 level 4 2kV
Others	MTBF	168K hrs min. MIL-HDBK-217F(25)
	Dimension	62*45*22.5mm (L*W*H)
	Weight	80g/piece , 9.8kg/box
	Packing	112piece
	The size of the packing box	360*300*250mm
Notes	1. Unless otherwise indicated of the above data,Our products are tested in the condition of TA=25o°C, humidity <75% , 230Vac nominal voltage input and rated load output.	
	2. Ripple & noise are measured at 20MHz of bandwidth by using a 300mm twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.	
	3. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.	

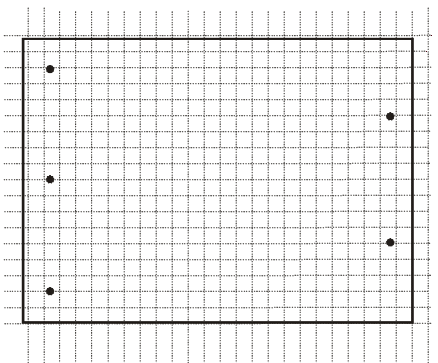
## Dimension



	Shell size	Pin	Pin function
A	17.5	1	FG
B	62.0	2	AC(N)
C	54.0	3	AC(L)
D	10.0		
E	20.0	4	-Vo
F	45.0	5	No Pin
G	22.5	6	+Vo
I	≥ 4.0		

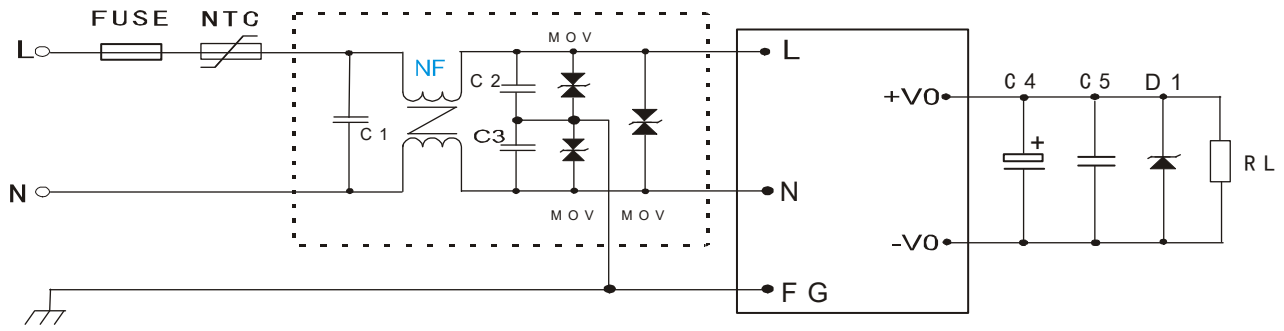
Remark: unit of measurement:mm  
Size of terminal section:1.00mm  
Terminal to larence: ± 0.1mm  
No to larence:± 0.5mm  
Module weight:80g(typical value)

## PCB LAYOUT



Note: each cell in the graph is 2.54mm (100mil)

## Typical application diagram



**Remarks :**

- 1.The output filter capacitor C4 is electrolytic capacitor, recommend using of high frequency and low resistance of electrolytic capacitors , the capacity and the current flowing-through need refer to the technical specifications provided by the manufacturer. Capacitance voltage derating is greater than 80% .C5 is use to remove high frequency noise.TVS D1 is used for protecting flow-up circuit (when module be abnormal)and recommended to use.
- 2.EMC filter used in the dashed box is to meet the higher requirements , if it is used in general applications , it can be omitted.
- 3.In order to meet customer demand,our company makes the circuit in the dashed box into products , and named : FA01 , FA02 and can be used with Switching power supply.Refer to technical manual to get more information.If you need technical support , please contact with our engineer.

### Typical values for external circuit components

Component	FUSE	NTC	NF	MOV	C1	C2, C3	C4	C5	D1
Model									
SP15-S03	T2A/250V	Model : 10D-9 is recommended for NTC	NF is common mode inductor, L=3-10mH,I=0.2A - 0.5A	Model : 7D471 is recommended for MOV	Model : 104K/275V Safety capacitor X is recommended for C1	Model : 102K/400V Safety capacitor is recommended for C2 , C3	470uF/16V	104K/50V( Ceramic capacitors)	P6KE6.8A
SP15-S05							470uF/16V		P6KE6.8A
SP15-S09							150uF/16V		P6KE16A
SP15-S12							120uF/16V		P6KE16A
SP15-S15							120uF/25V		P6KE20A
SP15-S24							100uF/35V		P6KE33A



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