



Key features

- Universal input: 85-264 VAC, 50/60 Hz
- Low ripple and noise
- Over load and short circuit protection
- High efficiency, high density, fine quality and low price
- Industrial design
- Lower power, RoSH , no-load loss < 0.5W
- 100% test and work
- 3 Years product warranty



SP05 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 (%)
SP05-S03	85 ~ 264VAC 70 ~ 370VDC	3.3	3.3	1	50	64
SP05-S05		5	5	1	50	70
SP05-S09		5	9	0.55	50	73
SP05-S12		5	12	0.42	50	75
SP05-S15		5	15	0.33	50	76
SP05-S24		5	24	0.21	50	78

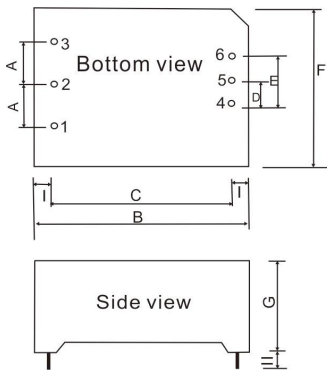
General features

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)	230mA / 115VAC 120m 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 (According to the output load 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	Conform to 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
Dimension		48.5*36*20.5mm (L*W*H)
Weight		50g/piece, 6.5kg/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

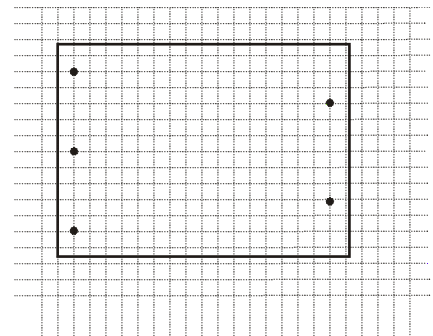


	Shell size	Pin	Pin function
A	17.5	1	FG
B	55.0	2	AC(N)
C	47.0	3	AC(L)
D	10.0		
E	20.0	4	-Vo
F	45.0	5	No Pin
G	21.0	6	+Vo
I	≥4.0		

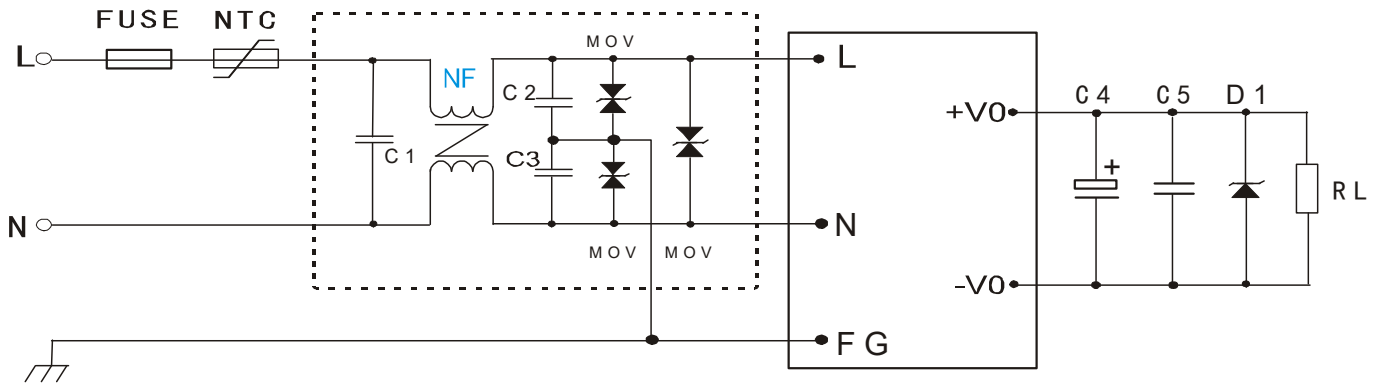
Remark: unit of measurement:mm
 Size of terminal section:1.00mm
 Terminal to larence: ± 0.1mm
 No to larence:± 0.5mm
 Module weight:50g(typical value)

PCB LAYOUT

Note: each cell in the graph is



Typical application diagram



Remark:

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.

Typical values for external circuit components

Component Model	FUSE	NTC	NF	MOV	C1	C2,C3	C4	C5	D1
SP05-S03	T1A/2 50V	NTC is thermal resistor, recommen ded model: 10D-9	NF is a common mode inductance , the inductance value is 30mH,curr ent0.2A-0.5 A.	MOV is a piezoelect ric resistor, recommen ded value is 14D471K	CX is the safety capacitor , 104K/275 V	C2, C3 is safety, Y is electric capacity 102K/400 Vac	470uF/16V	C5is ceramic chip electric capacity 104K/50V	P6KE6.8A
SP05-S05							470uF/16V		P6KE6.8A
SP05-S09							150uF/16V		P6KE16A
SP05-S12							120uF/16V		P6KE16A
SP05-S15							120uF/25V		P6KE20A
SP05-S24							100uF/35V		P6KE33A



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