



Key features

- Universal input :85-264 VAC, 50/60 Hz
- Low ripple(15mV) 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



SP10 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 (%) |
|----------|----------------------------|-----------------|-------------------|-------------------|------------|----------------|
| SP10-S03 | 85 ~ 264VAC 70 ~ 370VDC | 6.6 | 3.3 | 2 | 50 | 74 |
| SP10-S05 | | 10 | 5.0 | 2 | 50 | 75 |
| SP10-S09 | | 10.8 | 9.0 | 1.1 | 50 | 76 |
| SP10-S12 | | 10.8 | 12 | 0.9 | 50 | 78 |
| SP10-S15 | | 10.5 | 15 | 0.7 | 50 | 80 |
| SP10-S24 | | 10.8 | 24 | 0.45 | 50 | 82 |

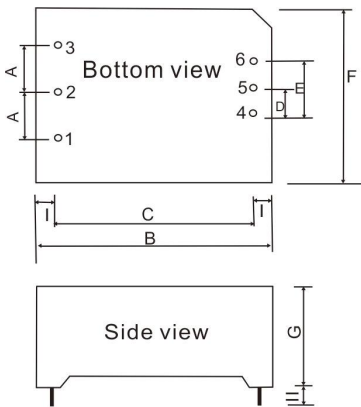
General features

| | | |
|------------|--|--|
| 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 environment | Operating Temperature | -40 ~ +70 °C (≥ 50 °C, 0.15 W / °C derating) |
| | Humidity | 85% .RH max |
| | 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 | 200K hrs min. MIL-HDBK-217F(25) |
| | Dimension | 55*45*21mm (L*W*H) |
| | Weight | 70g/piece, 8.67kg/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. |

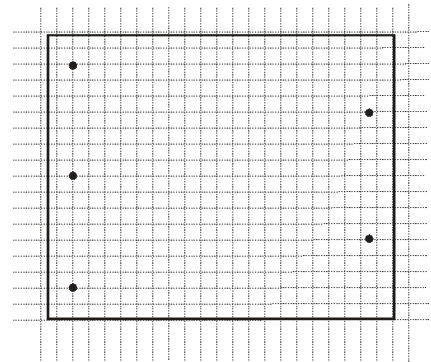
Dimension



| | 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 | | |

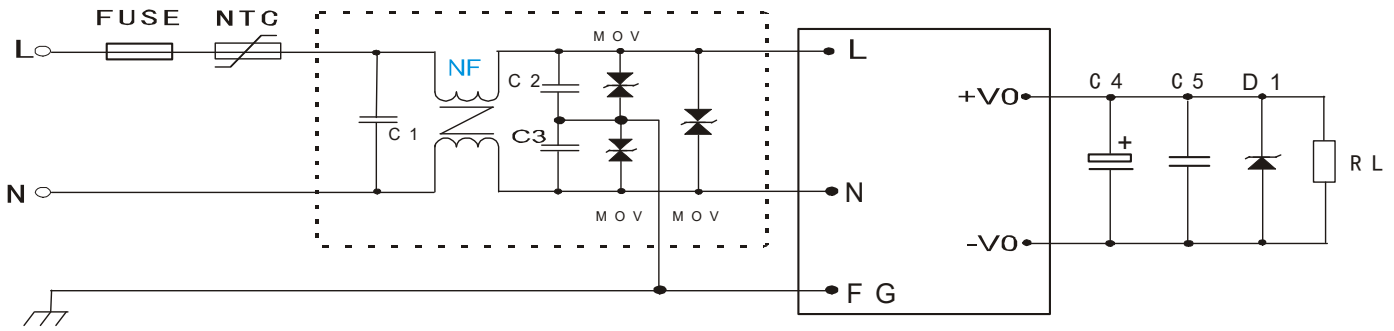
Remark: unit of measurement:mm
Size of terminal section:1.00mm
Terminal to larence: ± 0.1mm
No to larence:± 0.5mm
Module weight:70g(typical value)

PCB LAYOUT



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

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 | FUSE | NTC | NF | MOV | C1 | C2,C3 | C4 | C5 | D1 |
|-----------|--------------|--|---|--|--|--|-----------|---|----------|
| Model | | | | | | | | | |
| SP10-S03 | T1A/250 V | Model: 10D-9 is recommen ded for NTC | NF is common mode inductor, L= 3 -10mH,I=0.2 A - 0.5A | Model: 7D471 is recommen ded for MOV | Model: 104K/275 V Safety capacitor X is recommen ded for C1 | Model: 102K/400V Safety capacitor is recommen ded for C2, C3 | 470uF/16V | 104K/50V(Ceramic capacitors) | P6KE6.8A |
| SP10-S05 | | | | | | | 470uF/16V | | P6KE6.8A |
| SP10-S09 | | | | | | | 150uF/16V | | P6KE16A |
| SP10-S12 | | | | | | | 120uF/16V | | P6KE16A |
| SP10-S15 | | | | | | | 120uF/25V | | P6KE20A |
| SP10-S24 | | | | | | | 100uF/35V | | P6KE33A |



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