PAIRUI

# AC-DC Converter
# DIP-Package

## ASP20 Series 20Watt

### FEATURES:

- ✓ **Compact Size, High Power Density**
- ✓ **Universal Input Voltage Range: 85~265Vac/120~370Vdc**
- ✓ **Output Voltage Range: 3.3VDC~24VDC**
- ✓ **Low Standby Power Consumption<0.1W**
- ✓ **Better Energetic Efficiency: Meet Requirements of Energy Star and EC Code of Conduct**
- ✓ **Protections: Short Circuit, Over Temperature, Over Current**


### MODEL LIST

| Model number | Nominal input voltage | Output voltage | Output power | Maximum output current | efficiency | Maximum ambient temperature | authentication |
|---|---|---|---|---|---|---|---|
| ASP20210 | 85-265VAC | 3.3V | 15W | 4500mA | 82% | 50˚C | CE,UKCA |
| ASP20211 | 85-265VAC | 5V | 20W | 4000mA | 82% | 50˚C | CE,UKCA |
| ASP20212 | 85-265VAC | 9V | 20W | 2200mA | 85% | 60˚C | CE,UKCA |
| ASP20213 | 85-265VAC | 12V | 20W | 1700mA | 85% | 60˚C | CE,UKCA |
| ASP20214 | 85-265VAC | 15V | 20W | 1400mA | 85% | 60˚C | CE,UKCA |
| ASP20215 | 85-265VAC | 18V | 20W | 1100mA | 85% | 60˚C | CE,UKCA |
| ASP20216 | 85-265VAC | 24V | 20W | 840mA | 85% | 60˚C | CE,UKCA |

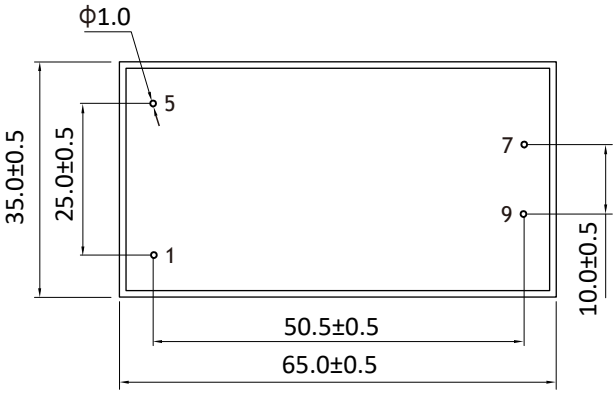
## ASP20 Series 20Watt

### ELECTRICAL PARAMETER

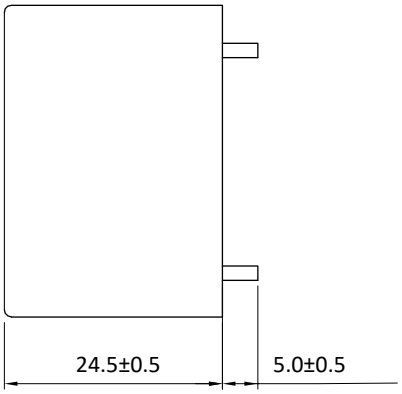
| item | Conditions | min | typ | max | unit |
|---|---|---|---|---|---|
| Input voltage | | 85 | --- | 265 | Vac |
| | | 120 | --- | 370 | Vdc |
| Input frequency | Vin=85~265Vac | 47 | --- | 63 | Hz |
| Input current | Full load, Vin=85~265Vac/120~370Vdc | --- | 0.6 | --- | A |
| Inrush current | Cold start, Vin=230Vac | --- | --- | 40 | A |
| Standby power | No load, rated output voltage | --- | --- | 0.15 | W |
| Output voltage accuracy | Rated input voltage, full load | --- | ±2 | ±4 | % |
| Line regulation | Vin from 85~265Vac or 120~370Vdc | --- | ±1 | --- | % |
| Load regulation | Vout from min. to max. | --- | ±1 | --- | % |
| Dynamic Response(Vout) | 50%~100% load, 1A/us, 1Khz, 50% duty ratio | --- | --- | 110 | % |
| Turn-on delay time | Rated input voltage, full load, cold start | --- | --- | 3 | S |
| Turn-on rise time | Rated input voltage, full load | --- | --- | 50 | ms |
| Hold up time | Rated input voltage, full load | 5 | --- | --- | ms |
| Overshoot | Rated input voltage, full load | --- | --- | 10 | % |
| Undershoot | Rated input voltage, full load | --- | --- | 10 | % |
| Ripple | Refer to below note | --- | 180 | --- | mV P-P |
| Short circuit | In hiccup mode, it will recover automatically after fault condition is removed;<br>No excessive heat, odor, or plastic deformation shall occur with no safety hazard | | | | |
| Over temperature | 130-150℃, shut off output voltage, it will recover automatically after the temperature turn to normal | | | | |
| Over current | When output current exceeds the rated range, it will be protected automatically, and will recover automatically after fault condition is removed | | | | |
| Ambient operating temperature | Startup at rated voltage | -20 | | / | ℃ |
| Operating relative humidity | Non condensing | 10 | | 90 | % |
| Storage temperature | Humidity 5 ~ 95% RH | -40 | | +85 | ℃ |
| MTBF | Full load, 220Vac input, 25℃ ambient temperature | 200 | | | Khrs |
| Dimension(LxWxH) | 65.0 x 35.0 x 24mm, pin length 4mm | | | | |
| Weigh | 92g | | | | |
| Safety | Design refer to UL/CUL60950, UL/CUL62368, IEC/EN60950, IEC/EN61558-2-16, IEC/EN62368 | | | | |
| Withstand voltage | I/P-O/P: 4KVAC, 5mA, 3s | | | | |
| EMI | Design refer to EN55032,EN55014,FCC part15,ClassB under 3dB margin | | | | |
| EMS | Design refer to EN61000-3-2:2014,ClassA<br>EN61000-3-3:2013<br>IEC61000-4-2:2008 Contact Discharge±4KV,Air Discharge±8KV<br>IEC61000-4-3:2006+A1:2007+A2:2010<br>IEC61000-4-4:2012,±1KV<br>IEC61000-4-5:2014,±1KV<br>IEC61000-4-6:2013<br>IEC61000-4-11:2004 | | | | |

## OVERALL DIMENSION

**Bottom view**




**Side view**

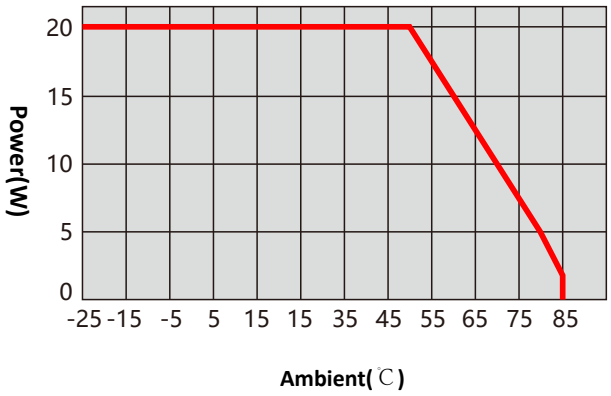



## PIN DEFINITION

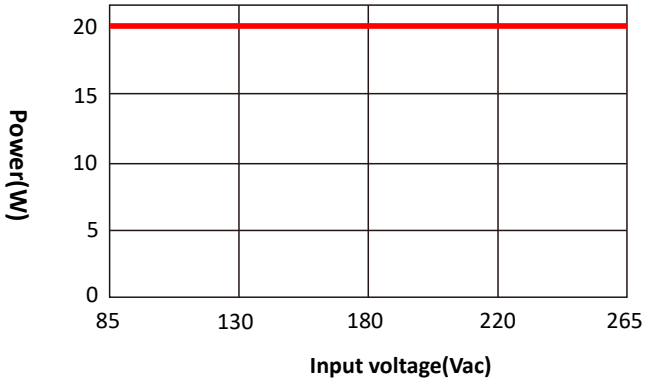
| No | definition |
|---|---|
| 1 | AC(L) |
| 5 | AC(N) |
| 7 | Vout(+) |
| 9 | Vout(0V) |

**ELECTRICAL CURVE**

**Power Derating Curve**




**Power Derating Curve**

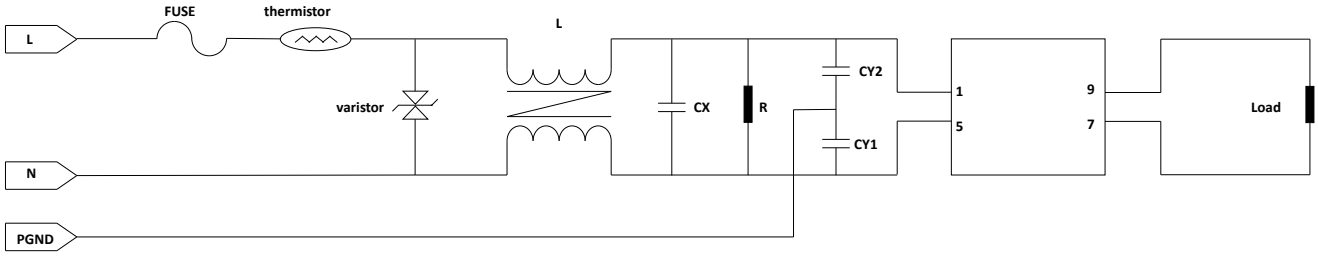


## APPLICATION GUIDE

1. Storage guide
Storage temperature: -40℃ to +85℃, storage humidity: 5% to 95%

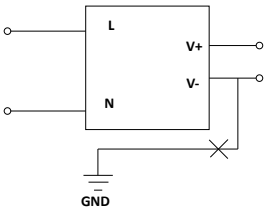
2. Warranty Guide
In order to best ensure the reliability and life of the power supply, we recommend customers to use within 6 months. If the power supply is stored unused for more than 12 months,Then we recommend that the product needs to be aged for 2 hours before use.

3. Suitable for applications that require high EMC performance
This product is certified to EN55022 and EN55014 CLASS B EMC without any additional internal components. As follows
The circuit can meet the more stringent EMC performance requirements.

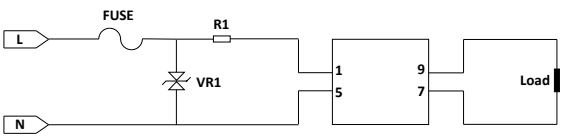



Fuse: Recommended parameters: 5A to 10A/250Vac, slow-acting fuse type
Thermistor: Recommended parameters: 2A,5Ω,1.8W to 5A D10,2.5Ω,2.4W.
Varistor: Recommended parameters: 14D471,300Vac, maximum energy 118 joules.
L is common mode inductor: Recommended parameter: 10mH to 30mH
CX is an X2 capacitor: Recommended parameters: 0.1uF to 0.22uF/275Vac
R is a resistor: Suggested parameter: 1.0MQ to 3.0 MQ2.

4. Suitable for grounding:
The application does not support ASQ/ASP products




5. High surge circuit
The ASQ /ASP series tests and certificates surge levels to 1EC61000-4-5 and does not require any additional external components. To wave
When the surge level is increased to 6KV, the following external circuits may be recommended.




VR1 is a varistor, recommended parameters: 14D471,300 Vac, maximum energy 118 joules.
R1 is a winding resistor, recommended parameters: 10R/1W~10R/3W, resistance wire diameter 0.1 to 0.23mm.
F1 is a fuse, recommended parameters: 6.3A to 10A/250 VAC, slow-acting fuse.