



# Specifications

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**AC-DC Converter**  
**ASQ03 Series, 1-3W**

**2020**

**PAIRUI ELECTRONICS**

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# AC-DC Converter, ASQ03 Series, 1-3W

## Features

- Compact Size, High Power Density
- Universal Input Voltage Range: 85~264Vac/120~370Vdc
- Output Voltage Range: 3.3VDC~24VDC
- Low Standby Power Consumption<0.15W
- Better Energetic Efficiency: Meet Requirements of Energy Star and EC Code of Conduct
- Encapsulated Design and Same Footprint as EE20 Transformer
- Protections: Short Circuit, Over Temperature, Over Current



## Electrical

| Part Number | Nominal Input Voltage | Output Voltage | Output Power     | Max. Output Current     | Efficiency        | Max. Ambient Temp.   | Certificate             |
|-------------|-----------------------|----------------|------------------|-------------------------|-------------------|----------------------|-------------------------|
| ASQ03020    | 85-265VAC             | 3.3V           | 1W<br>2.5W<br>3W | 300mA<br>750mA<br>830mA | 60%<br>63%<br>63% | 80°C<br>60°C<br>50°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03021    | 85-265VAC             | 5V             | 1W<br>2.5W<br>3W | 200mA<br>500mA<br>600mA | 60%<br>65%<br>65% | 80°C<br>60°C<br>50°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03022    | 85-265VAC             | 9V             | 1W<br>2.5W<br>3W | 110mA<br>280mA<br>330mA | 67%<br>70%<br>70% | 80°C<br>70°C<br>60°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03023    | 85-265VAC             | 12V            | 1W<br>2.5W<br>3W | 84mA<br>210mA<br>250mA  | 67%<br>72%<br>72% | 80°C<br>70°C<br>60°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03024    | 85-265VAC             | 15V            | 1W<br>2.5W<br>3W | 67mA<br>170mA<br>200mA  | 67%<br>72%<br>72% | 80°C<br>70°C<br>60°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03025    | 85-265VAC             | 18V            | 1W<br>2.5W<br>3W | 56mA<br>140mA<br>170mA  | 67%<br>72%<br>72% | 80°C<br>70°C<br>60°C | UL, CUL, CE,<br>CB, FCC |
| ASQ03026    | 85-265VAC             | 24V            | 1W<br>2.5W<br>3W | 42mA<br>105mA<br>125mA  | 70%<br>74%<br>74% | 80°C<br>70°C<br>60°C | UL, CUL, CE,<br>CB, FCC |

## INPUT

| PARAMETER       | CONDITIONS                            | MIN       | TYP  | MAX        | UNITS      |
|-----------------|---------------------------------------|-----------|------|------------|------------|
| Input voltage   |                                       | 85<br>120 |      | 265<br>370 | Vac<br>Vdc |
| Input frequency | Vin=85~265Vac                         | 47        |      | 63         | Hz         |
| Input current   | Full load, Vin=85~265Vac / 120~370Vdc |           | 0.15 |            | A          |
| Inrush current  | Cold start, Vin=230Vac                |           |      | 10         | A          |
| Standby power   | No load, rated output voltage         |           |      | 0.15       | W          |

## OUTPUT

| PARAMETER               | CONDITIONS                                 | MIN | TYP | MAX | UNITS |
|-------------------------|--|-----|-----|-----|-------|
| Output voltage accuracy | Rated input voltage, full load             |     | ±5  |     | %     |
| Line regulation         | Vin from 85~265Vac or 120~370Vdc           |     | ±3  |     | %     |
| Load regulation         | Vout from min. to max.                     |     | ±5  |     | %     |
| 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                        |     | 200 |     | mVp-p |

NOTE: The values are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with 0.1uF & 47uF parallel capacitor under ambient temperature 25°C at rated input voltage and rated load.

### Protection

|                  |   |
|------------------|---|
| Short circuit    | In hiccup mode, it will recover automatically after fault condition is removed; No excessive heat, odor, or plastic deformation shall occur with no safety hazard |
| Over temperature | 130-150°C, 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                  |

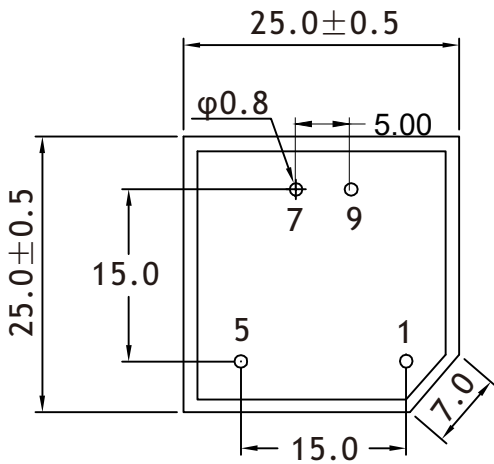
### Environment

| PARAMETER                     | CONDITIONS  | MIN | TYP | MAX | UNITS |
|-------------------------------|---|-----|-----|-----|-------|
| Ambient operating temperature | Startup at rated voltage                          | -25 |     | /   | °C    |
| Operating relative humidity   | Non condensing                                    | 10  |     | 90  | %     |
| Storage temperature           | Humidity 5 ~ 95% RH                               | -40 |     | +85 | °C    |
| MTBF                          | Full load, 220Vac input, 25°C ambient temperature | 550 |     |     | Khrs  |
| Dimension(LxWxH)              | 25.0 x 25.0 x 16.0mm, pin length 4mm              |     |     |     |       |
| Weight                        | 18.5g   |     |     |     |       |

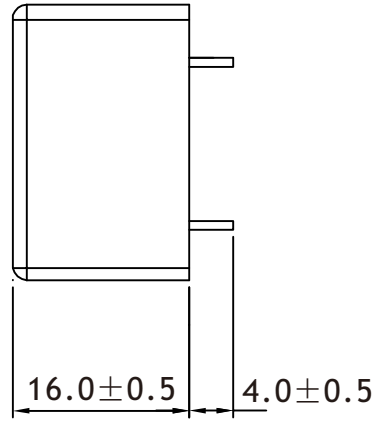
### Safety/EMC

|                   |  |
|-------------------|--|
| Safety            | Design refer to UL/CUL60950, UL/CUL62368, IEC/EN60950, IEC/EN60335, IEC/EN61558-2-16, IEC/EN62368  |
| Withstand voltage | I/P-O/P: 4KVAC, 5mA, 3s  |
| EMI               | Design refer to EN55032, EN55014, FCC part15, Class B under 3dB margin   |
| EMS               | Design refer to<br>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 |

### Dimension & Pinout



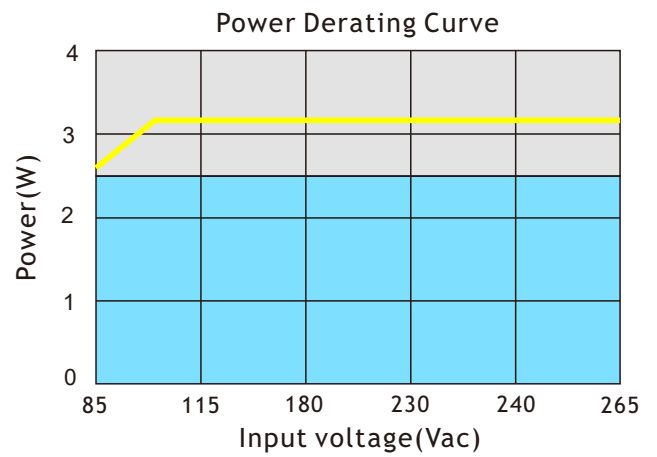
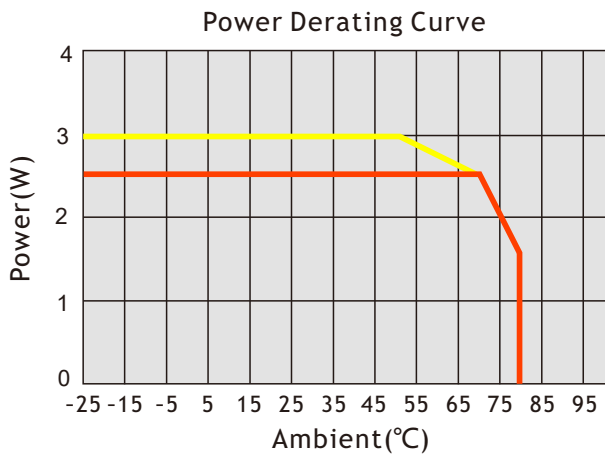
View from pins side



**PRI:**  
Pins 1-5: AC or DC Input  
**SEC:**  
Pin 7: DC Output +V  
Pin 9: DC Output 0V

Unit: mm

### Electrical Curve



### Package

| SERIES | QTY/TUBE  | QTY/CARTON | NET WEIGHT  | GROSS WEIGHT  | VOLUME         |
|--------|-----------|------------|-------------|---------------|----------------|
| ASQ03  | 23 pieces | 805 pieces | 15kg/carton | 17.6kg/carton | 0.7cuft/carton |