# **SERIES:** PSK-S2C | **DESCRIPTION:** AC-DC POWER SUPPLY

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## FEATURES

- wide input range (85~305 Vac)
- -40~70°C operating range
- over current/short circuit protection
- 4,000 Vac input/output isolation voltage
- CISPR32/EN55032 Class B
- UL/EN/IEC 62368-1 certified

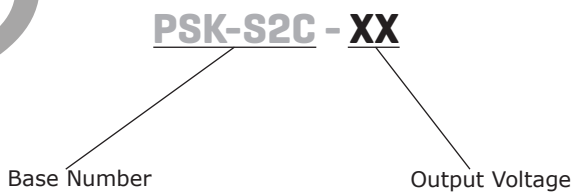


## MODEL

| MODEL | output voltage | output current | | output power | ripple and noise[1] | efficiency[2] |
|---|---|---|---|---|---|---|
| | | min | max | max | max | typ |
| | (Vdc) | (mA) | (mA) | (W) | (mVp-p) | (%) |
| PSK-S2C-3 | 3.3 | 60 | 600 | 2 | 200 | 65 |
| PSK-S2C-5* | 5 | 40 | 400 | 2 | 200 | 70 |
| PSK-S2C-9* | 9 | 22.2 | 222 | 2 | 200 | 72 |
| PSK-S2C-12 | 12 | 16.7 | 167 | 2 | 200 | 76 |
| PSK-S2C-15 | 15 | 13.3 | 133 | 2 | 200 | 76 |
| PSK-S2C-24 | 24 | 8.3 | 83 | 2 | 200 | 78 |

Notes:
1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 1 µF ceramic and 10 µF electrolytic capacitors on the output.
2. At 230 Vac input.
3. All specifications are measured at Ta=25°C, humidity <75%, nominal input voltage, and rated output load unless otherwise specified.
4. * Discontinued model.

## PART NUMBER KEY






Please read our datasheet & drawing disclaimer here.

## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| voltage | | 85<br>120 | | 305<br>430 | Vac<br>Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 115 Vac<br>at 230 Vac | | | 110<br>31 | mA<br>mA |
| inrush current | at 115 Vac<br>at 230 Vac | | 7<br>14 | | A<br>A |
| leakage current | | | | 0.25 | mA |
| no load power consumption | | | | 0.2 | W |

## OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| capacitive load | 3.3, 5 Vdc output models<br>9, 12 Vdc output models<br>15 Vdc output models<br>24 Vdc output models | | | 4,000<br>2,200<br>1,000<br>680 | µF<br>µF<br>µF<br>µF |
| initial set point accuracy | 3.3 Vdc output models<br>all other models | | ±6<br>±5 | | %<br>% |
| line regulation | at full load | | ±2 | | % |
| load regulation | from 10~100% load | | ±5 | | % |
| hold-up time | at 230 Vac | | 50 | | ms |
| temperature coefficient | | | ±0.04 | | %/°C |

## PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| over current protection | auto recovery | 120 | | 450 | % |
| short circuit protection | hiccup, continuous, auto recovery | | | | |

## SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| isolation voltage | input to output for 1 minute, 5 mA | 4,000 | | | Vac |
| safety approvals | UL 62368-1, EN 62368-1, IEC 62368-1 | | | | |
| safety class | Class II | | | | |
| conducted emissions | CISPR32/EN55032, Class B | | | | |
| radiated emissions | CISPR32/EN55032, Class B | | | | |
| ESD | IEC/EN61000-4-2, contact ±6 kV/ air ±8 kV, Class B | | | | |
| radiated immunity | IEC/EN61000-4-3, 10 V/m, Class A | | | | |

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## SAFETY & COMPLIANCE (CONTINUED)

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| EFT/burst | IEC/EN61000-4-4, ±2 kV, Class B (external circuit required, see Figure 2) | | | | |
| surge | IEC/EN61000-4-5, line to line ±1 kV/ line to ground ±2 kV, Class B (external circuit required, see Figure 2) | | | | |
| conducted immunity | IEC/EN61000-4-6, 10 Vrms, Class A | | | | |
| voltage dips & interruptions | IEC/EN61000-4-11 Class B, 0%-70% | | | | |
| MTBF | as per MIL-HDBK-217F at 25°C | 300,000 | | | hours |
| RoHS | yes | | | | |

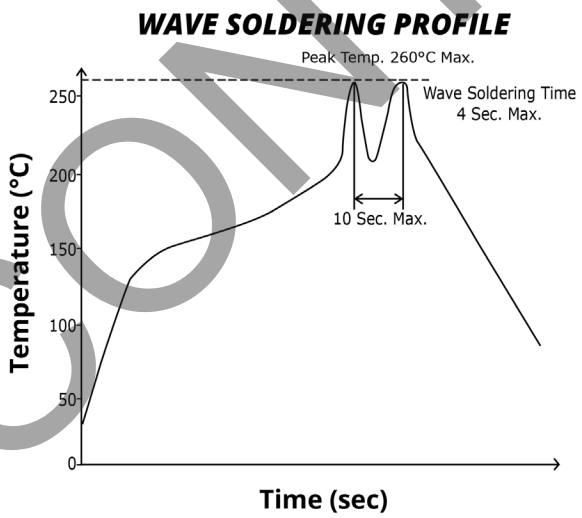
Notes: 4. The power supply is considered a component which will be installed into final equipment. The final equipment still must be tested to meet the necessary EMC directives.

## ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | see derating curves | -40 | | 70 | °C |
| storage temperature | | -40 | | 105 | °C |
| storage humidity | non-condensing | | | 95 | % |

## SOLDERABILITY

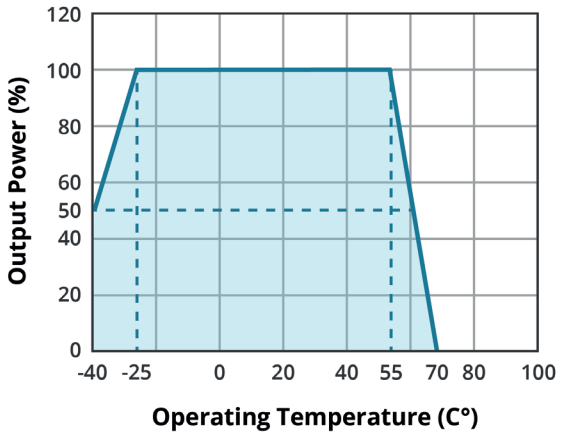
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| hand soldering | for 3~5 seconds | 350 | 360 | 370 | °C |
| wave soldering | for 5~10 seconds | 255 | 260 | 265 | °C |



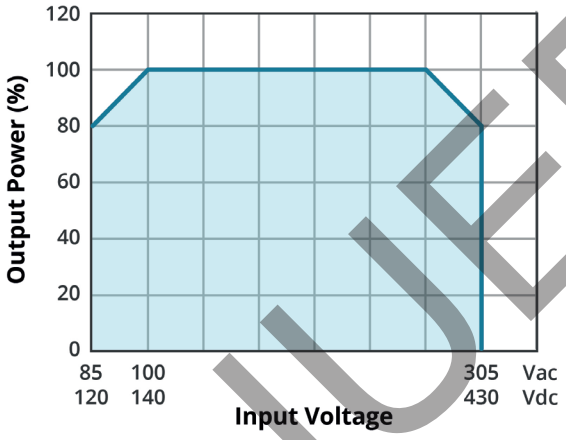

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## DERATING CURVES

***TEMPERATURE DERATING CURVE***




***INPUT VOLTAGE DERATING CURVE (25°C)***



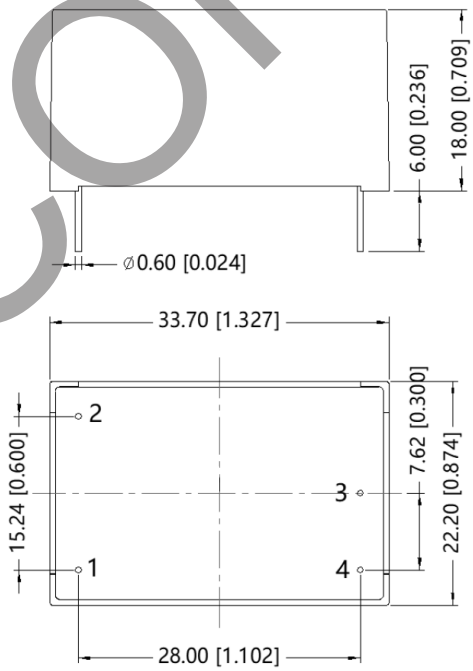

## MECHANICAL

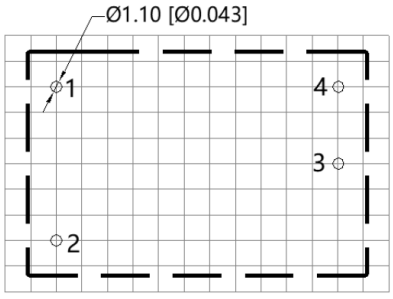
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | 33.70 x 22.20 x 18.00 (1.327 x 0.874 x 0.709 inch) | | | | mm |
| case material | black flame-retardant and heat-resistant plastic (UL94V-0) | | | | |
| weight | | | 20 | | g |

## MECHANICAL DRAWING

units: mm[inch]
tolerance: ±0.50[±0.020]
pin diameter tolerance: ±0.10[±0.004]

| PIN CONNECTIONS | |
|---|---|
| PIN | Function |
| 1 | AC (N) |
| 2 | AC (L) |
| 3 | +Vo |
| 4 | -Vo |




Note : Grid 2.54*2.54mm

Recommended PCB Layout
Top View

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## APPLICATION CIRCUIT

**Figure 1**

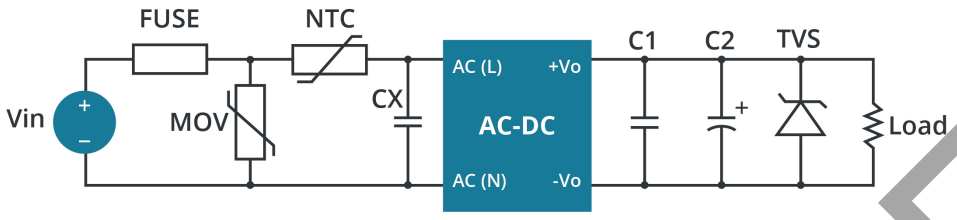



**Table 1**

| Recommended External Circuit Components | | | | | | | |
|---|---|---|---|---|---|---|---|
| Vo (Vdc) | FUSE | MOV | NTC | CX | C1 | C2 | TVS |
| 3.3 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 330 µF | SMBJ7.0A |
| 5 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 220 µF | SMBJ7.0A |
| 9 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 100 µF | SMBJ12A |
| 12 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 100 µF | SMBJ20A |
| 15 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 100 µF | SMBJ20A |
| 24 | 1A/300V | S14K350 | 10D-11 | 0.47 µF/305 Vac | 1 µF | 100 µF | SMBJ30A |

## EMC RECOMMENDED CIRCUIT

**Figure 2**

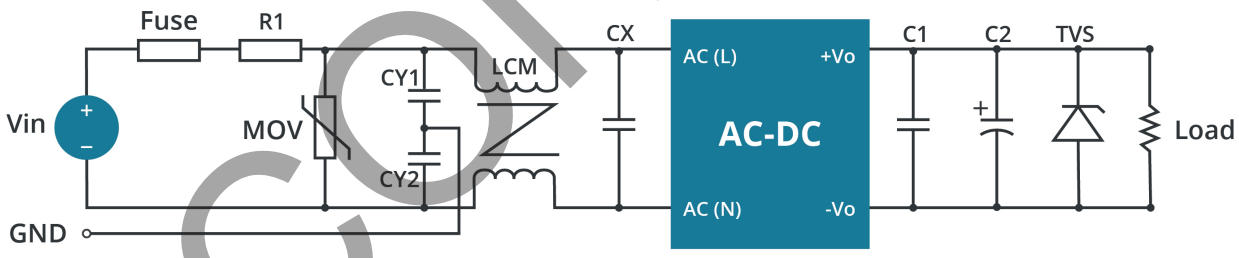



**Table 2**

| Recommended External Circuit Components | |
|---|---|
| FUSE | 1 A/300 V, slow fusing |
| MOV | S14K350 |
| LCM | 10 mH |
| CX | 0.47 µF/305 Vac |
| CY1, CY2 | 2.2 nF/400 Vac |
| R1 | 47 Ω/3 W |

Note: Also refer to Table 1.

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Notes:
5. C1 is a ceramic capacitor used to filter high frequency noise.
6. C2 is an electrolytic capacitor and it is recommended to be high frequency and low impedance. For capacitance and current of capacitor, refer to the datasheet provided by the manufacturer. Voltage derating of capacitor should be at least 80%.
7. TVS is a recommended component to protect post-circuits (if converter fails).

## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 03/07/2019 |
| 1.01 | derating curves and circuit figures updated | 01/19/2021 |
| 1.02 | derating curves updated | 01/18/2022 |
| 1.03 | UKCA mark added | 05/27/2022 |
| 1.04 | discontinued model PSK-S2C-9 | 09/13/2022 |
| 1.05 | discontinued model PSK-S2C-5 | 12/14/2022 |

The revision history provided is for informational purposes only and is believed to be accurate.

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