

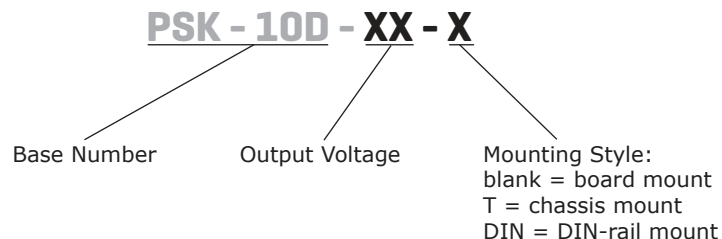
SERIES: PSK-10D | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY
FEATURES

- wide input range (85 ~ 305 Vac)
- wide operating temperature range (-40 to +85 C)
- Class B emissions
- certified to 62368, 61558, and 60335 safety standards
- over voltage, over current, short circuit protections
- input over voltage category III for fixed installations



| MODEL | output voltage | output current | output power | ripple and noise ¹ | efficiency ² |
|------------|----------------|----------------|--------------|-------------------------------|-------------------------|
| | (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| PSK-10D-3 | 3.3 | 2.6 | 8.6 | 100 | 74 |
| PSK-10D-5 | 5 | 2.0 | 10.0 | 100 | 79 |
| PSK-10D-9 | 9 | 1.1 | 10.0 | 100 | 81 |
| PSK-10D-12 | 12 | 0.83 | 10.0 | 100 | 84 |
| PSK-10D-15 | 15 | 0.66 | 10.0 | 100 | 84 |
| PSK-10D-24 | 24 | 0.41 | 10.0 | 100 | 85 |

Note: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 1 μ F ceramic and 10 μ F 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.

PART NUMBER KEY

INPUT

| parameter | conditions/description | min | typ | max | units |
|-----------------|------------------------|-----|-----|------|-------|
| voltage | ac input | 85 | | 305 | Vac |
| | dc input | 100 | | 430 | Vdc |
| frequency | | 47 | | 63 | Hz |
| current | 115 Vac | | | 0.23 | A |
| | 230 Vac | | | 0.15 | A |
| inrush current | 115 Vac | | 25 | | A |
| | 230 Vac | | 40 | | A |
| leakage current | 277 Vac/50 Hz | | | 0.1 | mA |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---------------------------|---------------------------------|-----|------|-------|-------|
| capacitive load | 3.3 Vdc output | | | 6,600 | μF |
| | 5 Vdc output | | | 5,000 | μF |
| | 9 Vdc output | | | 3,600 | μF |
| | 12 Vdc output | | | 2,000 | μF |
| | 15 Vdc output | | | 820 | μF |
| | 24 Vdc output | | | 470 | μF |
| output voltage accuracy | | | ±2 | | % |
| line regulation | at full load | | ±0.5 | | % |
| load regulation | 0~100% load | | ±1.0 | | % |
| hold-up time | 115 Vac | | 8 | | ms |
| | 230 Vac | | 40 | | ms |
| switching frequency | | | 65 | | kHz |
| no load power consumption | 230 Vac | | | | |
| | 3.3 Vdc, 9 Vdc & 15 Vdc outputs | | 0.1 | | W |
| | 5 Vdc & 12 Vdc outputs | | 0.2 | | W |
| | 24 Vdc output | | 0.12 | | W |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|-----------------------------------|-----|-----|-----|-------|
| over voltage protection | clamp or hiccup | | | | |
| | 3.3 & 5 Vdc output | | | 7.5 | V |
| | 9 Vdc output | | | 15 | V |
| | 12 & 15 Vdc output | | | 20 | V |
| | 24 Vdc output | | | 30 | V |
| over current protection | auto recovery | 110 | | | % |
| short circuit protection | continuous, auto recovery, hiccup | | | | |

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-------------------|--|-------|-----|-----|-------|
| isolation voltage | input to output, 1 min., <5mA | 4,000 | | | Vac |
| safety approvals | certified to 62368: IEC, EN, UL/cUL | | | | |
| | certified to 60335: EN | | | | |
| | certified to 61558: EN | | | | |
| safety class | Class II | | | | |
| EMI/EMC | CISPR32/EN55032 CLASS B EN55014-1 | | | | |
| ESD | IEC/EN 61000-4-2 Contact ±8KV/Air ±15KV perf. Criteria B EN55014-2 perf. Criteria B | | | | |
| radiated immunity | IEC/EN61000-4-3 10V/m perf. Criteria A EN55014-2 perf. Criteria A | | | | |

SAFETY & COMPLIANCE

| | | | | |
|-------------------------------|--|-----------|--|-------|
| EFT/burst | IEC/EN61000-4-4 ±2KV perf. Criteria B IEC/EN61000-4-4 ±4KV (See Fig.2 for recommended circuit) perf. Criteria B EN55014-2 perf. Criteria B | | | |
| surge | IEC/EN61000-4-5 line to line ±1KV perf. Criteria B IEC/EN61000-4-5 line to line ±2KV (See Fig.2 for recommended circuit) perf. Criteria B EN55014-2 perf. Criteria B | | | |
| conducted immunity | IEC/EN61000-4-6 10Vr.m.s perf. Criteria A EN55014-2 perf. Criteria A | | | |
| voltage dips and interruption | IEC/EN61000-4-11 0%, 70% perf. Criteria B EN55014-2 perf. Criteria B | | | |
| MTBF | MIL-HDBK-217F at 25°C | 3,200,000 | | hours |
| RoHS | yes | | | |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | | -40 | | 85 | °C |
| storage temperature | | -40 | | 85 | °C |
| storage humidity | | 0 | | 95 | % |

SOLDERABILITY

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

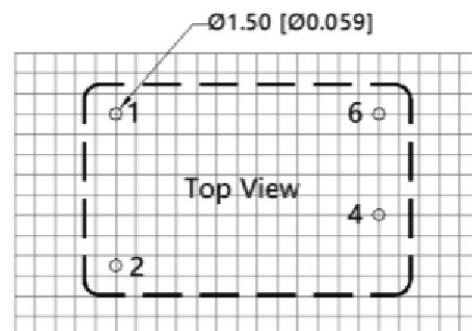
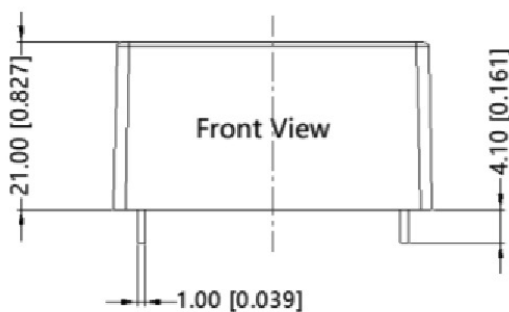
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|---|-----|----------------|-----|----------------|
| dimensions | DIP: 40.00 x 25.40 x 21.00 chassis mount: 76.00 x 31.50 x 29.80 DIN-rail: 76.00 x 31.50 x 34.40 | | | | mm mm mm |
| weight | DIP chassis mount DIN-rail | | 34 54 74 | | g g g |
| case material | Black plastic, flame-retardant and heat-resistant (UL94V-0) | | | | |

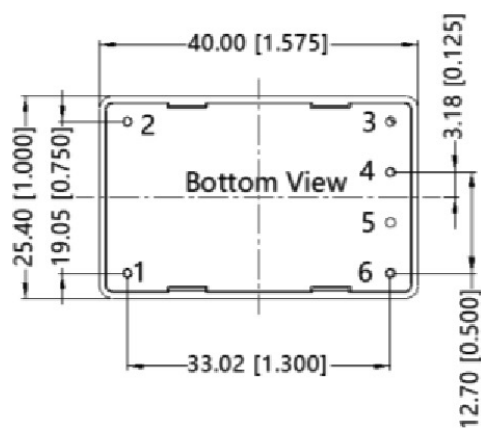
MECHANICAL DRAWING

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

| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | no pin |
| 4 | +Vo |
| 5 | no pin |
| 6 | -Vo |



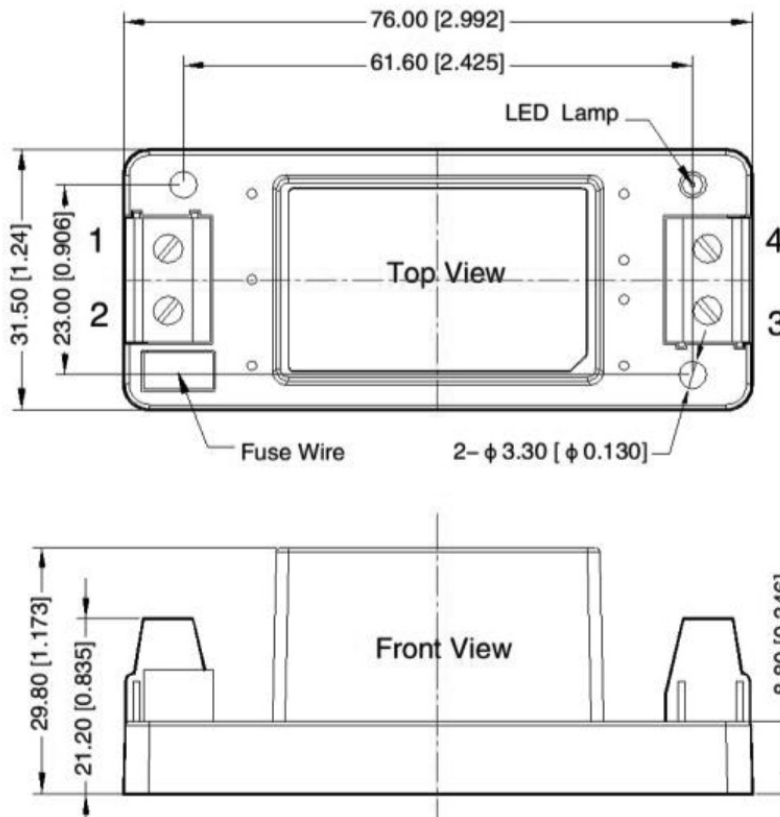
Note: Grid 2.54*2.54mm



MECHANICAL DRAWING

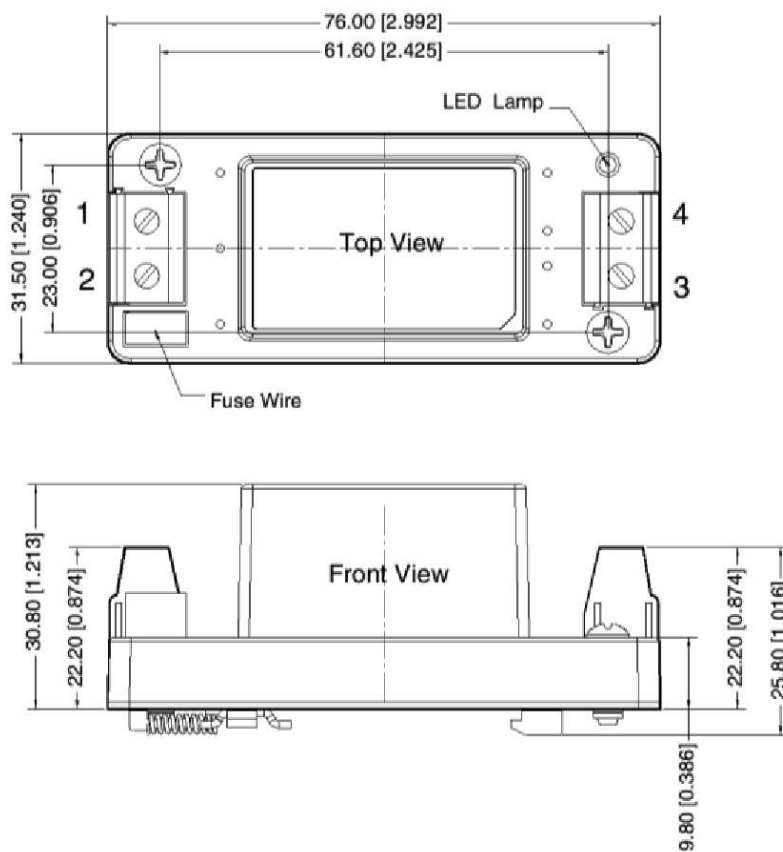
units: mm [inch]
 wire range: 24~12 AWG
 tightening torque: Max 0.4 N·m
 tolerance: ±1.0 [±0.039]

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



units: mm [inch]
 wire range: 24~12 AWG
 tightening torque: Max 0.4 N·m
 mounting rail: TS35, must be connected to safety ground
 tolerance: ±1.0 [±0.039]

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



APPLICATION DESIGN REFERENCE

Figure 1

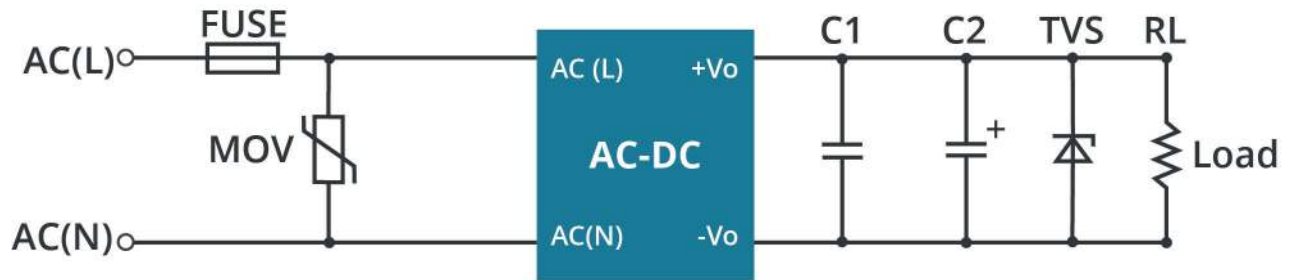


Table 1

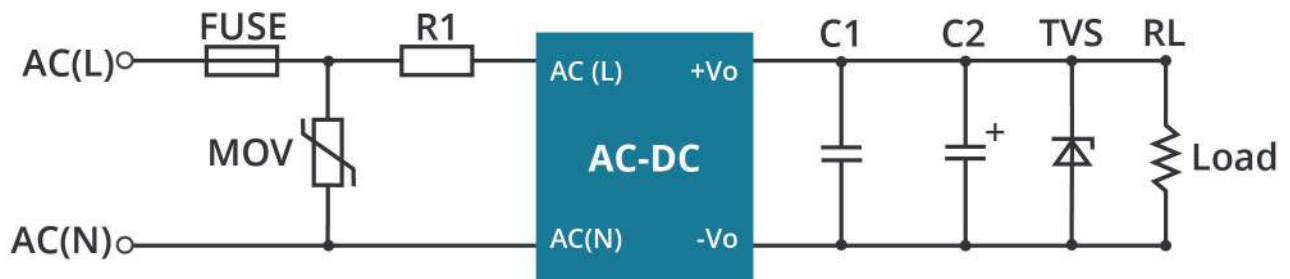
| Part No. | FUSE | MOV | C1(μF) | C2(μF) | TVS |
|------------|------------------------------------|---------|---------|-----------|----------|
| PSK-10D-3 | 2A/300V, slow-blow, required | S10K350 | 1μF/50V | 220μF/16V | SMBJ7.0A |
| PSK-10D-5 | | | | 220μF/16V | SMBJ7.0A |
| PSK-10D-9 | | | | 100μF/25V | SMBJ12A |
| PSK-10D-12 | | | | 100μF/25V | SMBJ20A |
| PSK-10D-15 | | | | 100μF/25V | SMBJ20A |
| PSK-10D-24 | | | | 100uF/35V | SMBJ30A |

Output Filtering Components:

An electrolytic capacitor with high frequency operation, low ESR, and at least 20% margin on rated output voltage is recommended for C2. C1 should be a ceramic capacitor and the TVS will help protect downstream electronics in the unlikely event of converter failure.

EMC RECOMMENDED CIRCUIT

Figure 2

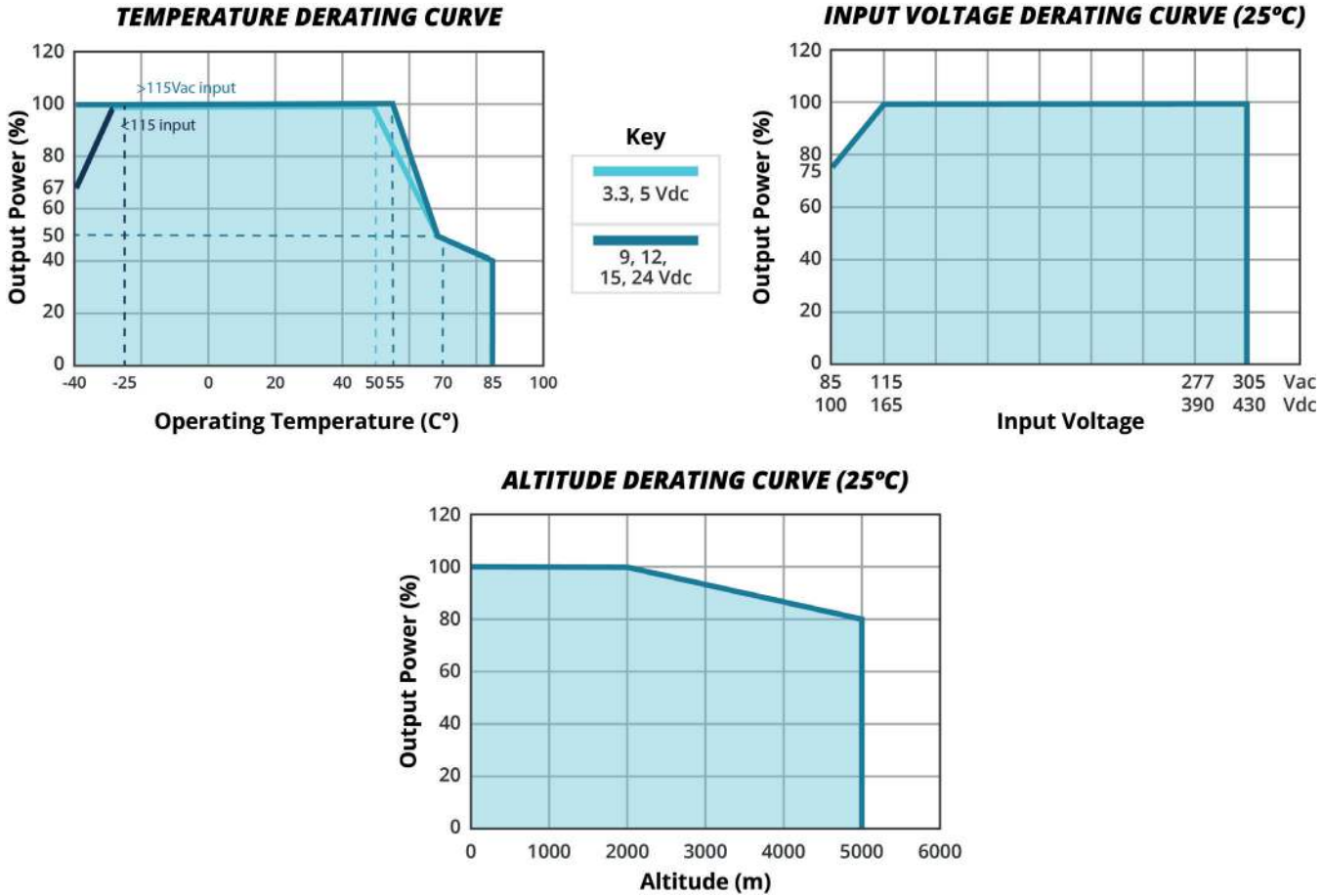


Note: EMC application circuit with higher requirements.

Table 2

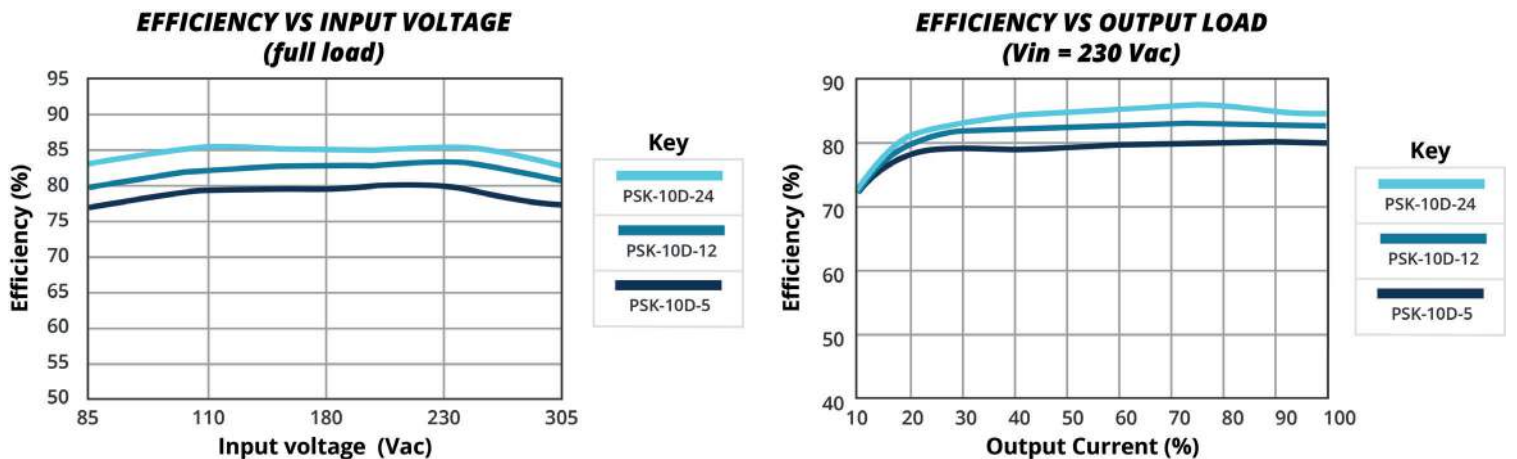
| Components | Recommended Value |
|------------|------------------------------|
| FUSE | 2A/300V, slow-blow, required |
| MOV | S14K350 |
| R1 | 6.8Ω/3W |

DERATING CURVE



Note: 1. With an AC input between 85~115Vac and a DC input between 100~165Vdc, the output power must be derated as per temperature derating curves.
 2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult with CUI.

EFFICIENCY CURVES



REVISION HISTORY

| rev. | description | date |
|------|---|------------|
| 1.0 | initial release | 01/28/2021 |
| 1.01 | over voltage category added to features | 04/06/2021 |
| 1.02 | derating and efficiency curves updated | 01/24/2022 |
| 1.03 | no load power consumption updated | 05/03/2022 |
| 1.04 | UKCA mark added | 05/26/2022 |

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



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