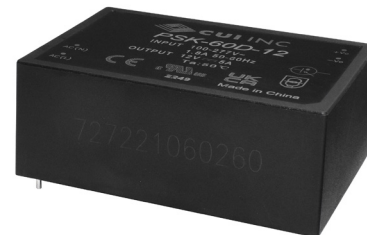


SERIES: PSK-60D | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

FEATURES

- 50~60 W output power
- certified to IEC/UL/EN 62368
- designed to meet IEC/EN 60335, IEC/EN 62477 and EN61558
- meets Class B emissions and +/- 2kV surge without external circuits
- universal 85-305Vac or 100-430Vdc input voltage
- operating ambient temperature range: -40°C ~ 85°C with derating
- output short circuit, over-current, and over-voltage protection
- input OVC III protection
- 5,000m operating altitude



| MODEL | output voltage | output current | output power | ripple and noise ¹ | efficiency ² |
|------------|----------------|----------------|--------------|-------------------------------|-------------------------|
| | (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| PSK-60D-5 | 5 | 10.0 | 50 | 150 | 89 |
| PSK-60D-12 | 12 | 5.0 | 60 | 150 | 91 |
| PSK-60D-15 | 15 | 4.0 | 60 | 150 | 90 |
| PSK-60D-24 | 24 | 2.5 | 60 | 150 | 90 |
| PSK-60D-48 | 48 | 1.25 | 60 | 150 | 91 |

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 1 µF ceramic and 47 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.

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 | | | 1.8 | A |
| | 230 Vac | | | 1.0 | A |
| inrush current | 115 Vac | | 30 | | A |
| | 230 Vac | | 60 | | A |
| leakage current | 277 Vac/50 Hz | | | 0.25 | mA |
| external input fuse | 3.15A/300V, slow-blow, required | | | | |
| no load power consumption | | | 0.3 | 0.45 | W |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|------------------------|-----|-------|--------|-------|
| capacitive load | 5 Vdc output model | | | 20,000 | μF |
| | 12 Vdc output model | | | 5,000 | μF |
| | 15 Vdc output model | | | 3,000 | μF |
| | 24 Vdc output model | | | 1,800 | μF |
| | 48 Vdc output model | | | 470 | μF |
| output voltage accuracy | | | ±2 | | % |
| line regulation | at full load | | ±1 | | % |
| load regulation | 0~100% load | | ±1.5 | | % |
| hold-up time | 115 Vac | | 8 | | ms |
| | 230 Vac | | 65 | | ms |
| temperature coefficient | | | ±0.02 | | %/°C |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|-----------------------------------|-----|-----|-----|-------|
| over voltage protection | latch-off | | | | |
| | 5 Vdc output | | | 9 | Vdc |
| | 12 Vdc output | | | 16 | Vdc |
| | 15 Vdc output | | | 25 | Vdc |
| | 24 Vdc output | | | 35 | Vdc |
| | 48 Vdc output | | | 60 | Vdc |
| over current protection | auto recovery | 140 | | | % |
| short circuit protection | continuous, auto recovery, hiccup | | | | |

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-----------------------|---|-------|-----|-----|-------|
| isolation voltage | input to output for 1 min., 5mA max | 4,200 | | | Vac |
| insulation resistance | input to output at 500 Vdc | 100 | | | MΩ |
| safety approvals | certified to 62368: UL, IEC, EN | | | | |
| safety class | Class II | | | | |
| conducted emissions | CISPR32/EN55032 Class B | | | | |
| radiated emissions | CISPR32/EN55032 Class B | | | | |
| ESD | IEC/EN61000-4-2 Contact ±6KV/Air ±8KV, perf. Criteria A | | | | |
| radiated immunity | IEC/EN61000-4-3 10V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN61000-4-4 ±2KV, perf. Criteria A | | | | |
| | IEC/EN61000-4-4 ±4KV (See recommended circuit), perf. Criteria A | | | | |
| surge | IEC/EN61000-4-5 line to line ±2KV, perf. Criteria A | | | | |
| | IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV (See recommended circuit), perf. Criteria A | | | | |
| conducted immunity | IEC/EN61000-4-6 10Vrms, perf. Criteria A | | | | |

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-------------------------------|---|---------|-----|-----|-------|
| voltage dips and interruption | IEC/EN61000-4-11 0%, 70% perf. Criteria B | | | | |
| MTBF | MIL-HDBK-217F at 25°C | 500,000 | | | 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 | 10 seconds max | 255 | 260 | 265 | °C |
| hand soldering | 5 seconds max | 350 | 360 | 370 | °C |

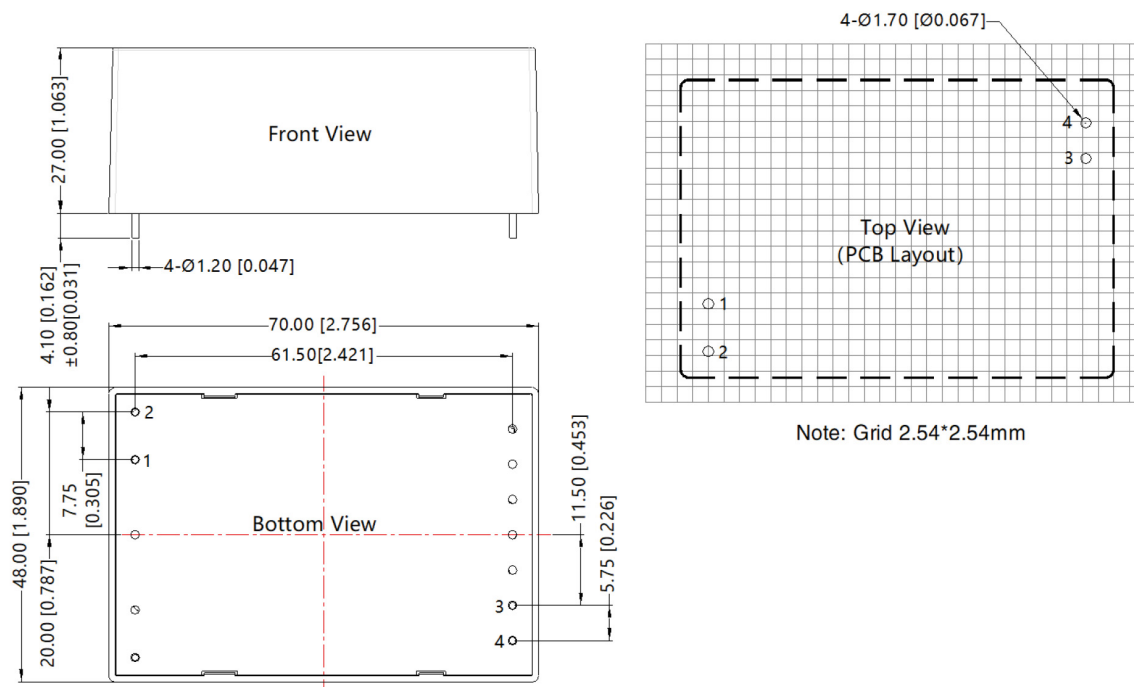
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|----------------|---|-----|-----|-----|-------|
| dimensions | 70.00 x 48.00 x 27.00 | | | | mm |
| weight | | | 130 | | g |
| case material | black plastic, flame-retardant and heat-resistant (UL94V-0) | | | | |
| cooling method | natural convection | | | | |

MECHANICAL DRAWING

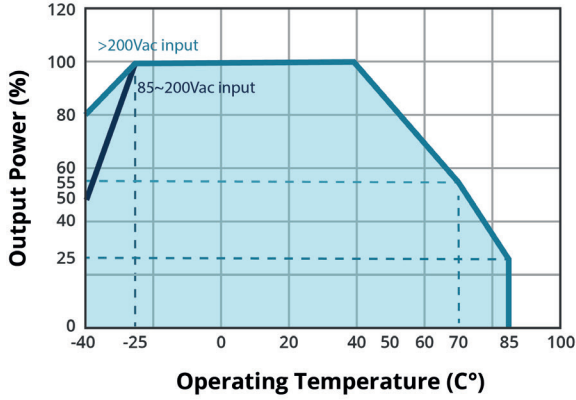
units: mm [inch]
 pin diameter tolerance: ± 0.10 [± 0.004]
 tolerance: ± 0.50 [± 0.020]

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

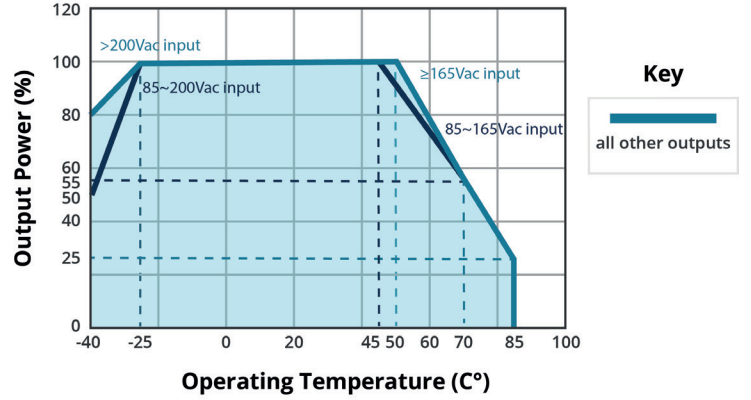


DERATING CURVE

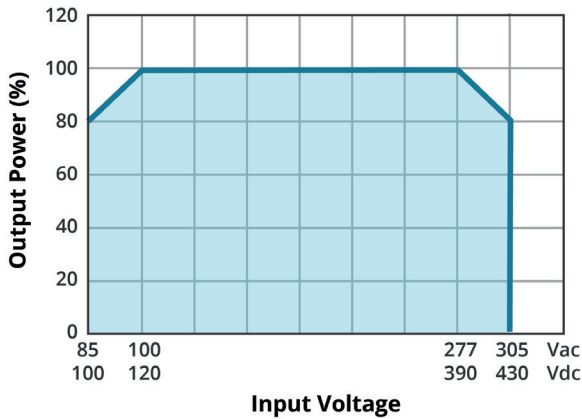
TEMPERATURE DERATING CURVE
85~305 Vac
100~430 Vdc



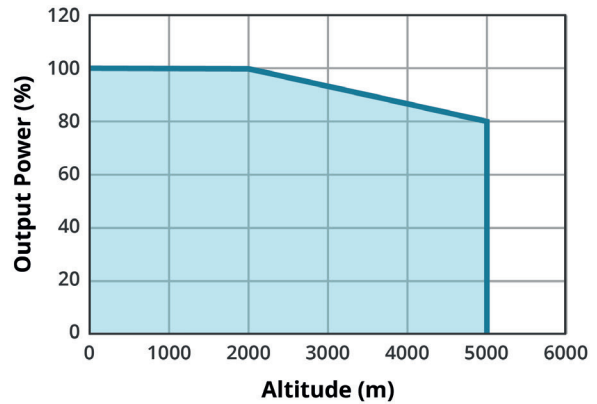
TEMPERATURE DERATING CURVE
85~305 Vac
100~430 Vdc



INPUT VOLTAGE DERATING CURVE
(25°C)



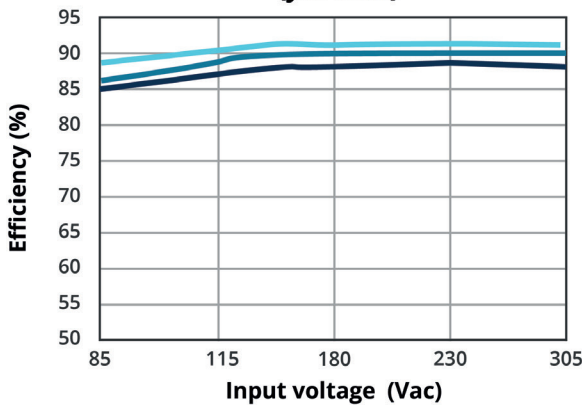
ALTITUDE DERATING CURVE (25°C)



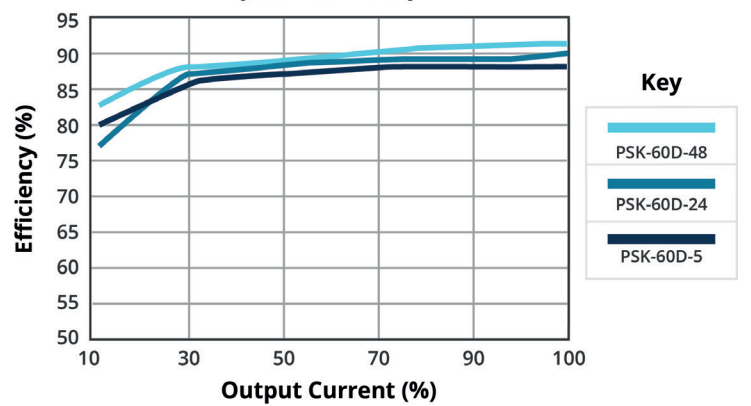
Note: 1. With an AC input between 85~100V/277~305Vac and a DC input between 100~120V/390~430Vdc, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult with CUI.

EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE
(full load)



EFFICIENCY VS OUTPUT LOAD
(Vin = 230 Vac)



APPLICATION DESIGN REFERENCE

Output Filtering Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture’s datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

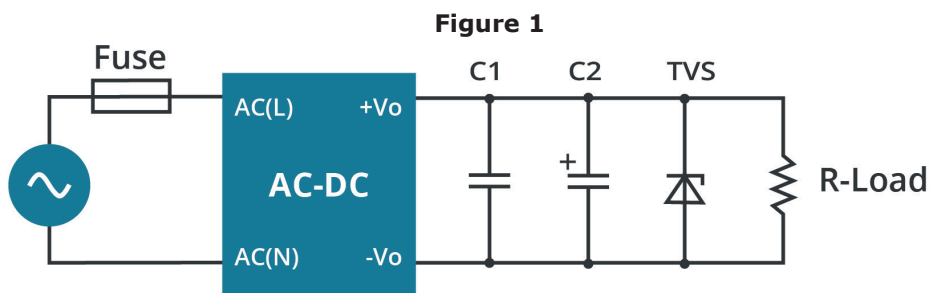
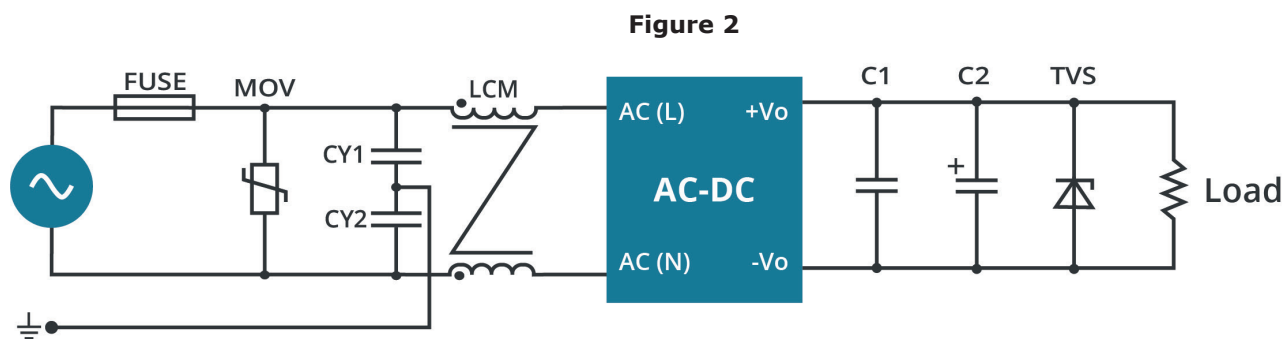


Table 1

| Part No. | FUSE | C1 | C2 | TVS |
|------------|----------------------------------|----------------|-----------------|---------|
| PSK-60D-5 | 3.15A/300V slow-blow required | 1 μ F/50V | 470 μ F/16V | SMBJ10A |
| PSK-60D-12 | | | 330 μ F/25V | SMBJ20A |
| PSK-60D-15 | | | 330 μ F/25V | SMBJ30A |
| PSK-60D-24 | | | 220 μ F/35V | SMBJ40A |
| PSK-60D-48 | | 1 μ F/100V | 100 μ F/63V | SMBJ60A |

EMC RECOMMENDED CIRCUIT



Note: EMC application circuit with higher requirements.

Table 2

| Components | Recommended Value |
|------------|---------------------------------|
| FUSE | 3.15A/300V, slow-blow, required |
| MOV | S14K350 |
| CY1/CY2 | 1nF/400Vac |
| LCM | 20mH |

REVISION HISTORY

| rev. | description | date |
|------|-----------------|------------|
| 1.0 | initial release | 02/06/2023 |

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



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