# **SERIES:** PSK-40F | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

## FEATURES

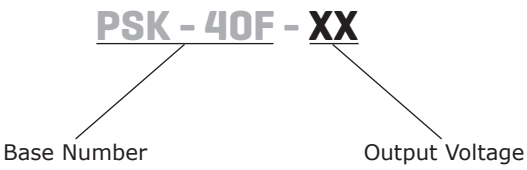
- universal input (85~305 Vac, 100~430 Vdc)
- -40~85°C operating range
- short circuit, under voltage, and over current protection
- isolation voltage 4,000 Vac
- certified to UL/EN/IEC 62368-1
- designed to meet EN 61558-1, EN 60335-1
- CISPR32/EN55032 Class B with application circuit
- Class II
- low stand-by power consumption (<0.3 W)
- high efficiency up to 89%
- 2,000 m operating altitude
- OVC III


## MODEL

| MODEL | output voltage (Vdc) | output current max (A) | output power max (W) | ripple and noise[1] max (mVp-p) | efficiency[2] typ (%) |
|---|---|---|---|---|---|
| PSK-40F-5 | 5 | 7.0 | 35 | 150 | 86 |
| PSK-40F-9 | 9 | 4.0 | 36 | 150 | 89 |
| PSK-40F-12 | 12 | 3.33 | 40 | 150 | 90 |
| PSK-40F-15 | 15 | 2.666 | 40 | 150 | 90 |
| PSK-40F-24 | 24 | 1.67 | 40 | 150 | 89 |
| PSK-40F-48 | 48 | 0.833 | 40 | 150 | 90 |

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.

## PART NUMBER KEY



## INPUT

| parameter | conditions/description | | min | typ | max | units |
|---|---|---|---|---|---|---|
| voltage | AC input | | 85 | | 305 | Vac |
| | DC input | 48 Vdc output model | 120 | | 430 | Vdc |
| | | all other outputs | 100 | | 430 | Vdc |
| frequency | | | 47 | 50~60 | 63 | Hz |
| current | at 115 Vac<br>at 230 Vac | | | | 1.0<br>0.6 | A<br>A |
| inrush current | at 115 Vac<br>at 230 Vac | | | 30<br>60 | | A<br>A |
| leakage current | at 230 Vac/50 Hz | | | | 0.1 | mA |
| recommended external input fuse | 2A/300V, slow-blow, required | | | | | |

## OUTPUT

| parameter | conditions/description | | min | typ | max | units |
|---|---|---|---|---|---|---|
| capacitive load | 5 Vdc output model<br>9, 12 Vdc output model<br>15 Vdc output model<br>24 Vdc output model<br>48 Vdc output model | | | | 6,600<br>4,400<br>3,300<br>1,500<br>470 | µF<br>µF<br>µF<br>µF<br>µF |
| output voltage accuracy | | | | ±2 | | % |
| line regulation | at full load | | | ±0.5 | | % |
| load regulation | 0~100% load | 5 Vdc output model | | ±2 | | % |
| | | all other outputs | | ±1 | | % |
| hold-up time | at 230 Vac | | | 55 | | ms |
| temperature coefficient | | | | ±0.02 | | %/°C |
| no load power consumption | at 230 Vac | | | 0.3 | 0.55 | W |

## PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| over current protection | auto recovery | 110 | | | % |
| short circuit protection | continuous, auto recovery | | | | |

## SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| isolation voltage | input to output for 1 minute, 5mA max | 4,000 | | | Vac |
| safety approvals | certified to 62368-1: UL, EN, IEC<br>designed to meet 61558-1: EN<br>designed to meet 60335-1: EN | | | | |
| 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, perf. Criteria A | | | | |
| radiated immunity | IEC/EN61000-4-3 10 V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN61000-4-4 ±2 kV, perf. Criteria B<br>IEC/EN61000-4-4 ±4 kV, perf. Criteria A (see Fig. 2 for recommended circuit) | | | | |
| surge | IEC/EN61000-4-5 line to line ±2 kV, perf. Criteria B<br>IEC/EN61000-4-5 line to line ±2 kV; line to PE ±4 kV, perf. Criteria A (see Fig. 2 for recommended circuit) | | | | |
| conducted immunity | IEC/EN61000-4-6 10 Vrms, perf. Criteria A | | | | |

## SAFETY & COMPLIANCE (CONTINUED)

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| MTBF | MIL-HDBK-217F at 25°C | 500,000 | | | hours |
| RoHS | yes | | | | |

## ENVIRONMENTAL

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

## SOLDERABILITY

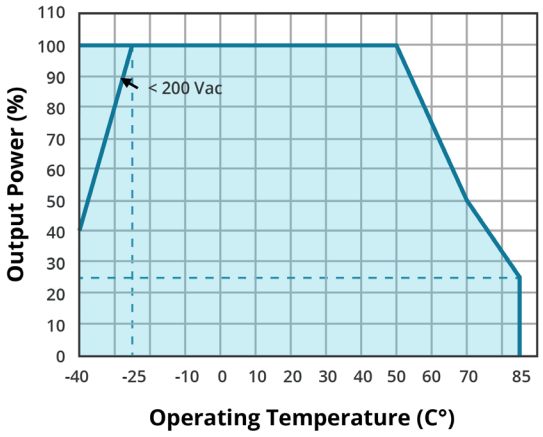
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| wave soldering | 5~10 seconds max | 255 | 260 | 265 | °C |
| hand soldering | 3~5 seconds max | 350 | 360 | 370 | °C |

## MECHANICAL

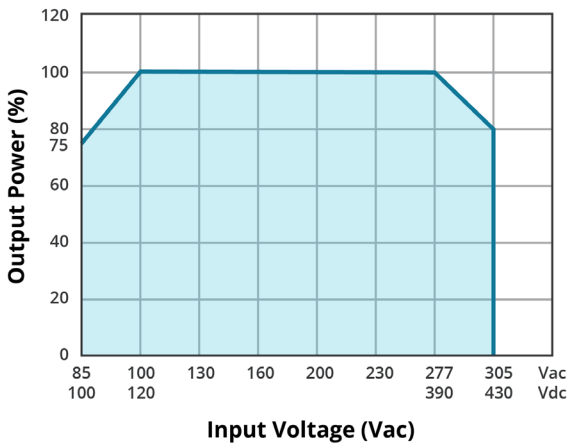
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | 69.50 x 39.00 x 24.00 [2.736 x 1.535 x 0.945 inches] | | | | mm |
| weight | | | 102 | | g |
| case material | black plastic, flame-retardant and heat-resistant (UL94V-0) | | | | |
| cooling method | natural convection | | | | |

## DERATING CURVES

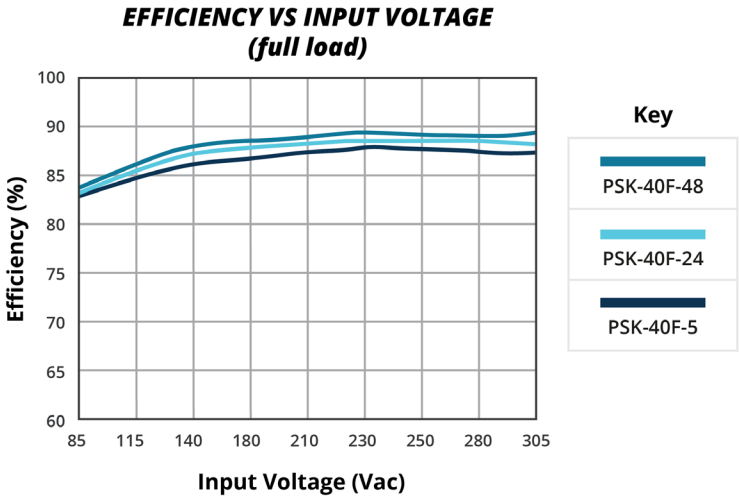
***TEMPERATURE DERATING CURVE***
***(Input voltage: 85~305 Vac, 100~430 Vdc)***

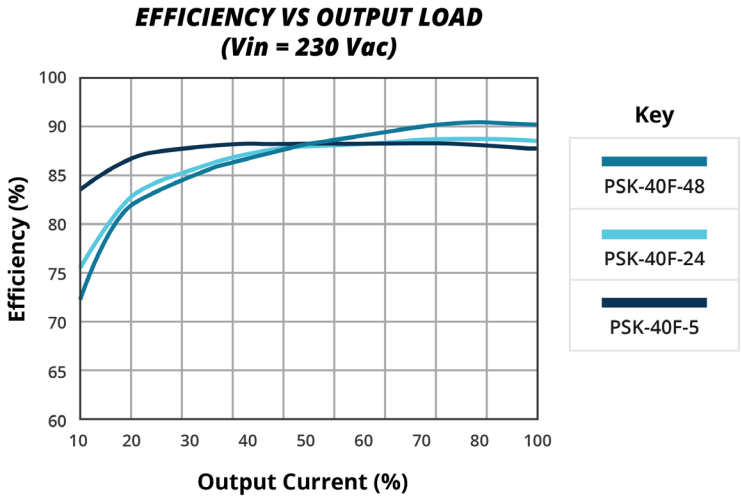



***INPUT VOLTAGE DERATING CURVE***
***(25 °C)***



## EFFICIENCY CURVES

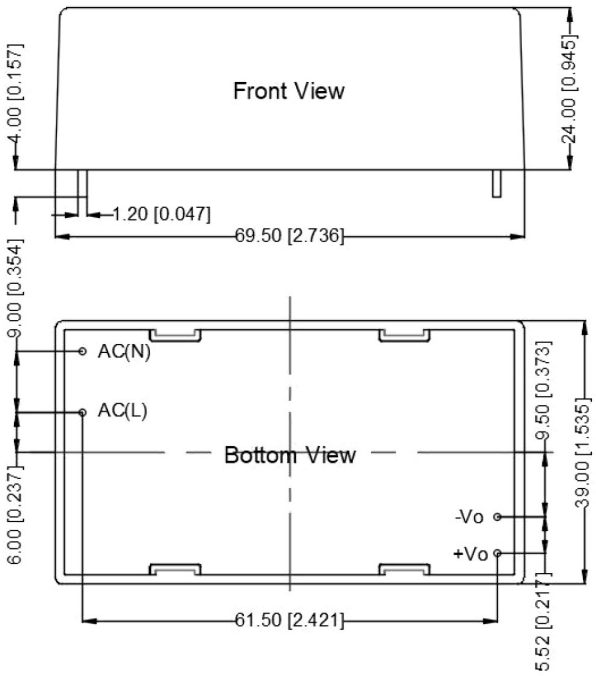


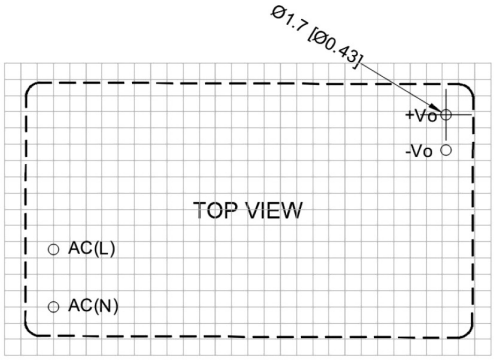




## MECHANICAL DRAWING

units: mm [inch]
pin diameter tolerance: ±0.1 [±0.004]
tolerance: ±0.50 [±0.020]

| PIN CONNECTIONS | |
|---|---|
| PIN | Function |
| 1 | AC(N) |
| 2 | AC(L) |
| 4 | -Vo |
| 5 | +Vo |




Grid size：2.54*2.54mm

## APPLICATION DESIGN REFERENCE

**Figure 1**

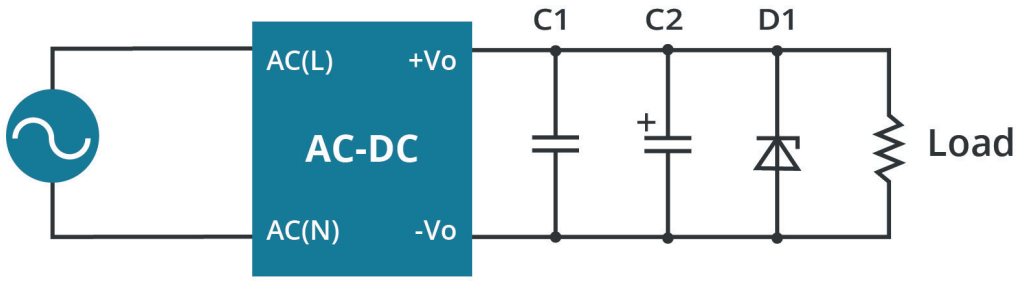



**Table 1**

| Part No. | Fuse | C1 | C2 | D1 |
|---|---|---|---|---|
| PSK-40F-5 | 1μF/100V | | 330μF/16V | see note below |
| PSK-40F-9/12/15 | | | 330μF/25V | |
| PSK-40F-24 | | | 100μF/35V | |
| PSK-40F-48 | | 1μF/100V | 47μF/63V | |

Note: D1 is a TVS transistor that can protect the downstreamcircuit in case of module abnormalities.
It is recommended to choose a model that is 1.2 times the output voltage.

## EMC RECOMMENDED CIRCUIT

**Figure 2**

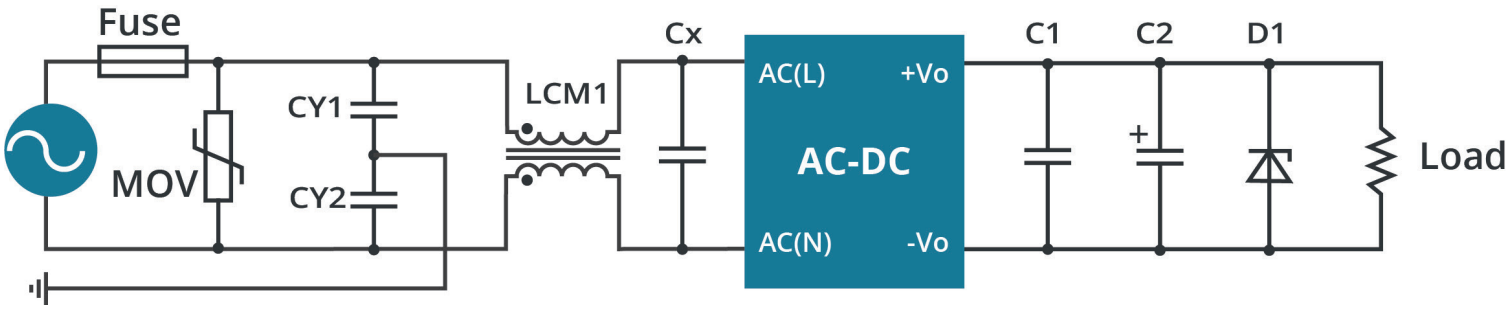



**Table 2**

| Components | Recommended Value |
|---|---|
| FUSE | 3.15A/300V, slow-blow, required |
| MOV | 14D561K |
| Cx | 0.68μF/310Vac |
| CY1, CY2 | 1.0nF/400Vac |
| LCM1 | 20mH, common mode inductance |

Notes:
4. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage.
5. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product.

## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 09/19/2025 |

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

CUI INC
a bel group

15575 SW Sequoia Pkwy #100
Portland, OR 97224
800.275.4899

Fax 503.612.2383
Belfuse.com
powersupport@belf.com