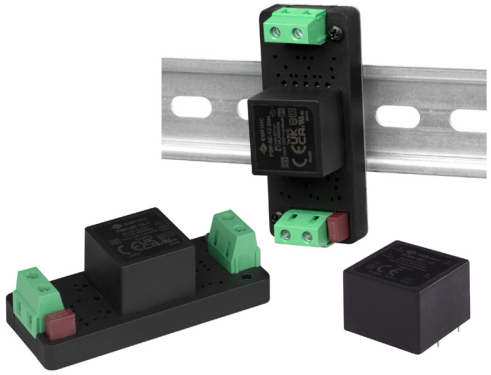
# **SERIES:** PSK-5E | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

## FEATURES

- universal input 85~305 Vac & 100~430 Vdc
- wide operating temperature range (-40~85°C)
- EMI Class B emissions (EN55032/CISPR) without additional components
- certified to IEC/EN/UL 62368-1
- isolation voltage 4,000 Vac
- short circuit and over current protection
- input under voltage protection
- Class II
- low stand-by power consumption (<0.1 W)
- 2,000 m operating altitude
- OVC III

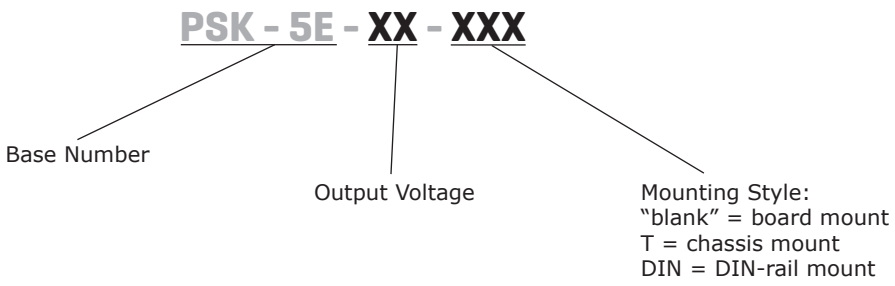


## MODEL

| MODEL | output voltage (Vdc) | output current max (A) | output power max (W) | ripple and noise[1] max (mVp-p) | efficiency[2] typ (%) |
|---|---|---|---|---|---|
| PSK-5E-3 | 3.3 | 1.515 | 5 | 120 | 72 |
| PSK-5E-5 | 5 | 1.000 | 5 | 120 | 76 |
| PSK-5E-9 | 9 | 0.555 | 5 | 120 | 79 |
| PSK-5E-12 | 12 | 0.416 | 5 | 120 | 79 |
| PSK-5E-15 | 15 | 0.333 | 5 | 120 | 79 |
| PSK-5E-24 | 24 | 0.208 | 5 | 120 | 82 |

Notes: 1. Ripple & noise are measured at 20 MHz BW. 10% ~ full load.
2. 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.
3. Unless otherwise specified, all indicators in this manual are measured at Ta=25 °C, humidity<75% RH, nominal input voltage, and output rated load

## PART NUMBER KEY



## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| voltage[4] | ac input<br>dc input | 85<br>100 | | 305<br>430 | Vac<br>Vdc |
| frequency | | 47 | 50~60 | 63 | Hz |
| current | 115 Vac<br>230 Vac | | | 0.13<br>0.07 | A<br>A |
| external input fuse | 1 A, slow-blow, required | | | | |
| leakage current | 230 Vac/50 Hz | | | 0.3 | mA |
| no load power consumption | at 230 Vac | | 0.1 | | W |

Notes: 4. The input voltage should not exceed the specified range value to prevent permanent and irreparable damage.

## OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| capacitive load | 3.3 Vdc output model<br>5 Vdc output model<br>9, 12 Vdc output model<br>15 Vdc output model<br>24 Vdc output model | | | 4,000<br>3,000<br>1,200<br>680<br>220 | µF<br>µF<br>µF<br>µF<br>µF |
| output voltage accuracy | 5% ~ 100% load<br>3.3 Vdc output model<br>all other output models | | <br>±3<br>±2 | | <br>%<br>% |
| line regulation | | | ±0.5 | | % |
| load regulation | 5% ~ 100% load | | ±1.0 | | % |
| hold-up time | at 230 Vac | | 50 | | ms |
| temperature coefficient | | | ±0.02 | | %/°C |

## 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: IEC, EN, UL<br>designed to meet 61558: EN<br>designed to meet 60335: EN | | | | |
| safety class | Class II | | | | |
| EMI/EMC | CISPR32/EN55032 CLASS B | | | | |
| ESD | IEC/EN61000-4-2 Contact ±6 kV/Air ±8 kV, perf. Criteria B | | | | |
| radiated immunity | IEC/EN61000-4-3 10 V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN61000-4-4 ±4 kV (see recommended circuit Fig. 2 ), perf. Criteria B | | | | |
| surge | IEC/EN61000-4-5 line to line ±1 kV, perf. Criteria B<br>IEC/EN61000-4-5 line to line ±2 kV, (see recommended circuit Fig. 2 ), perf. Criteria B | | | | |
| conducted immunity | IEC/EN61000-4-6 10 Vrms, perf. Criteria A | | | | |
| MTBF | MIL-HDBK-217F at 25°C | 2,600,000 | | | hours |
| RoHS | yes | | | | |

## ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | | -40 | | 85 | °C |
| storage temperature | | -40 | | 105 | °C |
| storage humidity | non-condensing | 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 | 355 | 360 | 360 | °C |

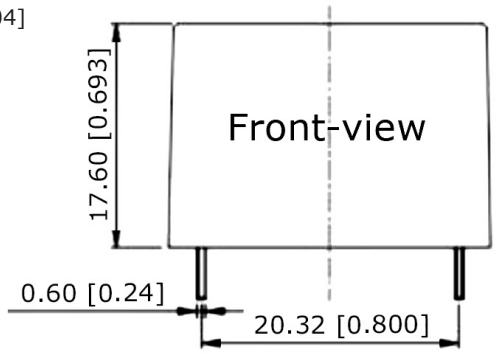
## MECHANICAL

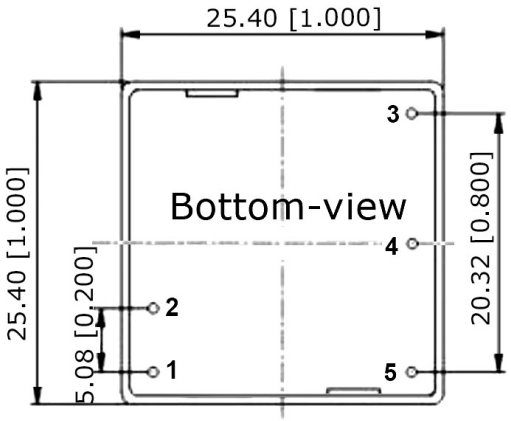
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | board mount: 25.40 x 25.40 x 17.60 [1.000 x 1.000 x 0.693 inch]<br>chassis mount: 76.00 x 31.50 x 26.40 [2.992 x 1.240 x 0.906 inch]<br>DIN-rail mount: 76.00 x 31.50 x 27.40 [2.992 x 1.240 x 1.079 inch] | | | | mm<br>mm<br>mm |
| weight | board mount<br>chassis mount<br>DIN-rail mount | | 23.0<br>41.58<br>61.40 | | g<br>g<br>g |
| case material | black plastic, flame-retardant and heat-resistant (UL94V-0) | | | | |
| cooling | natural convection | | | | |

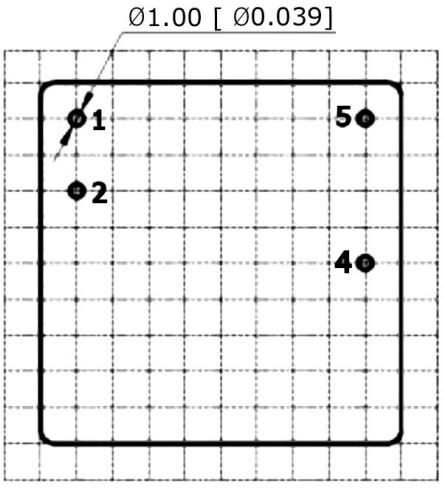
## MECHANICAL DRAWING

**Board mount**
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 | no pin |
| 4 | -Vo |
| 5 | +Vo |



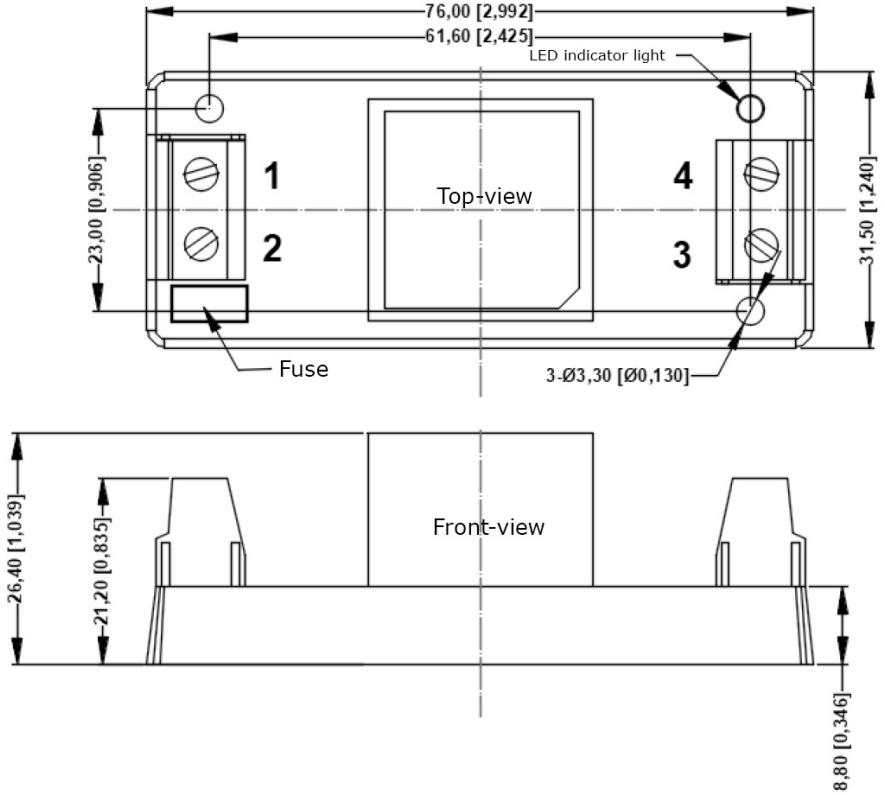




Grid size：2.54*2.54mm

## MECHANICAL DRAWING (CONTINUED)

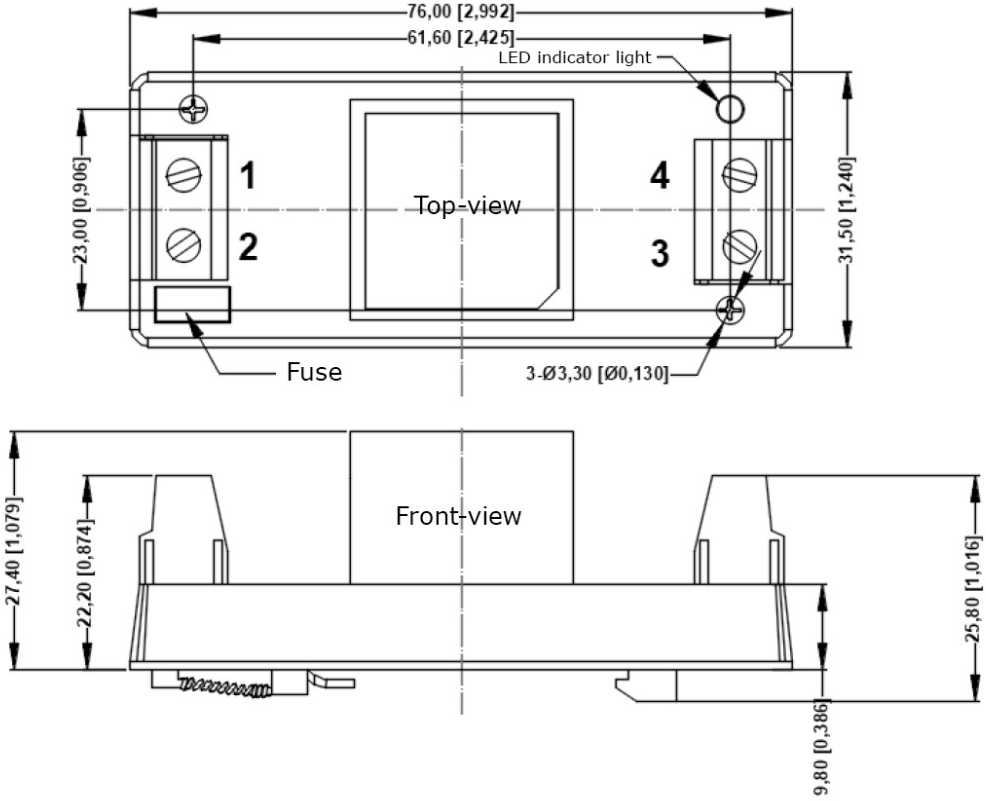
**Chassis mount**
units: mm [inch]
wire diameter: 24 ~ 12 AWG
tightening torque: Max 0.4 N·m
tolerance: ±1.00 [±0.039]

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



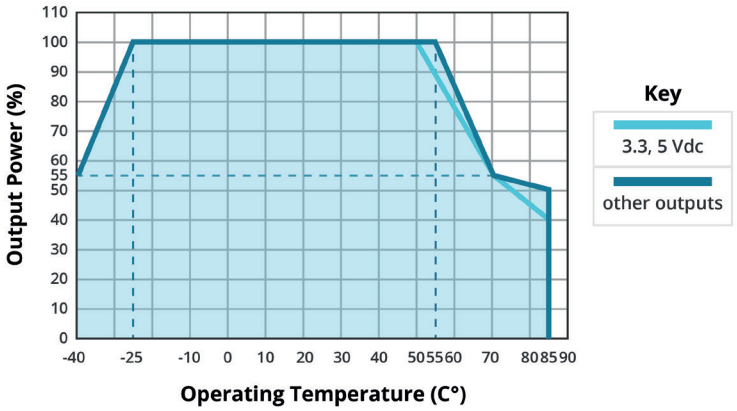

**DIN-rail mount**
units: mm [inch]
wire diameter: 24 ~ 12 AWG
tightening torque: Max 0.4 N·m
mounting rail: TS35,
rail needs to connect to safety ground
tolerance: ±1.00 [±0.039]

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

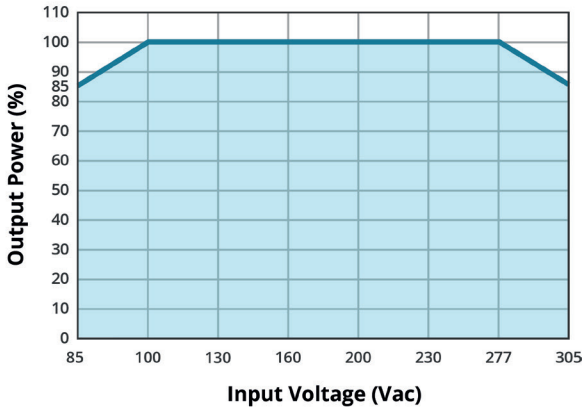


## DERATING CURVE

***TEMPERATURE DERATING CURVE***
***(Input voltage = 85 ~305 Vac)***

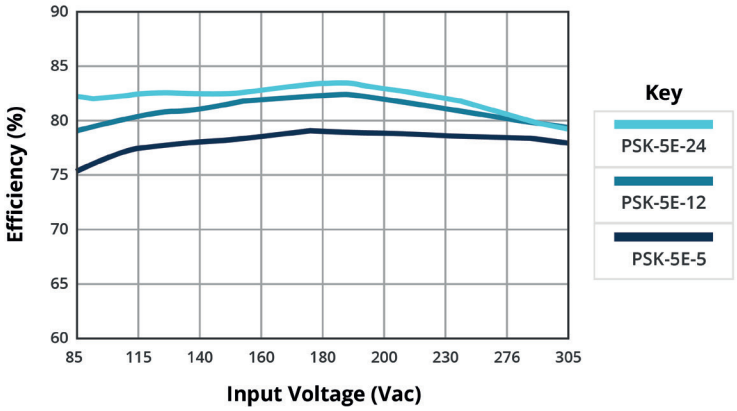



***INPUT VOLTAGE DERATING CURVE***
***(at 25°C)***

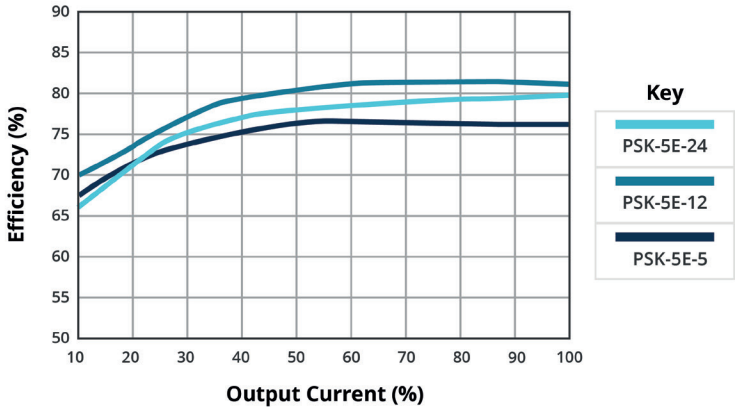



## EFFICIENCY CURVES

***EFFICIENCY VS INPUT VOLTAGE***
***(Full load)***




***EFFICIENCY VS OUTPUT LOAD***
***(Vin = 230 Vac)***



## APPLICATION DESIGN REFERENCE

**Figure 1**

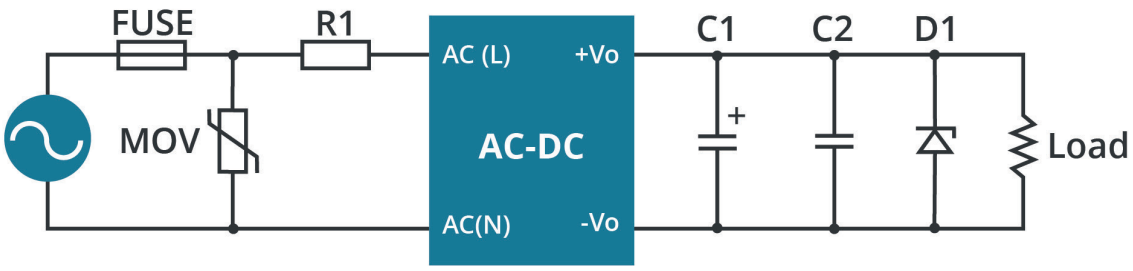



**Table 1**

| Vout (Vdc) | FUSE | MOV | R1 | C1 (µF/V) | C2(µF/V) | D1 |
|---|---|---|---|---|---|---|
| 3.3, 5 | 1A/300V, slow-blow, required | 10D561K | 12Ω/3W (wire-wound resistor, required) | 1 µF/16 V | 150 µF/16 V | see note 2 |
| 9, 12 | | | | 1 µF/25 V | 150 µF/25 V | |
| 15, 24 | | | | 1 µF/50 V | 100 µF/35 V | |

Notes: 1. Fuse and MOV should be selected based on application requirements and performance criteria.
2. D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose amodel that is 1.2 times the output voltage.

## RECOMMENDED CIRCUIT FOR HIGHER EMI REQUIREMENTS

**Figure 2**

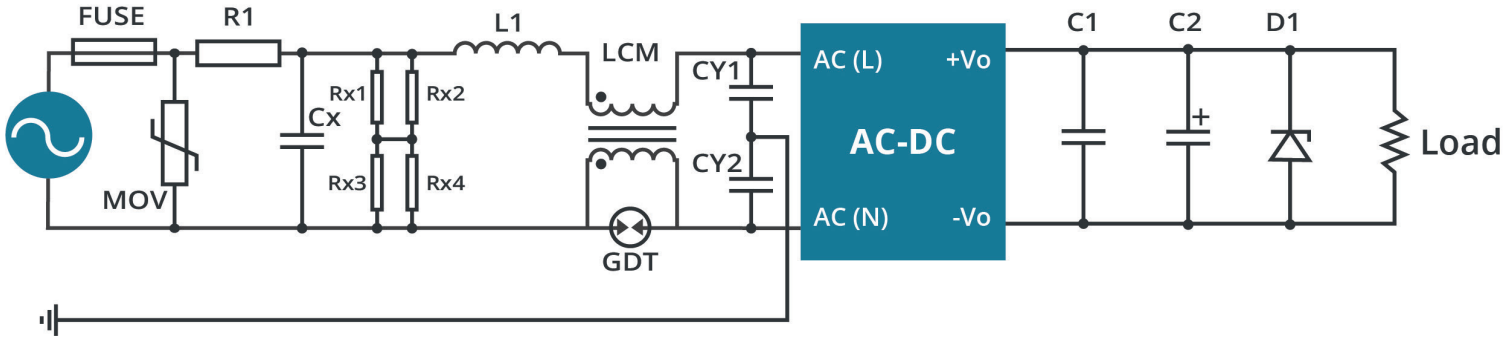



**Table 2**

| Components | Recommended Value |
|---|---|
| FUSE | 2A/300V, slow-blow, required |
| MOV | 14D561K |
| Cx | 0.33 µF/305 Vac |
| R1 | 12Ω/3W (wire wound resistor, required) |
| L1 | 1.2 mH/0.3 A |
| CY1, CY2 | 1nF/400 Vac |
| GDT | 300 V/1 kA |
| LCM | 20 mH Common mode Choke |
| Rx1, Rx2, Rx3, Rx4 | 2 MΩ/1206 |

## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 04/07/2025 |
| 1.01 | chassis and DIN-rail mount added | 01/19/2026 |

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