

SERIES: PRF30W-Q48-D524-D | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- ultrawide 4:1 input range
- dual asymmetrical positive output
- 3000 Vac isolation
- input under-voltage protection
- output short circuit, over current, and over-voltage protection
- wide operating temp: -40°C to +85°C
- EN62368 approved
- meets IEC61000-4-5 (Surge) at ±2KV without extra components
- meets IEC61000-4-4 (EFT) at ±4KV without extra components

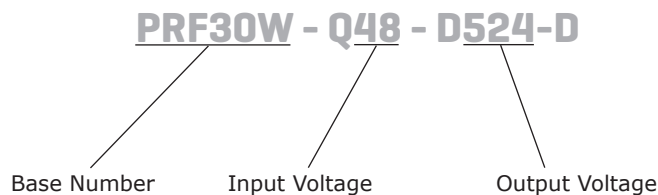


MODEL

| MODEL | input voltage | | output voltage | output current | | output power | ripple & noise | full load efficiency ¹ |
|-------------------|---------------|-------------|----------------|----------------|----------|--------------|----------------|-----------------------------------|
| | typ (Vdc) | range (Vdc) | Vo1/Vo2 (Vdc) | min (mA) | max (mA) | max (W) | max (mVp-p) | min/typ (%) |
| PRF30W-Q48-D524-D | 48 | 18~75 | 5/24 | 0/0 | 4000/417 | 30 | 80/100 | 82/84 |

Notes: 1. Efficiency is measured in nominal input voltage and rated output load.

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|---------------|------------------------------------------|------|--------|--------|-------|
| input voltage | at start up | 18 | | 80 | Vdc |
| current | full load/no load, nominal input voltage | | 745/40 | 763/80 | A |
| start-up time | | | 20 | 50 | ms |
| surge voltage | 1 second max | -0.7 | | 100 | V |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|---------------------------------------------|-----|-------------------|-----------------|--------------------|
| output capacitance | Vo1 Vo2 | | | 3000 100 | μ F μ F |
| line regulation | Vo1/Vo2 | | $\pm 0.2/\pm 0.5$ | $\pm 0.5/\pm 1$ | % |
| load regulation | 5~100% load | | ± 0.5 | ± 1 | % |
| set-point accuracy | 5~100% load | | ± 1 | ± 3 | % |
| switching frequency | PWM mode | | 300 | | kHz |
| transient response | 25% load step change, nominal input voltage | | ± 4 | ± 8 | % Vout |
| temperature coefficient | full load | | | ± 0.03 | %/°C |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------------|---------------------------|-----|-----|-----|------------|
| over voltage protection | | 110 | | 160 | %Vo |
| over current protection | | 110 | | 190 | %Io |
| short circuit protection | continuous, self recovery | | | | |
| input under-voltage protection | output on: output off: | 12 | | 18 | Vdc Vdc |

SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|----------------------|-------------------------------------------------|------|-----|-----|--------|
| isolation voltage | input to output for 1 minute at 5mA | 3000 | | | Vac |
| isolation resistance | input to output at 500 Vdc | 1000 | | | MΩ |
| safety approvals | EN/IEC 62368 | | | | |
| EMI/EMC | CISPR32/EN 55032 Class B | | | | |
| ESD | IEC/EN61000-4-2, Contact ±8KV, perf. Criteria B | | | | |
| radiated immunity | IEC/EN6100-4-3, 30 v/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN61000-4-4, ±4KV, perf. Criteria B | | | | |
| surge | IEC/EN61000-4-5, ±2KV, perf. Criteria B | | | | |
| conducted immunity | IEC/EN61000-4-6, 10 Vr.m.s, perf. Criteria A | | | | |
| RoHS | yes | | | | |
| MTBF | as per MIL-HDBK-217F at 25°C | 1000 | | | kHours |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|----------------------------------------|-----|-----|-----|-------|
| operating temperature | | -40 | | 85 | °C |
| storage temperature | | -55 | | 125 | °C |
| humidity | | 5 | | 95 | % |
| shock/vibration | 10-150Hz, 5G, 90 Min. along X, Y and Z | | | | |

SOLDERABILITY

| parameter | conditions/description | min | typ | max | units |
|----------------|-------------------------------------------------------|-----|-----|-----|-------|
| hand soldering | Soldering spot is 1.5mm away from case for 10 seconds | | | 300 | °C |

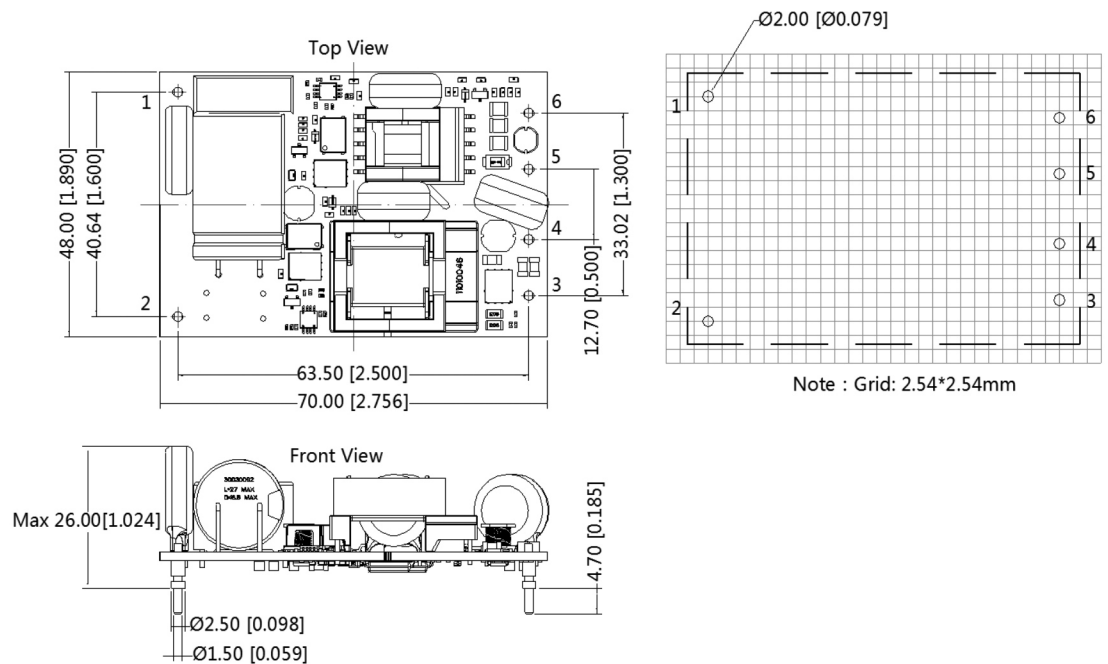
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|------------|------------------------|-----|-----|-----|-------|
| dimensions | 70 x 48 x 26 | | | | mm |
| weight | | | 50 | | g |

MECHANICAL DRAWING

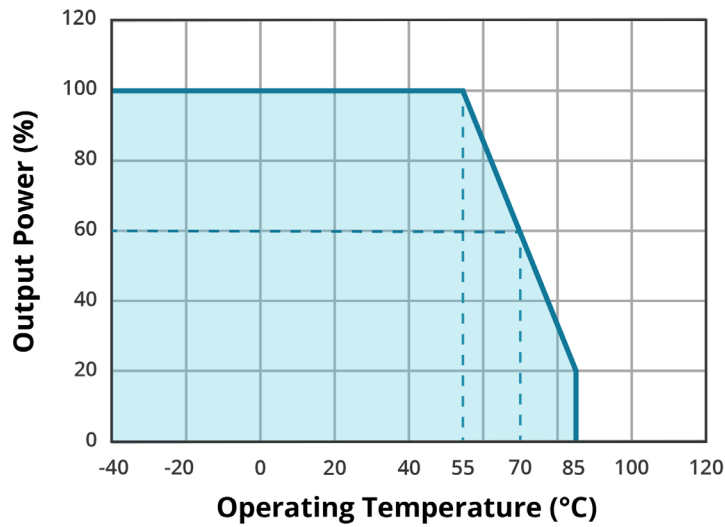
units: inches [mm]
tolerance: ± 0.50 [±0.020]

| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | FUNCTION |
| 1 | Vin |
| 2 | GND |
| 3 | Vo1+ |
| 4 | Vo1- |
| 5 | Vo2- |
| 6 | Vo2+ |



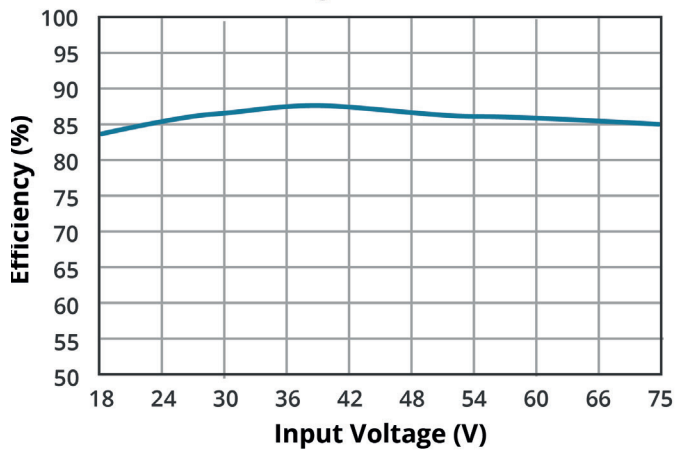
DERATING CURVES

TEMPERATURE DERATING CURVE

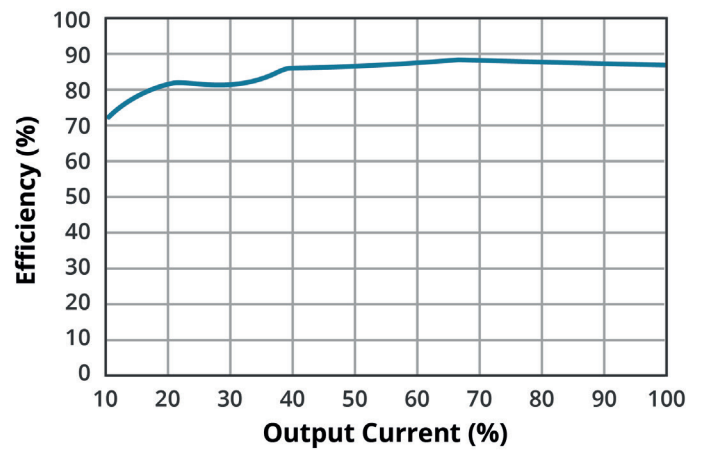


EFFICIENCY CURVES

**EFFICIENCY VS INPUT LOAD
(full load)**



**EFFICIENCY VS OUTPUT LOAD
(Vin = 48 V)**



REVISION HISTORY

| rev. | description | date |
|------|------------------------------------------------------------------------|------------|
| 1.0 | initial release | 05/26/2020 |
| 1.01 | isolation voltage updated to Vac; updated derating & efficiency curves | 06/08/2021 |

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



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