# **SERIES:** PVQ100W-D | **DESCRIPTION:** DC-DC CONVERTER

## FEATURES

- 100 W isolated output
- ultra-wide 14:1 input range, 12~160 Vdc
- -40 ~ 105 °C operating temperature with derating
- reinforced insulation
- input under-voltage; output over temperature, over current, & over voltage protection
- 4,200 Vdc isolation
- remote on/off
- industry standard 1/4 brick package
- UL/EN/IEC 62368 certified
- designed to meet EN 55032/55035/50155/EN 45545-2 with external circuits

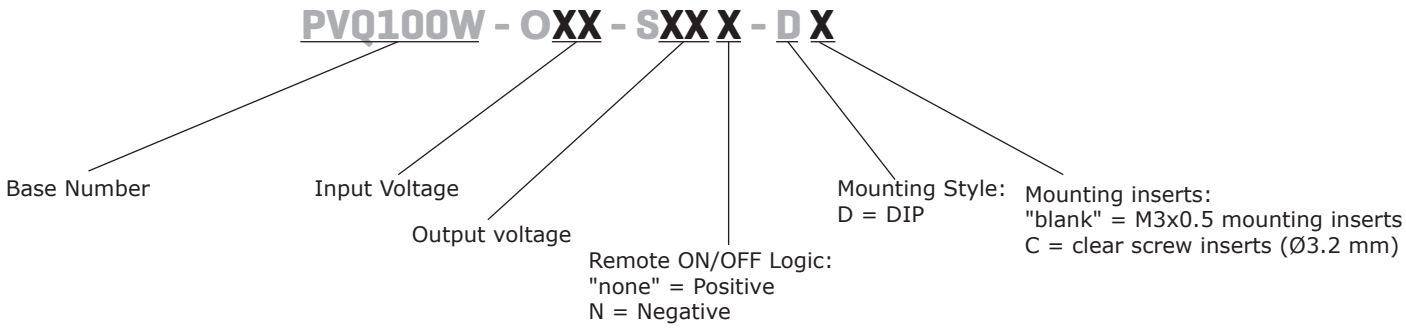



## MODEL

| MODEL | input voltage nom (Vdc) | input voltage range (Vdc) | output voltage (Vdc) | output current max (A) | output power max (W) | ripple & noise[1] max (mVp-p) | efficiency[2] typ (%) |
|---|---|---|---|---|---|---|---|
| PVQ100W-O72-S5-D | 72 | 12~160 | 5 | 20.0 | 100 | 150 | 87.5 |
| PVQ100W-O72-S12-D | 72 | 12~160 | 12 | 8.3 | 100 | 150 | 88.0 |
| PVQ100W-O72-S15-D | 72 | 12~160 | 15 | 6.7 | 100 | 150 | 89.0 |
| PVQ100W-O72-S24-D | 72 | 12~160 | 24 | 4.2 | 100 | 240 | 89.0 |
| PVQ100W-O72-S28-D | 72 | 12~160 | 28 | 3.6 | 100 | 240 | 90.0 |
| PVQ100W-O72-S54-D | 72 | 12~160 | 54 | 1.85 | 100 | 480 | 90.0 |

Notes:
1. 20MHz bandwidth, peak to peak, 10µF polymer tantalum and 1µF ceramic capacitors.
2. Efficiency is measured at 72 Vdc input voltage.
3. An external input capacitor 220µF for all models is recommended to reduce input ripple voltage.

## PART NUMBER KEY






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## INPUT

| parameter | conditions/description | | min | typ | max | units |
|---|---|---|---|---|---|---|
| operating input voltage | | | 12 | 72 | 160 | Vdc |
| under voltage lockout | turn-on voltage treshold | 80% load | 10.7 | 11 | 11.7 | Vdc |
| | turn-off voltage treshold | 80% load | 9.7 | 10 | 10.7 | Vdc |
| | lockout hysteresis voltage | 80% load | | 1.0 | | Vdc |
| current | at 16 V input, full load<br>at 12 V input, 80% load | | | | 8.0 | A |
| inrush current ($I^2t$) | as per ETS300 132-2 | | | | 0.1 | $A^2s$ |
| filter | Pi filter | | | | | |
| surge voltage | for maximum of 100ms | | | | 185 | Vdc |
| CTRL | positive logic | models ON (3.5~160 Vdc or on/off pin open circuit) | | | | |
| | | models OFF (on/off pin 0~1.2 Vdc) | | | | |
| | negative logic | models ON (on/off pin 0~1.2 Vdc) | | | | |
| | | models OFF (3.5~160 Vdc or on/off pin open circuit) | | | | |
| on/off current[4] | I on/off at V on/off = 0V | | | 0.4 | 1 | mA |
| leakage current[4] | logic high, V on/off = 15V | | | | 30 | µA |

Notes: 4. For both remote on/off logic.

## OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| maximum capacitive load | 5 Vdc output model | | | 20,000 | µF |
| | 12 Vdc output model | | | 8,300 | µF |
| | 15 Vdc output model | | | 6,700 | µF |
| | 24 Vdc output model | | | 4,200 | µF |
| | 28 Vdc output model | | | 3,600 | µF |
| | 54 Vdc output model | | | 1,000 | µF |
| voltage accuracy | at 72 V input, full load, 25°C | -1.0 | | 1.0 | % |
| line regulation | from low line to high line, full load | | | ±0.2 | % |
| load regulation | full load to no load | | | ±0.2 | % |
| temperature coefficient | -40° ~ 105°C | | | ±0.02 | %/°C |
| switching frequency | | 180 | 200 | 220 | kHz |
| transient recovery time | 75 ~ 100% of step load change, $d_i/d_t$ = 0.1A/µs<br>(within 1% Vout nominal) | | | 250 | µs |
| transient response deviation | 75 ~ 100% of step load change, $d_i/d_t$ = 0.1A/µs<br>(within 1% Vout nominal) | | | ±5 | % |
| start up time / input voltage | V on/off to 10% Vo_set, remote on | | 50 | | ms |
| start up time / on/off control | Vin_min to 10% Vo_set, power up | | 50 | | ms |
| rise time | 10% Vo_set to 90% Vo_set | | 50 | | ms |
| adjustability | Po ≤ max rated power, Io ≤ Io_max | | | | |
| | 54 Vdc output model | -20 | | 10 | % |
| | all other models | -20 | | 15 | % |
| remote sense | Po ≤ max rated power, Io ≤ Io_max % of nominal Vo | | | | |
| | 54 Vdc output model | | | 10 | % |
| | all other models | | | 15 | % |



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## PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| over voltage protection | limited voltage, % of nominal output<br>54 Vdc output model<br>all other models | <br>112<br>117 | <br>117<br>125 | <br>140<br>140 | <br>%<br>% |
| over current protection | auto recovery, hiccup | 110 | 150 | 180 | % |
| short circuit protection | continuous, auto recovery | | | | |
| over temperature protection | temperature at the center part of case, non-latching<br>shutdown<br>recovery | | <br>110<br>100 | | <br>°C<br>°C |

## SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| isolation voltage | input to output, for 1 minute | | | 3,000<br>4,200 | Vac<br>Vdc |
| | input to case (base plate), for 1 minute | | | 2,100<br>3,000 | Vac<br>Vdc |
| | output to case (base plate), for 1 minute | | | 1,500<br>2,100 | Vac<br>Vdc |
| isolation resistance | input to output | 100 | | | MΩ |
| isolation capacitance | input to output | | 1,000 | | pF |
| safety approvals | certified to 62368: UL/cUL, EN, IEC | | | | |
| concucted emissions | EN55032 and EN50155 Compliant (with external filter) | | | | |
| ESD | EN61000-4-2 Level 3: Air ±8kV, Contact ±6kv, perf. Criteria A | | | | |
| radiated immunity | EN61000-4-3 Level 3: 80~ 1000 MHz, 20V/m, perf. Criteria A | | | | |
| EFT/burst | EN61000-4-4 Level 3: on power input port, ±2kV, external input capacitor required (EN 50155), perf. Criteria A | | | | |
| surge | EN61000-4-5 Level 4: Line to Earth, ±4kV, Line to Line ±2kV (EN50155), perf. Criteria A | | | | |
| conducted immunity | EN61000-4-6 Level 3: 0.15~80MHz, 3V, perf. Criteria A | | | | |
| voltage supply interruptions | EN50155 Class S3: 20ms interruptions | | | | |
| MTBF | as per MIL-HDBK-217F, 25°C<br>5 Vdc output model<br>12 Vdc output model<br>15 Vdc output model<br>24 Vdc output model<br>28 Vdc output model<br>54 Vdc output model | | <br>570<br>690<br>785<br>840<br>800<br>850 | | <br><br><br><br><br><br>K hours |
| RoHS | yes | | | | |

## ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating case temperature | measured at the center of the case plate, see derating curve | -40 | | 105 | °C |
| storage temperature | | -55 | | 125 | °C |
| operating humidity | non-condensing | | | 95 | % |



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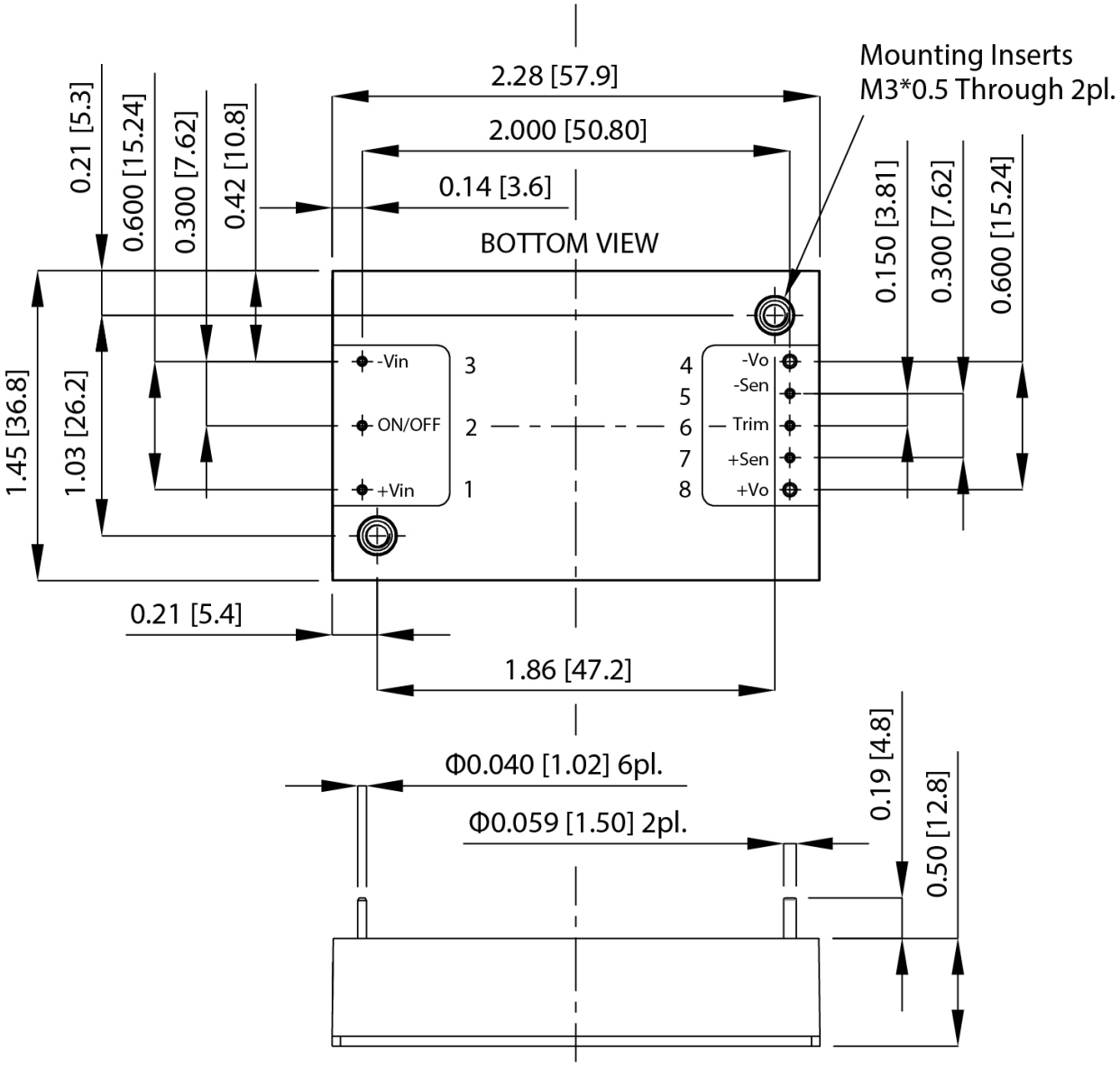
## MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | 57.9 × 36.8 × 12.8 [2.28 x 1.45 x 0.50 inch] | | | | mm |
| case material | plastic, DAP, UL 94V-0 | | | | |
| weight | | | 66 | | g |

## MECHANICAL DRAWING

units: inch [mm]
tolerances: inches: x.xx = ±0.02, x.xxx = ±0.010
mm: x.x = ±0.5, x.xx = ±0.25

| PIN Out | |
|---|---|
| PIN | Function |
| 1 | +Vin |
| 2 | on/off |
| 3 | -Vin |
| 4 | -Vo |
| 5 | Sense- |
| 6 | Trim |
| 7 | Sense+ |
| 8 | +Vo |

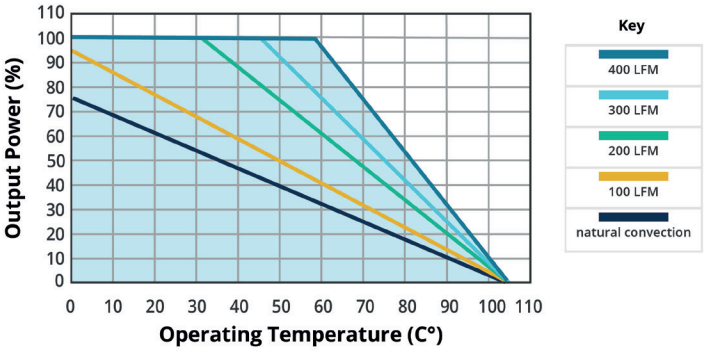




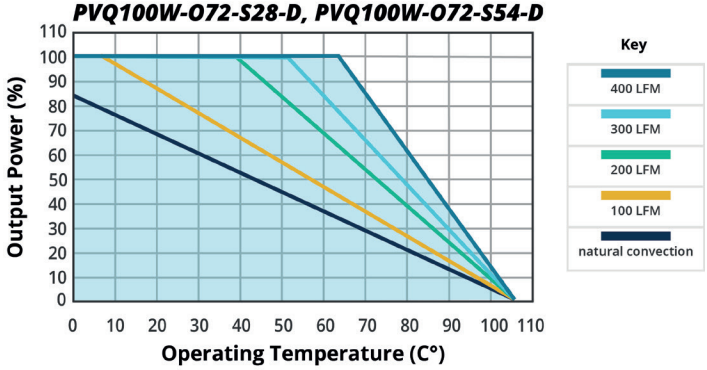

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## DERATING CURVES

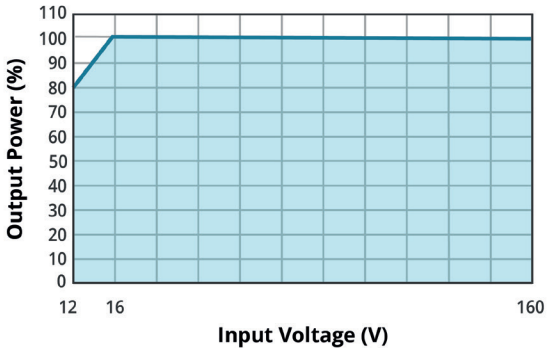
***TEMPERATURE DERATING CURVE (Vin =72 V)***
***PVQ100W-O72-S5-D, PVQ100W-O72-S12-D***




***TEMPERATURE DERATING CURVE (Vin =72 V)***
***PVQ100W-O72-S15-D, PVQ100W-O72-S24-D,***
***PVQ100W-O72-S28-D, PVQ100W-O72-S54-D***




***INPUT VOLTAGE DERATING CURVE***

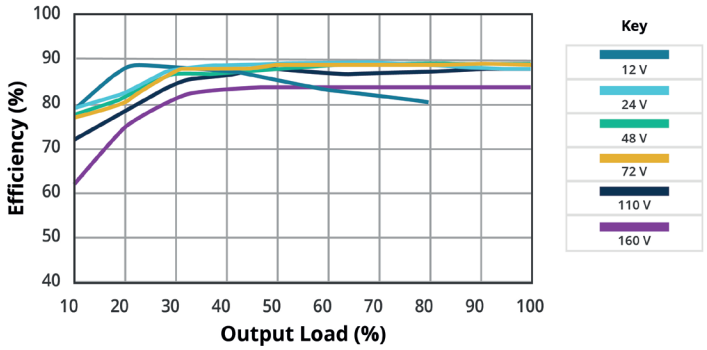




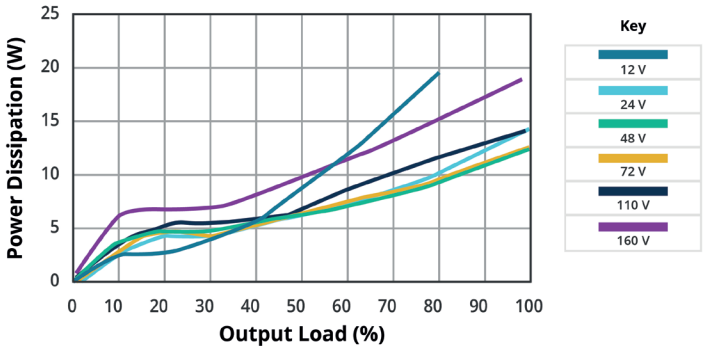

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## EFFICIENCY CURVES

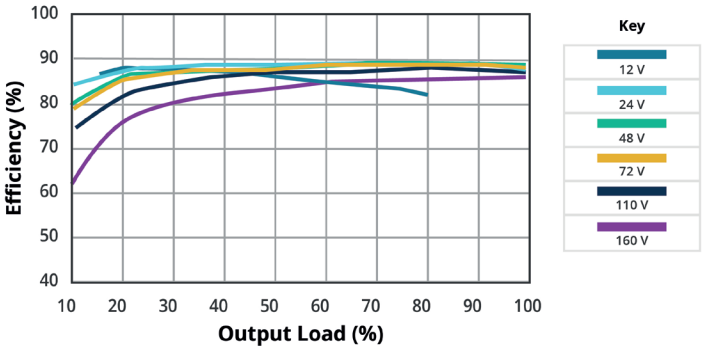
***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S5-D***



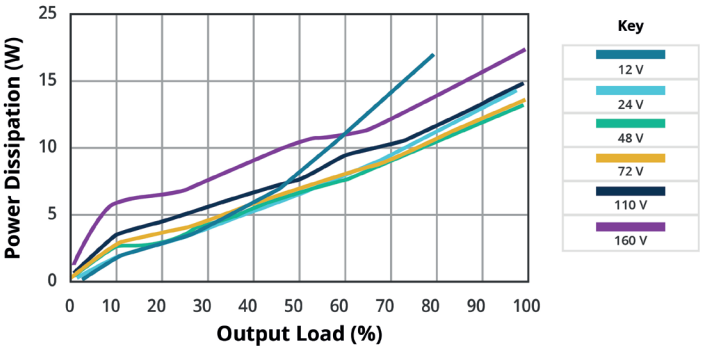

***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S5-D***



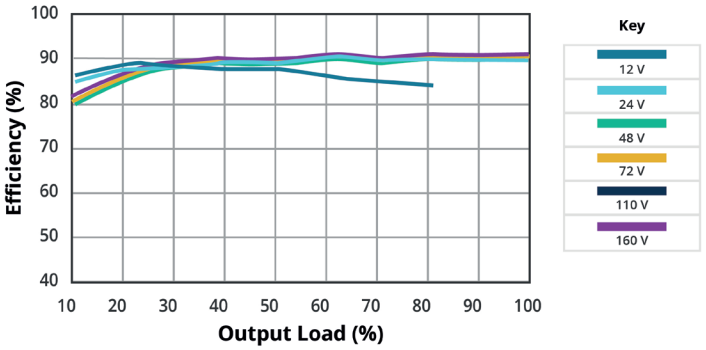

***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S12-D***



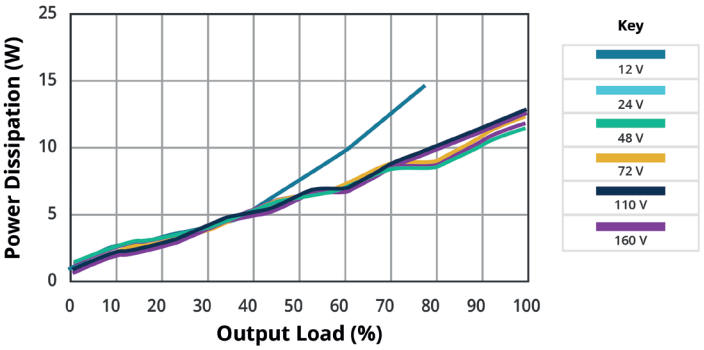

***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S12-D***




***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S15-D***




***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S15-D***

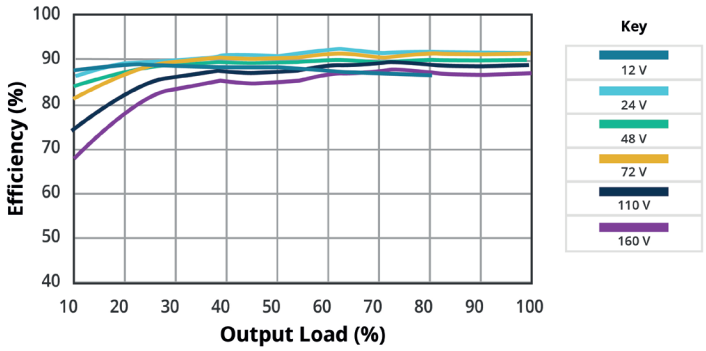




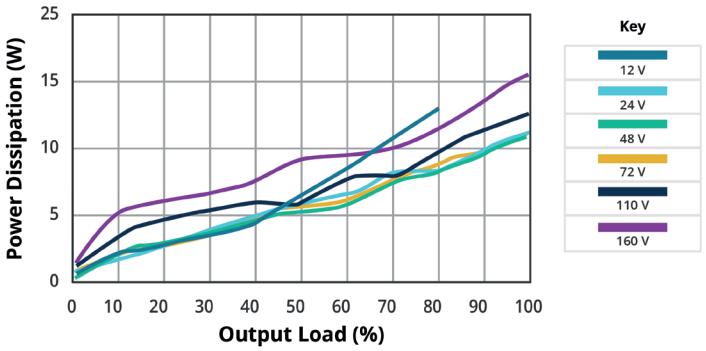

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## EFFICIENCY CURVES (CONTINUED)

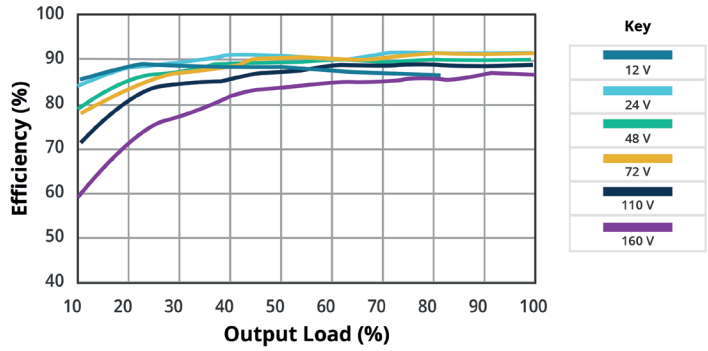
***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S24-D***



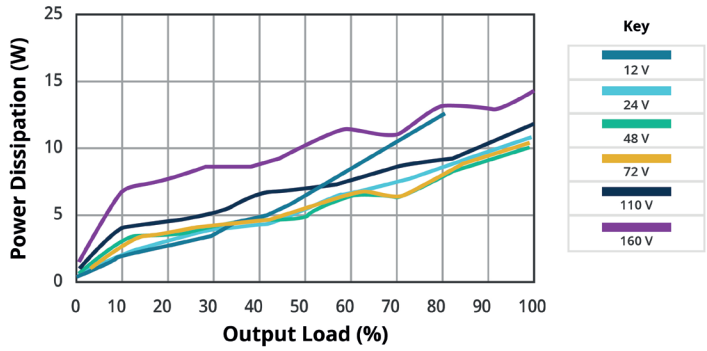

***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S24-D***



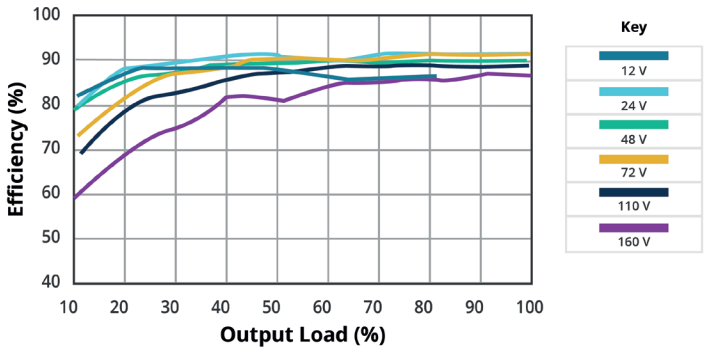

***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S28-D***



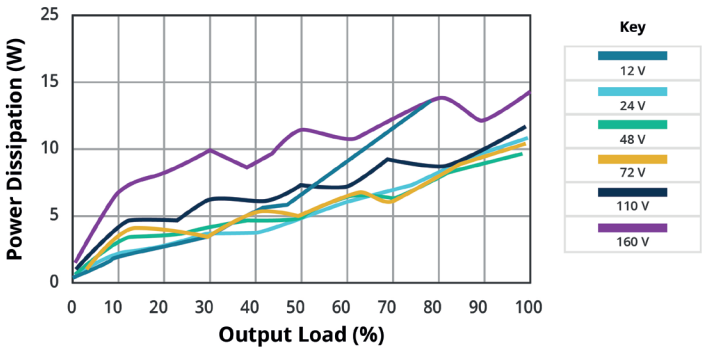

***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S28-D***




***EFFICIENCY VS OUTPUT LOAD***
***25°C***
***PVQ100W-O72-S54-D***




***POWER DISSIPATION VS OUTPUT POWER***
***25°C***
***PVQ100W-O72-S54-D***



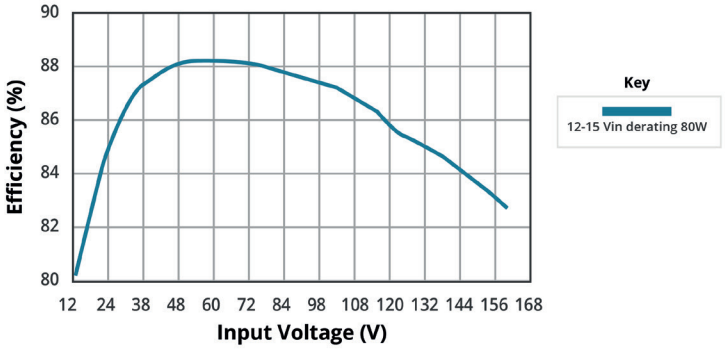



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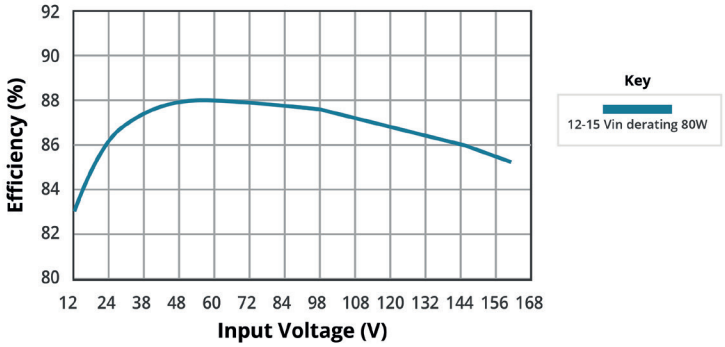
## EFFICIENCY CURVES (CONTINUED)

Efficiency measured at 100% load. At 80% load when Vin is 12 ~ 16V.

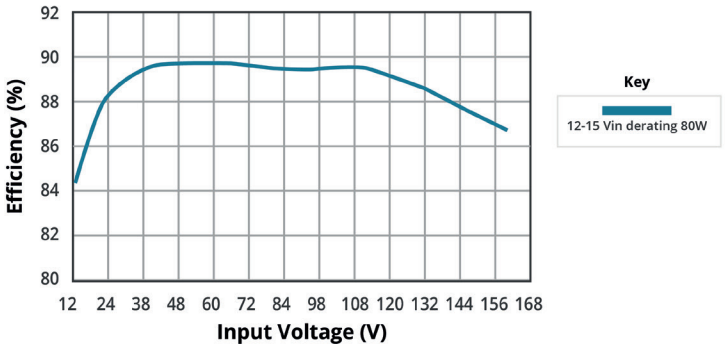
***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S5-D***



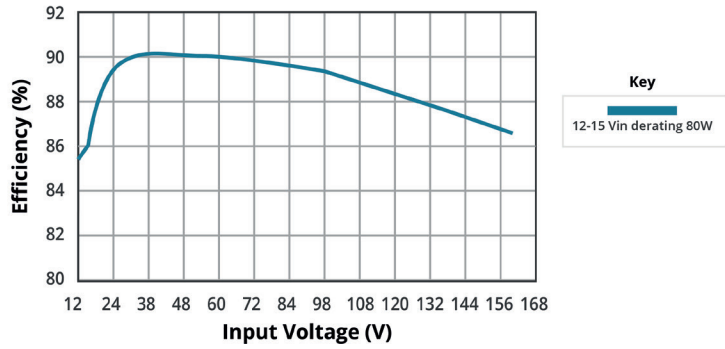

***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S12-D***



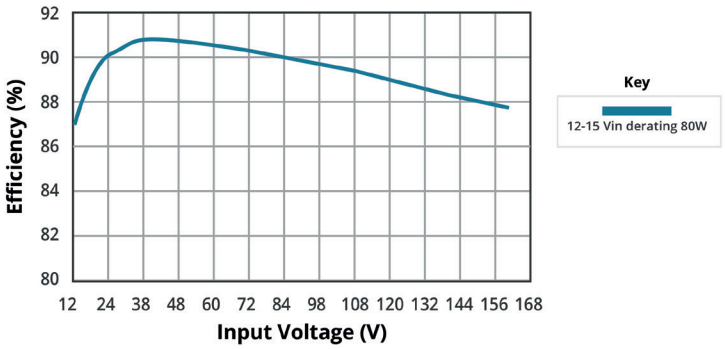

***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S15-D***



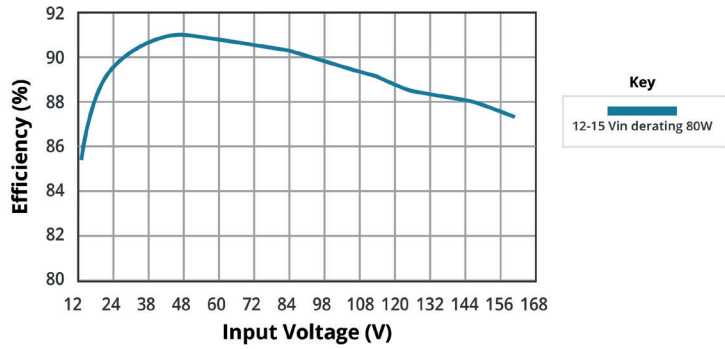

***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S24-D***




***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S28D***




***EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S54-D***






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## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 11/22/2022 |
| 1.01 | clear mounting insert option added | 12/12/2022 |
| 1.02 | PN key updated | 04/17/2023 |
| 1.03 | company address updated | 11/14/2024 |
| 1.04 | datasheet updated | 05/02/2025 |
| 1.05 | conducted immunity updated | 06/01/2026 |

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

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