

P44WG-xxxxE/Z2:1(H35)LF



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PM7-SERIES

Rev.03-2009

- ✓ 12 Watt
- ✓ 2:1 Wide Input
- ✓ 2" x 1" Case
- ✓ 1.5 - 3.5 kV DC I/O Isolation
- ✓ Regulated Output
- ✓ **Single** and **Dual** Output
- ✓ Continuous Short Circuit Prot.

The PM7 series P44WG-xxxxE/Z2:1(H35)LF is a family of cost effective 12W, single & dual output DC-DC converters with a wide input range of 2:1. These converters are encapsulated in nickel coated brass 2"x1" case with high performance features: 1500VDC up to 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation, high efficiency operation and output voltage accuracy of $\pm 1\%$ maximum.

All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

Input Specifications

| | |
|---|----------------------------|
| Voltage Range | 2:1 Wide Input (See Table) |
| Input Filter | Capacitors |
| Input Reflected Ripple Current ¹ | 35 mA pk-pk |
| Start up Time (Nom. V_{in} and constant resistive load) | 20mS, typ. |

Output Specifications

| | |
|------------------------------------|---------------------------------|
| Voltage Accuracy | $\pm 1\%$ |
| Short Circuit Protection | Indefinite (Automatic Recovery) |
| Over Current Protection | 140% of max. I _{out} |
| Line Regulation | $\pm 0.5\%$ |
| Load Regulation (10% - 100%) | $\pm 0.5\%$ |
| Ripple and Noise (20Mhz bandwidth) | 100 mV pk-pk |
| Temperature Coefficient | $\pm 0.02\% / ^\circ\text{C}$ |

General Specifications

| | |
|---|-------------------------------|
| Efficiency | See Table |
| I/O Isolation Voltage (3 sec.) | 1500 VDC (3000 VDC optional)* |
| I/O Isolation Capacitance | 470 pF, typ. |
| I/O Isolation Resistance | 1000 M Ohm |
| Switching Frequency | 200 kHz, typ. |
| Humidity | 95% rel H |
| Reliability Calculated MTBF (MIL-HDBK-217F) | > 1.121 Mhrs |

Physical Specifications

| | |
|------------------|-----------------------|
| Case Material | Nickel Coated Brass |
| Potting Material | Epoxy (UL94V-0 rated) |
| Weight | ~ 30g, typ. |

Environment Specifications

| | |
|--------------------------|---|
| Operating Temperature | -40 to +85 °C (ambient) |
| Maximum Case Temperature | 100 °C |
| Storage Temperature | -40 to +125 °C |
| Cooling | Free Air Convection |
| RoHS Conform | Soldering 260 °C, max. (1.5mm from case 10s.) |

Selection Guide

Single Output

| Order # | Input Voltage (VDC) | Input Current No Load (mA) | Input Current Full Load (mA) | Output Voltage (VDC) | Output Current Min. Load (mA) | Output Current Full Load (mA) | Efficiency (%) | Capacitor Load (uF) ² |
|----------------------|---------------------|----------------------------|------------------------------|----------------------|-------------------------------|-------------------------------|----------------|----------------------------------|
| SINGLE OUTPUT | | | | | | | | |
| P44WG-123R3E2:1LF | 9-18 | 30 | 835 | 3.3 | 240 | 2400 | 79 | 3300 |
| P44WG-1205E2:1LF | 9-18 | 30 | 1219 | 5 | 240 | 2400 | 82 | 3300 |
| P44WG-127R2E2:1LF | 9-18 | 30 | 1204 | 7.2 | 166 | 1666 | 83 | 2200 |
| P44WG-1209E2:1LF | 9-18 | 30 | 1204 | 9 | 133 | 1333 | 83 | 1000 |
| P44WG-1212E2:1LF | 9-18 | 30 | 1190 | 12 | 100 | 1000 | 84 | 1000 |
| P44WG-1215E2:1LF | 9-18 | 30 | 1190 | 15 | 80 | 800 | 84 | 680 |
| P44WG-1218E2:1LF | 9-18 | 30 | 1176 | 18 | 66 | 666 | 85 | 470 |
| P44WG-1224E2:1LF | 9-18 | 30 | 1176 | 24 | 50 | 500 | 85 | 470 |
| P44WG-243R3E2:1LF | 18-36 | 25 | 417 | 3.3 | 240 | 2400 | 79 | 3300 |
| P44WG-2405E2:1LF | 18-36 | 25 | 609 | 5 | 240 | 2400 | 82 | 3300 |
| P44WG-247R2E2:1LF | 18-36 | 25 | 602 | 7.2 | 166 | 1666 | 83 | 2200 |
| P44WG-2409E2:1LF | 18-36 | 25 | 595 | 9 | 133 | 1333 | 84 | 1000 |
| P44WG-2412E2:1LF | 18-36 | 25 | 595 | 12 | 100 | 1000 | 84 | 1000 |
| P44WG-2415E2:1LF | 18-36 | 25 | 588 | 15 | 80 | 800 | 85 | 680 |
| P44WG-2418E2:1LF | 18-36 | 25 | 588 | 18 | 66 | 666 | 85 | 470 |
| P44WG-2424E2:1LF | 18-36 | 25 | 581 | 24 | 50 | 500 | 86 | 470 |
| P44WG-483R3E2:1LF | 36-72 | 20 | 208 | 3.3 | 240 | 2400 | 79 | 3300 |
| P44WG-4805E2:1LF | 36-72 | 20 | 301 | 5 | 240 | 2400 | 83 | 3300 |
| P44WG-487R2E2:1LF | 36-72 | 20 | 301 | 7.2 | 166 | 1666 | 83 | 2200 |
| P44WG-4809E2:1LF | 36-72 | 20 | 297 | 9 | 133 | 1333 | 84 | 1000 |
| P44WG-4812E2:1LF | 36-72 | 20 | 297 | 12 | 100 | 1000 | 84 | 1000 |
| P44WG-4815E2:1LF | 36-72 | 20 | 297 | 15 | 80 | 800 | 84 | 680 |
| P44WG-4818E2:1LF | 36-72 | 20 | 294 | 18 | 66 | 666 | 85 | 470 |
| P44WG-4824E2:1LF | 36-72 | 20 | 294 | 24 | 50 | 500 | 86 | 470 |

If you need other specifications, please enquire.

*** For optional 3.5kV DC I/O Isolation, please add "H35" before LF!**

→ Example: P44WG-2409E2:1H35LF for 3.5kV

Notes:

Selection Guide

Dual Output

| Order # | Input Voltage (VDC) | Input Current No Load (mA) | Input Current Full Load (mA) | Output Voltage (VDC) | Output Current Min. Load (mA) | Output Current Full Load (mA) | Efficiency (%) | Capacitor Load (uF) ² |
|--------------------|---------------------|----------------------------|------------------------------|----------------------|-------------------------------|-------------------------------|----------------|----------------------------------|
| DUAL OUTPUT | | | | | | | | |
| P44WG-123R3Z2:1LF | 9-18 | 30 | 835 | ± 3.3 | ± 120 | ± 1200 | 79 | ± 1000 |
| P44WG-1205Z2:1LF | 9-18 | 30 | 1219 | ± 5 | ± 120 | ± 1200 | 82 | ± 1000 |
| P44WG-127R2Z2:1LF | 9-18 | 30 | 1204 | ± 7.2 | ± 83 | ± 833 | 83 | ± 680 |
| P44WG-1209Z2:1LF | 9-18 | 30 | 1190 | ± 9 | ± 66 | ± 666 | 84 | ± 470 |
| P44WG-1212Z2:1LF | 9-18 | 30 | 1190 | ± 12 | ± 50 | ± 500 | 84 | ± 470 |
| P44WG-1215Z2:1LF | 9-18 | 30 | 1176 | ± 15 | ± 40 | ± 400 | 85 | ± 330 |
| P44WG-1218Z2:1LF | 9-18 | 30 | 1176 | ± 18 | ± 33 | ± 333 | 85 | ± 220 |
| P44WG-1224Z2:1LF | 9-18 | 30 | 1176 | ± 24 | ± 25 | ± 250 | 85 | ± 220 |
| P44WG-243R3Z2:1LF | 18-36 | 25 | 417 | ± 3.3 | ± 120 | ± 1200 | 79 | ± 1000 |
| P44WG-2405Z2:1LF | 18-36 | 25 | 609 | ± 5 | ± 120 | ± 1200 | 82 | ± 1000 |
| P44WG-247R2Z2:1LF | 18-36 | 25 | 602 | ± 7.2 | ± 83 | ± 833 | 83 | ± 680 |
| P44WG-2409Z2:1LF | 18-36 | 25 | 602 | ± 9 | ± 66 | ± 666 | 83 | ± 470 |
| P44WG-2412Z2:1LF | 18-36 | 25 | 595 | ± 12 | ± 50 | ± 500 | 84 | ± 470 |
| P44WG-2415Z2:1LF | 18-36 | 25 | 595 | ± 15 | ± 40 | ± 400 | 84 | ± 330 |
| P44WG-2418Z2:1LF | 18-36 | 25 | 588 | ± 18 | ± 33 | ± 333 | 85 | ± 220 |
| P44WG-2424Z2:1LF | 18-36 | 25 | 588 | ± 24 | ± 25 | ± 250 | 85 | ± 220 |
| P44WG-483R3Z2:1LF | 36-72 | 20 | 208 | ± 3.3 | ± 120 | ± 1200 | 79 | ± 1000 |
| P44WG-4805Z2:1LF | 36-72 | 20 | 304 | ± 5 | ± 120 | ± 1200 | 82 | ± 1000 |
| P44WG-487R2Z2:1LF | 36-72 | 20 | 297 | ± 7.2 | ± 83 | ± 833 | 84 | ± 680 |
| P44WG-4809Z2:1LF | 36-72 | 20 | 297 | ± 9 | ± 66 | ± 666 | 84 | ± 470 |
| P44WG-4812Z2:1LF | 36-72 | 20 | 294 | ± 12 | ± 50 | ± 500 | 85 | ± 470 |
| P44WG-4815Z2:1LF | 36-72 | 20 | 294 | ± 15 | ± 40 | ± 400 | 85 | ± 330 |
| P44WG-4818Z2:1LF | 36-72 | 20 | 290 | ± 18 | ± 33 | ± 333 | 86 | ± 220 |
| P44WG-4824Z2:1LF | 36-72 | 20 | 290 | ± 24 | ± 25 | ± 250 | 86 | ± 220 |

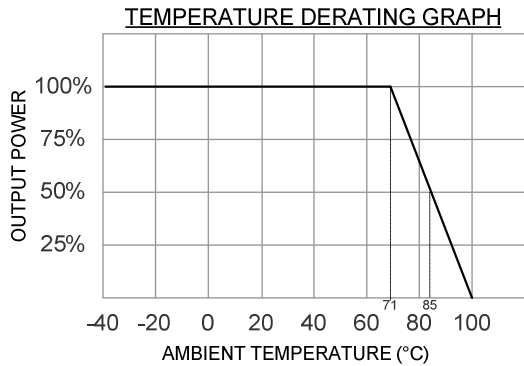
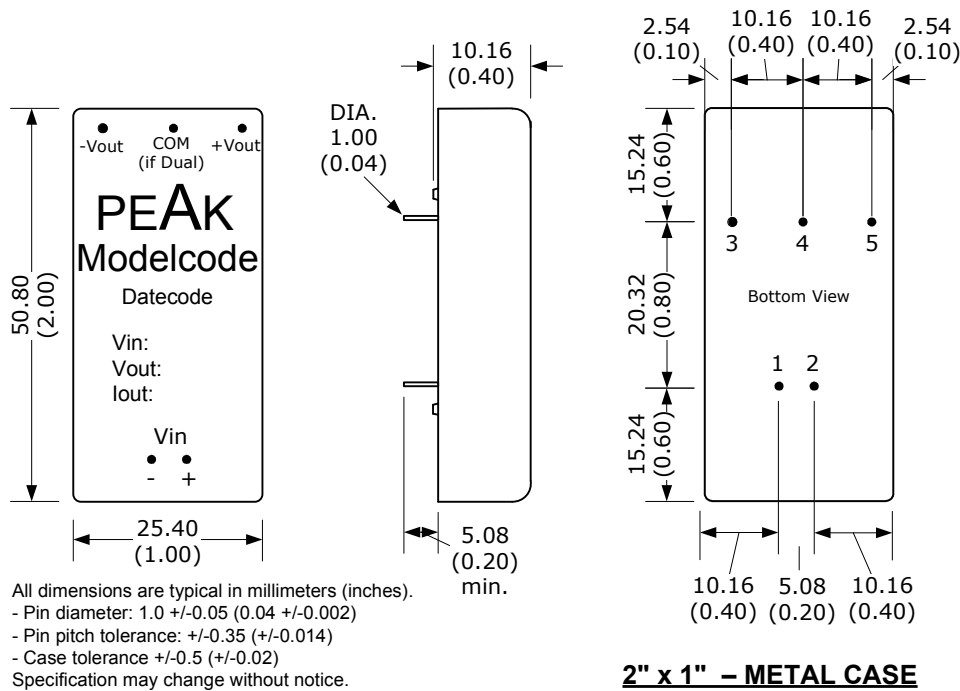
If you need other specifications, please enquire.

*** For optional 3.5kV DC I/O Isolation, please add “H35” before LF!**

→ Example: P44WG-2409Z2:1H35LF for 3.5kV

Notes:

Package / Pinning / Derating



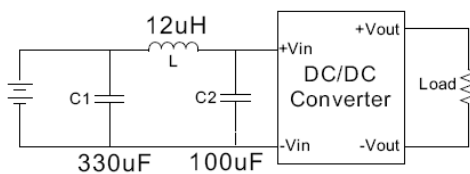
| PIN CONNECTIONS | | |
|-----------------|---------|--------|
| # | SINGLE | DUAL |
| 1 | +Vin | +Vin |
| 2 | - Vin | - Vin |
| 3 | +Vout | +Vout |
| 4 | Omitted | Common |
| 5 | - Vout | - Vout |

same Pinning for 3.5 kV Isolation

App Notes:

- ¹ = Measured Input reflected ripple current with a simulated source inductance of 12uH.
- ² = Tested by minimal Vin and constant resistive load.

- Operation under no-load conditions will not damage these devices, but they will not observe the listed specifications.
- Suggest adding input external filter (C1 , C2 , L) to meet conducted emissions (En55022 class A).



| EMC SPECIFICATIONS | | |
|--------------------|---------------------------------|--------------------|
| Radiated Emissions | EN 55022 FCC 47CFR Part 15/A | CLASS A CLASS A |
| ESD | IEC 61000-4-2 | Perf. Criteria B |
| RS | IEC 61000-4-3 | Perf. Criteria A |