

# P22TG-xxxxE/Z4:1(H35)MLF



## PMQ-SERIES

Rev.01-2009

- ✓ 5 Watt
- ✓ 4:1 Ultra Wide Input
- ✓ Regulated
- ✓ Single and Dual Output
- ✓ 1.5 to 3.5 kV DC I/O Isolation
- ✓ DIP24 Metal Case
- ✓ Continuous Short Circuit Prot.

The PMQ series P18TG-xxxxE/Z4:1(H35)MLF is a family of cost effective 5W, single & dual output DC-DC converters with a ultra wide input range of 4:1. These converters are encapsulated in DIP24 metal case with high performance features: 1500 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                               | 4:1 Ultra Wide Input |
| Input Filter                                | Pi Type              |
| Input Reflected Ripple Current <sup>1</sup> | 35 mA pk-pk          |

### Output Specifications

|                                    |   |
|------------------------------------|---|
| Voltage Accuracy                   | $\pm 1\%$   |
| Short Circuit Protection           | Indefinite (automatic recovery)                           |
| Line Regulation                    | $\pm 0.5\%$   |
| Load Regulation                    | $\pm 0.5\%$ (3.3 / $\pm 3.3V_{out}$ Models: $\pm 1.5\%$ ) |
| Ripple and Noise (20Mhz bandwidth) | 60 mV pk-pk   |
| Temperature Coefficient            | $\pm 0.02\% / ^\circ\text{C}$                             |

### General Specifications

|   |                               |
|---|-------------------------------|
| Efficiency                                  | See Table                     |
| I/O Isolation Voltage (3 sec.)              | 1500 VDC (3500 VDC optional)* |
| I/O Isolation Capacity                      | 470 pF, typ.                  |
| I/O Isolation Resistance                    | 1000 MOhm                     |
| Switching Frequency (typical)               | 266 kHz                       |
| Humidity                                    | 95% rel H                     |
| Reliability Calculated MTBF (MIL-HDBK-217F) | > 1.121 Mhrs                  |

### Physical Specifications

|                  |                       |
|------------------|-----------------------|
| Case Material    | Nickel Coated Copper  |
| Potting Material | Epoxy (UL94V-0 rated) |
| Weight           | ~ 17g, typ.           |

### Environment Specifications

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

PMQ-Series – P22TG-xxxxE/Z4:1(H35)MLF – Single and Dual Output – DIP24 - Metal Case

Specification can change without a notice – We accept no liability for any inaccuracy or printing errors.

# Selection Guide

## Single/Dual Output

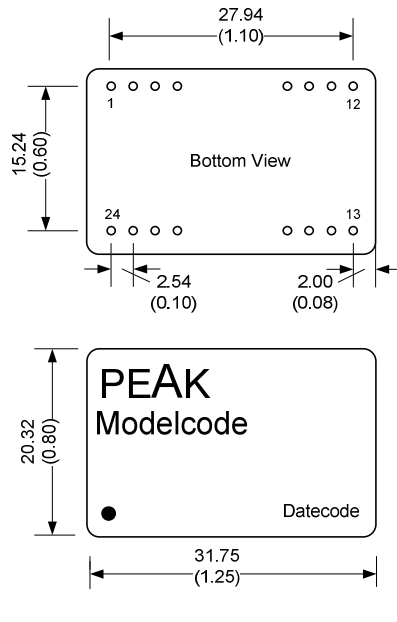
| Order #              | Input Voltage (VDC) | Input Current No Load (mA) | Input Current Full Load (mA) | Output Voltage (VDC) | Output Current Min. Load (mA) | Output Current Full Load (mA) | Efficiency (%) | Capacitor Load (uF) <sup>‡</sup> |
|----------------------|---------------------|----------------------------|------------------------------|----------------------|-------------------------------|-------------------------------|----------------|----------------------------------|
| <b>SINGLE OUTPUT</b> |                     |                            |                              |                      |                               |                               |                |                                  |
| P22TG-243R3E4:1MLF   | 9-36                | 18                         | 238.3                        | 3.3                  | 0                             | 1300                          | 75             | 1000                             |
| P22TG-2405E4:1MLF    | 9-36                | 18                         | 260.4                        | 5                    | 0                             | 1000                          | 80             | 680                              |
| P22TG-2409E4:1MLF    | 9-36                | 18                         | 257.2                        | 9                    | 0                             | 555                           | 81             | 220                              |
| P22TG-2412E4:1MLF    | 9-36                | 18                         | 257.2                        | 12                   | 0                             | 416                           | 81             | 100                              |
| P22TG-2415E4:1MLF    | 9-36                | 18                         | 254.1                        | 15                   | 0                             | 333                           | 82             | 100                              |
| P22TG-2424E4:1MLF    | 9-36                | 18                         | 260.4                        | 24                   | 0                             | 208                           | 80             | 47                               |
| P22TG-483R3E4:1MLF   | 18-72               | 15                         | 119.2                        | 3.3                  | 0                             | 1300                          | 75             | 1000                             |
| P22TG-4805E4:1MLF    | 18-72               | 15                         | 130.2                        | 5                    | 0                             | 1000                          | 80             | 680                              |
| P22TG-4809E4:1MLF    | 18-72               | 15                         | 128.6                        | 9                    | 0                             | 555                           | 81             | 220                              |
| P22TG-4812E4:1MLF    | 18-72               | 15                         | 128.6                        | 12                   | 0                             | 416                           | 81             | 100                              |
| P22TG-4815E4:1MLF    | 18-72               | 15                         | 127                          | 15                   | 0                             | 333                           | 82             | 100                              |
| P22TG-4824E4:1MLF    | 18-72               | 15                         | 130.2                        | 24                   | 0                             | 208                           | 80             | 47                               |
| <b>DUAL OUTPUT</b>   |                     |                            |                              |                      |                               |                               |                |                                  |
| P22TG-243R3Z4:1MLF   | 9-36                | 18                         | 281.5                        | ± 3.3                | 0                             | ± 757                         | 74             | ± 470                            |
| P22TG-2405Z4:1MLF    | 9-36                | 18                         | 260.4                        | ± 5                  | 0                             | ± 500                         | 80             | ± 330                            |
| P22TG-2409Z4:1MLF    | 9-36                | 18                         | 257.2                        | ± 9                  | 0                             | ± 277                         | 81             | ± 68                             |
| P22TG-2412Z4:1MLF    | 9-36                | 18                         | 257.2                        | ± 12                 | 0                             | ± 208                         | 81             | ± 47                             |
| P22TG-2415Z4:1MLF    | 9-36                | 18                         | 254.1                        | ± 15                 | 0                             | ± 166                         | 82             | ± 47                             |
| P22TG-2424Z4:1MLF    | 9-36                | 18                         | 260.4                        | ± 24                 | 0                             | ± 104                         | 80             | ± 22                             |
| P22TG-483R3Z4:1MLF   | 18-72               | 15                         | 140.7                        | ± 3.3                | 0                             | ± 757                         | 74             | ± 470                            |
| P22TG-4805Z4:1MLF    | 18-72               | 15                         | 130.2                        | ± 5                  | 0                             | ± 500                         | 80             | ± 330                            |
| P22TG-4809Z4:1MLF    | 18-72               | 15                         | 128.6                        | ± 9                  | 0                             | ± 277                         | 81             | ± 68                             |
| P22TG-4812Z4:1MLF    | 18-72               | 15                         | 128.6                        | ± 12                 | 0                             | ± 208                         | 81             | ± 47                             |
| P22TG-4815Z4:1MLF    | 18-72               | 15                         | 127                          | ± 15                 | 0                             | ± 166                         | 82             | ± 47                             |
| P22TG-4824Z4:1MLF    | 18-72               | 15                         | 130.2                        | ± 24                 | 0                             | ± 104                         | 80             | ± 22                             |

If you need other specifications, please enquire.

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

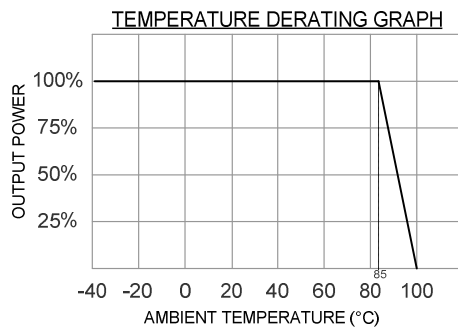
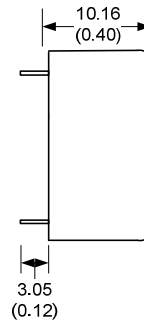
→ Example: P22TG-1205Z4:1H35MLF for 3.5kV

# Package / Pinning / Derating



All dimensions are typical in millimeters (inches).  
 - Pin diameter: 0.5 +/-0.05 (0.02 +/-0.002)  
 - Pin pitch tolerance: +/-0.35 (+/-0.014)  
 - Case tolerance +/-0.5 (+/-0.02)  
 Standard Drawing  
 For exact pinning please see connection table!  
 Specification may change without notice.

## DIP24 – METAL CASE



| PIN CONNECTIONS |              |            |              |            |
|-----------------|--------------|------------|--------------|------------|
| #               | Single 1.5kV | Dual 1.5kV | Single 3.5kV | Dual 3.5kV |
| 1               | +Vin         | +Vin       | Omitted      | Omitted    |
| 2               | N.C.         | - Vout     | - Vin        | - Vin      |
| 3               | N.C.         | Common     | - Vin        | - Vin      |
| 9               | Omitted      | Omitted    | N.C.         | Common     |
| 10              | - Vout       | Common     | Omitted      | Omitted    |
| 11              | +Vout        | +Vout      | N.C.         | - Vout     |
| 12              | - Vin        | - Vin      | Omitted      | Omitted    |
| 13              | - Vin        | - Vin      | Omitted      | Omitted    |
| 14              | +Vout        | +Vout      | +Vout        | +Vout      |
| 15              | - Vout       | Common     | Omitted      | Omitted    |
| 16              | Omitted      | Omitted    | - Vout       | Common     |
| 22              | N.C.         | Common     | +Vin         | +Vin       |
| 23              | N.C.         | - Vout     | +Vin         | +Vin       |
| 24              | +Vin         | +Vin       | Omitted      | Omitted    |

### App Notes:

- <sup>1</sup> = Measured Input reflected ripple current with a simulated source inductance of 12uH.
- <sup>2</sup> = Tested by nominal Vin and constant resistor load.