

**SERIES:** PTK10 | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- industry standard pin out
- wide 4:1 input range
- fully isolated
- over-current protection
- over-voltage protection
- six-sided EMI shielding
- constant switching frequency
- high efficiency
- compact size 2.0"x1.0"x0.4"
- 3 year warranty



| MODEL         | input<br>voltage<br>range<br>(Vdc) | output<br>voltage<br>(Vdc) | output<br>current |             | output<br>power<br>max<br>(W) | ripple <sup>1</sup><br>max<br>(mVp-p) | noise <sup>1</sup><br>max<br>(mVp-p) | efficiency<br>typ<br>(%) |
|---------------|------------------------------------|----------------------------|-------------------|-------------|-------------------------------|---------------------------------------|--------------------------------------|--------------------------|
|               |                                    |                            | min<br>(mA)       | max<br>(mA) |                               |                                       |                                      |                          |
| PTK10-Q24-S3  | 10 ~ 36                            | 3.3                        | 0.24              | 2.4         | 7.92                          | 75                                    | 75                                   | 79                       |
| PTK10-Q24-S5  | 10 ~ 36                            | 5                          | 0.2               | 2.0         | 10.0                          | 75                                    | 75                                   | 82                       |
| PTK10-Q24-S12 | 10 ~ 36                            | 12                         | 0.09              | 0.9         | 10.8                          | 120                                   | 120                                  | 83                       |
| PTK10-Q24-S15 | 10 ~ 36                            | 15                         | 0.07              | 0.7         | 10.5                          | 150                                   | 150                                  | 84                       |
| PTK10-Q24-D5  | 10 ~ 36                            | ±5                         | 0.1/0.1           | 1.0/1.0     | 10.0                          | 100                                   | 100                                  | 80                       |
| PTK10-Q24-D5A | 10 ~ 36                            | ±5                         | 0.15/0.05         | 1.5/0.5     | 10.0                          | 100                                   | 100                                  | 78                       |
| PTK10-Q24-D12 | 10 ~ 36                            | ±12                        | 0.045             | 0.45        | 10.8                          | 120                                   | 120                                  | 83                       |
| PTK10-Q24-D15 | 10 ~ 36                            | ±15                        | 0.035             | 0.35        | 8.5                           | 150                                   | 150                                  | 83                       |
| PTK10-Q48-S3  | 20 ~ 72                            | 3.3                        | 0.24              | 2.4         | 7.92                          | 75                                    | 75                                   | 78                       |
| PTK10-Q48-S5  | 20 ~ 72                            | 5                          | 0.2               | 2.0         | 10.0                          | 75                                    | 75                                   | 81                       |
| PTK10-Q48-S12 | 20 ~ 72                            | 12                         | 0.09              | 0.9         | 10.8                          | 120                                   | 120                                  | 84                       |
| PTK10-Q48-S15 | 20 ~ 72                            | 15                         | 0.07              | 0.7         | 10.5                          | 150                                   | 150                                  | 85                       |
| PTK10-Q48-D5  | 20 ~ 72                            | ±5                         | 0.1/0.1           | 1.0/1.0     | 10.0                          | 100                                   | 100                                  | 81                       |
| PTK10-Q48-D5A | 20 ~ 72                            | ±5                         | 0.15/0.05         | 1.5/0.5     | 10.0                          | 100                                   | 100                                  | 81                       |
| PTK10-Q48-D12 | 20 ~ 72                            | ±12                        | 0.045             | 0.45        | 10.8                          | 120                                   | 120                                  | 83                       |
| PTK10-Q48-D15 | 20 ~ 72                            | ±15                        | 0.035             | 0.35        | 10.5                          | 150                                   | 150                                  | 83                       |

Notes: 1. All models are also available in an extended temperature range of -40°C~85°C. For these models, append "M" to the model number, e.g. PTK10-Q48-S5M.

2. Ripple & noise measured with a 20MHz bandwidth, off a 10uF electrolytic and a 0.1uF ceramic cap in parallel at the output.

## INPUT

| parameter               | conditions/description | min | typ | max | units |
|-------------------------|------------------------|-----|-----|-----|-------|
| operating input voltage |                        | 10  | 24  | 36  | Vdc   |
|                         |                        | 20  | 48  | 72  | Vdc   |

## OUTPUT

| parameter                                         | conditions/description                      | min | typ  | max   | units |
|---------------------------------------------------|---------------------------------------------|-----|------|-------|-------|
| line regulation<br>(low line to high line)        | single output                               |     | ±0.5 |       | %     |
|                                                   | dual output                                 |     | ±1.0 |       | %     |
| load regulation<br>measured from 10% to full load | single output models - no load to full load |     | ±1.0 |       | %     |
|                                                   | dual output models - balanced loads         |     | ±2.5 |       | %     |
| voltage accuracy                                  | positive, refer to recommended circuit      |     | ±1   | ±3    | %     |
|                                                   | negative, refer to recommended circuit      |     | ±3   | ±5    | %     |
| switching frequency                               | constant                                    |     | 300  |       | kHz   |
| temperature coefficient                           |                                             |     |      | ±0.03 | %/°C  |

## PROTECTIONS

| parameter    | conditions/description                      | min | typ | max | units |
|--------------|---------------------------------------------|-----|-----|-----|-------|
| over-current | continuous, automatic recovery <sup>4</sup> | 105 |     | 135 | %     |
| over-voltage | internal protection zener <sup>4</sup>      | 110 |     | 140 | %     |

Notes: 4. continuous operation in a protected state may compromise long-term reliability.

## SAFETY AND COMPLIANCE

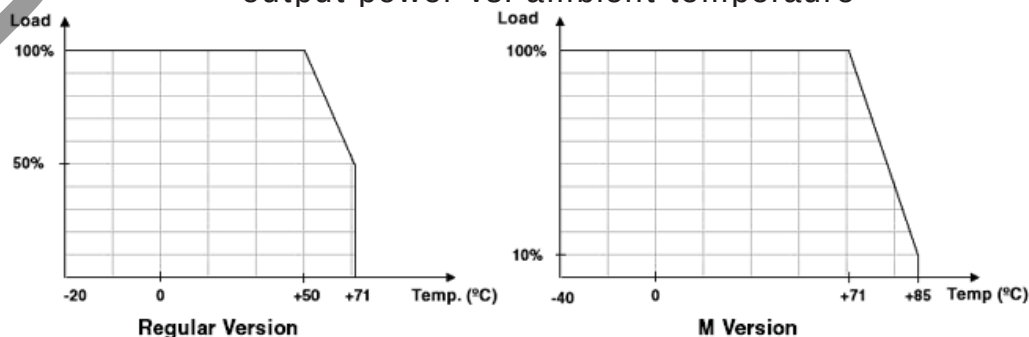
| parameter             | conditions/description                | min     | typ | max | units |
|-----------------------|---------------------------------------|---------|-----|-----|-------|
| efficiency            | typical at full load                  | 77      |     | 83  | %     |
| isolation voltage     | input/case, input/output, output/case | 500     |     |     | Vac   |
| insulation resistance | at 500 Vdc                            | 100     |     |     | MΩ    |
| RoHS compliant        | yes                                   |         |     |     |       |
| MTBF                  | MIL-HDBK-217F                         | 580,000 |     |     | hours |

## ENVIRONMENTAL

| parameter                  | conditions/description              | min | typ | max | units |
|----------------------------|-------------------------------------|-----|-----|-----|-------|
| case operating temperature | regular models - see derating curve | -20 |     | 71  | °C    |
|                            | extended temperature models         | -40 |     | 85  | °C    |
| storage temperature        |                                     | -40 |     | 105 | °C    |
| storage humidity           | non-condensing                      | 5   |     | 95  | %     |
| temperature rise           | 100% load                           |     | 40  |     | °C    |
| lead temperature           | 1.5 mm from the case for 10 seconds |     |     | 300 | °C    |

## DERATING CURVES

output power vs. ambient temperature



## MECHANICAL

| parameter     | conditions/description                        | min | typ | max | units |
|---------------|-----------------------------------------------|-----|-----|-----|-------|
| dimensions    | 2.0 x 1.0 x 0.4 inch (50.8 x 25.4 x 10.16 mm) |     |     |     |       |
| case material | Zn                                            |     |     |     |       |
| weight        |                                               |     | 40  |     | g     |

## MECHANICAL DRAWING

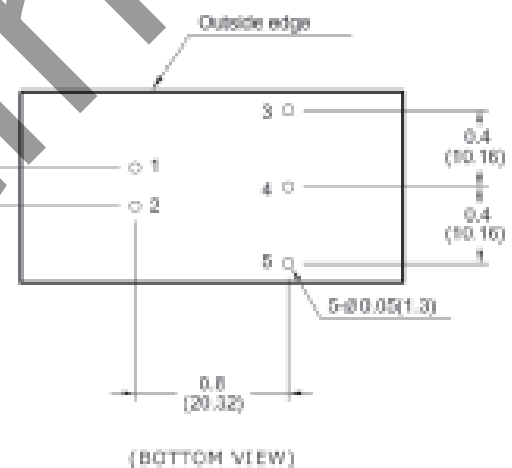
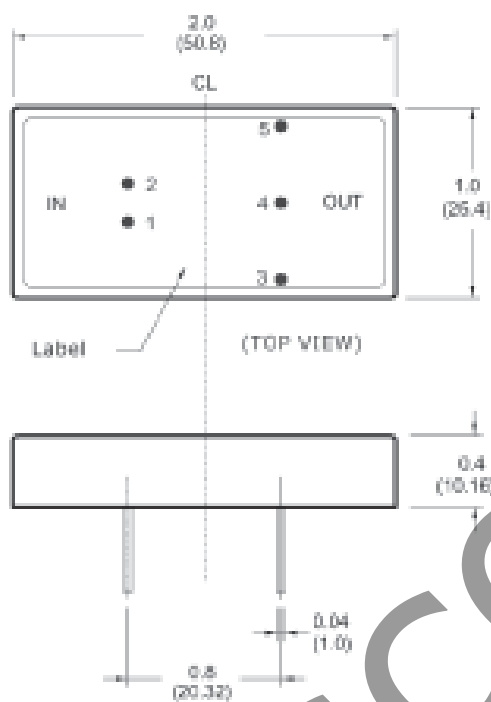
units: inches (mm)

### Single Output

1. +Vin
2. -Vin
3. +Vout
4. No pin
5. -Vout

### Dual Output

1. +Vin
2. -Vin
3. +Vout
4. Com
5. -Vout



## PIN Definitions

- +Vin: Input positive terminal
- Vin: Input negative terminal
- CNT: Remote On/Off control of output voltage. Referenced to -Vin
- +Vout: Main output positive terminal
- Vout: Output negative terminal
- +Vaux: Positive auxiliary output
- Vaux: Negative auxiliary output
- Com: Common node for dual- or triple-output models
- Trim: For trimming output voltage on single- or dual-output models

## REVISION HISTORY

| rev. | description                | date       |
|------|----------------------------|------------|
| 1.0  | initial release            | 07/07/2011 |
| 1.01 | updated mechanical drawing | 03/27/2012 |
| 1.02 | discontinued               | 09/28/2012 |

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

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