

Features

- ◆ Very high power density:
50 W in 1" x 2" x 0.4" package
- ◆ Wide 4:1 input range
- ◆ Excellent efficiency up to 92 %
- ◆ Operating temperature range
-40°C to +80°C
- ◆ Protection against over-temperature
- ◆ No minimum load required
- ◆ Output voltage adjustable
- ◆ Remote On/Off
- ◆ I/O isolation 1500 VDC
- ◆ 3-year product warranty



The TEN 50WI Series is a range of isolated high performance DC/DC converter modules. With a very high efficiency of up to 92% and the use of highest reliable components these 50 W converters can be packed into the standard 1.0" x 2.0" casing. The 10 models have a wide 4:1 input voltage range and a tight output voltage regulation. They do not need a minimum load and offer a high efficiency also at low load conditions. The output voltage is adjustable by external resistor. Remote On/Off and protection against overload and short circuit are standard features of these converters.

Typical applications are in mobile equipment, instrumentation, distributed power architectures in communication and industrial electronics and everywhere where space on the PCB is critical.

Models

| Order code | Input voltage range | Output voltage | Output current max. | Efficiency |
|---------------|---------------------------------|----------------|---------------------|------------|
| TEN 50-2410WI | 9 – 36 VDC (nominal 24 VDC) | 3.3 VDC | 10'000 mA | 90 % |
| TEN 50-2411WI | | 5.0 VDC | 10'000 mA | 91 % |
| TEN 50-2412WI | | 12 VDC | 4'170 mA | 92 % |
| TEN 50-2413WI | | 15 VDC | 3'330 mA | 92 % |
| TEN 50-2415WI | | 24 VDC | 2'080 mA | 91 % |
| TEN 50-4810WI | 18 – 75 VDC (nominal 48 VDC) | 3.3 VDC | 10'000 mA | 90 % |
| TEN 50-4811WI | | 5.0 VDC | 10'000 mA | 91 % |
| TEN 50-4812WI | | 12 VDC | 4'170 mA | 92 % |
| TEN 50-4813WI | | 15 VDC | 3'330 mA | 92 % |
| TEN 50-4815WI | | 24 VDC | 2'080 mA | 91 % |

Input Specifications

| | |
|--|--|
| Input current at no load (nominal input voltage) | 24 Vin models: 80 mA typ. 48 Vin models: 50 mA typ. |
| Recommended input fuse (slow blow) | 24 Vin models: 1000 mA 48 Vin models: 500 mA |
| Surge voltage (100 msec. max.) | 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Reflected input ripple current | 24Vin models: 40 mA typ. 48Vin models: 30 mA typ. |
| Conducted noise (input) | EN 55022 class A, FCC part 15 level A with external LC see application note |
| Start-up voltage / under voltage shut down | 24 Vin models: 9 VDC max./ 7.5 VDC typ. 48 Vin models: 18 VDC max./ 16 VDC typ. |
| EMC immunity | <ul style="list-style-type: none"> - ESD (electrostatic discharge) EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A - Radiated immunity EN 61000-4-3, 10 V/m, perf. criteria A - Fast transient / surge (with external input capacitor) EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A Nippon chemi-con KY 220 µF, 100 V, ESR 48 mOhm - Conducted immunity EN 61000-4-6, 10 Vrms, perf. criteria A |

Output Specifications

| | |
|---|--|
| Voltage set accuracy | ±1.0 % max. |
| Output voltage adjustment range | 24 VDC models: +20 / -10 % other models: ±10 % consider max. power at increased voltage for resistor values see application note |
| Regulation | <ul style="list-style-type: none"> - Input variation Vin min. to Vin max. 0.5 % max. - Load variation 0 – 100 % 0.5 % max. |
| Minimum load | not required |
| Temperature coefficient | ±0.02 %/K |
| Ripple and noise (20 MHz Bandwidth) | 3.3 & 5.0 VDC models: 100 mVpk-pk. typ. other models: 150 mVpk-pk typ. with 1µF MLCC and a 10µF tantalum capacitor |
| Transient response (alignment to 1% at load step change 75% to 100%) | 250 µs typ. |
| Output current limitation | at 150% of Iout max. |
| Short circuit protection | hiccup mode, automatic recovery |
| Capacitive load | <ul style="list-style-type: none"> 3.3 VDC models: 26'000 µF max. 5.0 VDC models: 17'000 µF max. 12.0 VDC models: 3'000 µF max. 15.0 VDC models: 2'000 µF max. 24.0 VDC models: 750 µF max. |

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

General Specifications

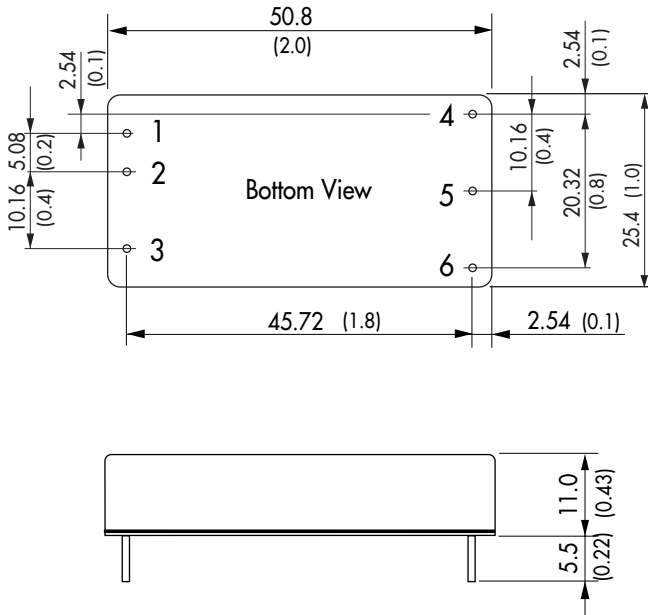
| | | |
|---|--|--|
| Temperature ranges | <ul style="list-style-type: none"> - Operating (natural convection 20 LFM) - Operating with heat sink (natural convection 20 LFM) - Case temperature - Storage | <ul style="list-style-type: none"> -40°C to +80°C (with derating) -40°C to +85°C (with derating) +105°C max. -50°C to +125°C |
| Load derating (natural convection 20 LFM, typical values over series) | <ul style="list-style-type: none"> - without heat sink - with heat sink | <ul style="list-style-type: none"> 2.0 %/K above +55°C 2.5 %/K above +65°C see application note for particular models |
| Thermal impedance | <ul style="list-style-type: none"> - Natural convection 20 LFM - Natural convection 20 LFM with heatsink | <ul style="list-style-type: none"> 12°C/W 10°C/W |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) | | >230'900 h |
| Isolation voltage (60 sec.) | - Input/Output | 1500 VDC |
| Isolation capacitance | - Input/Output | 2200 pF max. (100 kHz, 1 V) |
| Isolation resistance | - Input/Output | >1000 Mohm (500 VDC) |
| Switching frequency | | 285 kHz typ. |
| Remote On/Off | <ul style="list-style-type: none"> - On: - Off: - Off idle current: | <ul style="list-style-type: none"> 3.5 to 12 VDC to -Vin or open circuit. 0 to +1.2 VDC or short circuit to -Vin 2.5 mA typ. |
| Safety standards | | CAN/CSA-C22.2 No 60950-1-07, 2nd ed; A1:2011 ANSI/UL No. 60950-1, 2nd ed.; A1:2011, IEC 60950-1:2005 (2nd edition); Am 1:2009 EN 60950-1:2006/A11:2009/A1:2010/12:2011 www.tracopower.com/overview/ten50wi - Certification documents |

Physical Specifications

| | | |
|--------------------------|---|--|
| Casing material | | aluminium alloy, 6-side shielded, insulating baseplate |
| Potting material | | epoxy (UL 94V-0 rated) |
| Weight | | 34 g (1.05 oz) |
| Soldering temperature | | max. 260°C / 10 sec. (1.5 mm from casing) |
| Environmental compliance | <ul style="list-style-type: none"> - Reach - RoHS | www.tracopower.com/overview/ten50wi directive 2011/65/EU |

Application note: www.tracopower.com/products/ten50wi-application.pdf

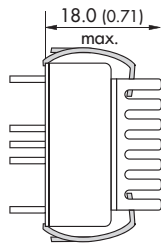
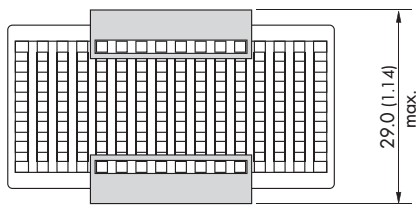
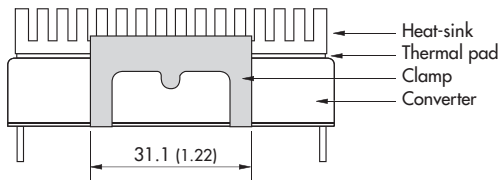
Outline Dimensions



| Pin-Out | |
|---------|---------------|
| Pin | Single |
| 1 | +Vin (Vcc) |
| 2 | -Vin (GND) |
| 3 | Remote On/Off |
| 4 | +Vout |
| 5 | -Vout |
| 6 | Trim |

Dimensions in [mm], () = Inch
 Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
 Pin pitch tolerance: ±0.13 (±0.005)
 Case tolerances: ±0.25 (±0.01)

Heat-sink TEN-HS4 (optional)



Order code: TEN-HS4

(cont.: heat-sink, thermal pad, 2 clamps)

Material: Aluminum

Finish: Anodic treatment (black)

Weight: 9 g (0.31oz) without converter

Thermal impedance after assembling: 10 K/W

Note:

Before attaching the heatsink, the product label on converter has to be removed for optimal performance.

For volume orders we can supply the converters with heatsink already mounted. Please contact us for a relative quotation.



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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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