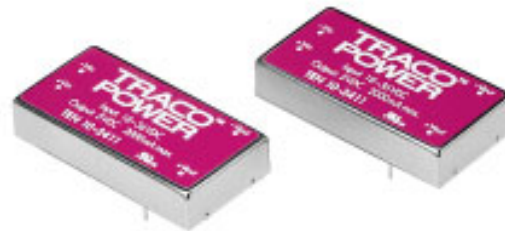


Features

- Wide 2 : 1 Input Range
- High Power Density
- Operating Temp. Range
- 40°C to +71°C
- Indefinite Short-Circuit Protection
- I/O-Isolation 1500 VDC
- Input Filter meets EN 55022, Class A
and FCC, Level A without external
Components
- Industry Standard Pinout
- Shielded Metal Case with
insulated Baseplate
- High Reliability, MTBF >1 Mio. h
- 3 Year Product Warranty



The TEN 10 series of DC/DC converters, comprising 24 different models, has been designed for a wide range of applications including communications, industrial systems and battery powered equipments. Full SMD-design with use of ceramic chip capacitors guarantees a high reliability and a long lifetime. Other features of this converters are internal filter to meet EN 55022, class A and FCC, level A and a high efficiency.

| Models | | | | |
|-------------|---------------------|----------------|---------------------|-----------------|
| Ordercode | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
| TEN 10-1210 | 9 – 18 VDC | 3,3 VDC | 2'400 mA | 72 % |
| TEN 10-1211 | | 5 VDC | 2'000 mA | 77 % |
| TEN 10-1212 | | 12 VDC | 830 mA | 80 % |
| TEN 10-1213 | | 15 VDC | 670 mA | 80 % |
| TEN 10-1215 | | 24 VDC | 415 mA | 81 % |
| TEN 10-1221 | | ± 5 VDC | ± 1'000 mA | 78 % |
| TEN 10-1222 | | ± 12 VDC | ± 415 mA | 81 % |
| TEN 10-1223 | | ± 15 VDC | ± 330 mA | 80 % |
| TEN 10-2410 | 18 – 36 VDC | 3,3 VDC | 2'400 mA | 76 % |
| TEN 10-2411 | | 5 VDC | 2'000 mA | 78 % |
| TEN 10-2412 | | 12 VDC | 830 mA | 82 % |
| TEN 10-2413 | | 15 VDC | 670 mA | 82 % |
| TEN 10-2415 | | 24 VDC | 415 mA | 83 % |
| TEN 10-2421 | | ± 5 VDC | ± 1'000 mA | 80 % |
| TEN 10-2422 | | ± 12 VDC | ± 415 mA | 82 % |
| TEN 10-2423 | | ± 15 VDC | ± 330 mA | 82 % |
| TEN 10-4810 | 36 – 75 VDC | 3,3 VDC | 2'400 mA | 76 % |
| TEN 10-4811 | | 5 VDC | 2'000 mA | 80 % |
| TEN 10-4812 | | 12 VDC | 830 mA | 82 % |
| TEN 10-4813 | | 15 VDC | 670 mA | 83 % |
| TEN 10-4815 | | 24 VDC | 415 mA | 83 % |
| TEN 10-4821 | | ± 5 VDC | ± 1'000 mA | 81 % |
| TEN 10-4822 | | ± 12 VDC | ± 415 mA | 83 % |
| TEN 10-4823 | | ± 15 VDC | ± 330 mA | 83 % |

Input Specifications

| | | |
|---|------------------------------|--|
| Input current (no load) | 12 Vin models | 30 mA typ. |
| | 24 Vin models | 20 mA typ. |
| | 48 Vin models | 10 mA typ. |
| Input current (full load) | 12 Vin; 3.3 Vout models: | 915 mA typ. |
| | 12 Vin; 5 & ±5 Vout models: | 1080 mA typ. |
| | 12 Vin; other output models: | 1045 mA typ. |
| | 24 Vin; 3.3 Vout models: | 435 mA typ. |
| | 24 Vin; 5 & ±5 Vout models: | 530 mA typ. |
| | 24 Vin; other output models: | 510 mA typ. |
| | 48 Vin; 3.3 Vout models: | 215 mA typ. |
| | 48 Vin; 5 & ±5 Vout models: | 260 mA typ. |
| | 48 Vin; other output models: | 250 mA typ. |
| Start-up voltage / under voltage shut down | 12 Vin models | 8.5 VDC / 8 VDC |
| | 24 Vin models | 16.5 VDC / 16 VDC |
| | 48 Vin models | 32.5 VDC / 32 VDC |
| Surge voltage (1 sec. max.) | 12 Vin models | 25 V max. |
| | 24 Vin models | 50 V max.. |
| | 48 Vin models | 100 V max. |
| Reverse voltage protection | | 1.0 A max. |
| Conducted noise (input) | | EN 55022 level A, FCC part 15, level A |

Output Specifications

| | | |
|---|------------------------------------|--------------------------------------|
| Voltage set accuracy | | ± 1 % |
| Regulation – Input variation Vin min. to Vin max. | | ± 0.3 % max. |
| | – Load variation 10 – 90 % | |
| | – single output models | ± 0.5 % max. |
| | – dual output models balanced load | ± 1 % max. |
| – dual output models unbalanced load | | ± 3 % max. |
| Ripple and noise (20 MHz Bandwidth) | | 50 mVpk-pk max. |
| Temperature coefficient | | ± 0.02 % / K |
| Output current limitation | | >110% of Iout max., constant current |
| Short circuit protection | | indefinite (automatic recovery) |
| Capacitive load | – single output models | 2200 µF max. |
| | – dual output models | 470 µF max. |

General Specifications

| | | |
|---|------------------------|--|
| Temperature ranges | – Operating | –40°C to +85°C (derating 3.3%/°K above 70°C) |
| | – Case temperature | +100 °C max. |
| | – Storage | –40 °C to +125 °C |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217 E) | | >1 Mio. h @ + 25 °C |
| Isolation voltage | Input/Output | 1'500 VDC |
| Isolation capacity | Input/Output | 120 pF typ |
| Isolation resistance | Input/Output (500 VDC) | > 1'000 M Ohm |

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

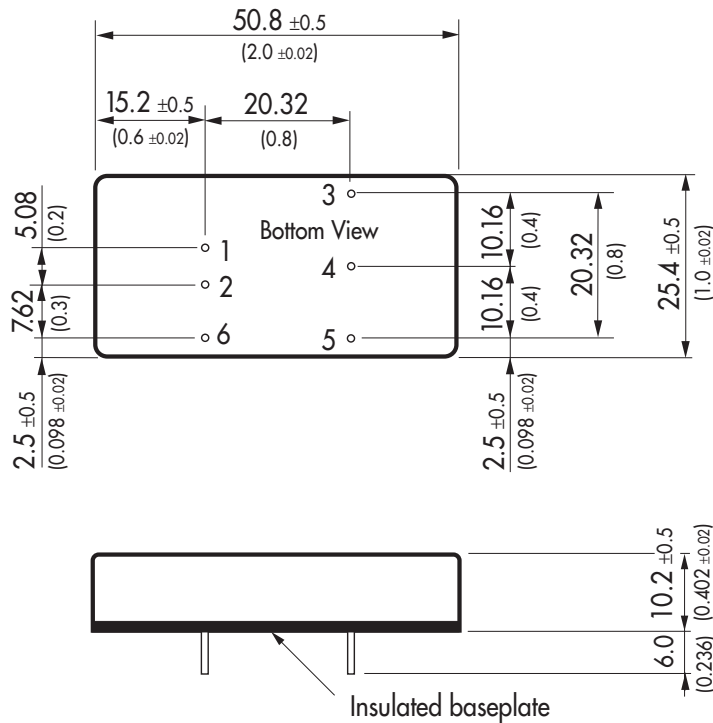
General Specifications

| | |
|-----------------------------|---|
| Switching frequency (fixed) | 300 kHz typ. (Pulse width modulation PWM) |
| Safety standards | UL 1950, EN 60950, IEC 60950 Compliance up to 60 VDC input voltage(SELV limit) |
| Safety approvals | UL /cUL File E188913 |

Physical Specifications

| | |
|-----------------------|-------------------------------------|
| Case material | Steel chrome-nickel plated |
| Baseplate | Epoxy |
| Potting material | Silicon rubber TES (UL 94V-0 rated) |
| Weight | 30 g (1.2 oz) |
| Soldering temperature | max. 265 °C / 10 sec. |

Outline Dimensions mm (inches)



| Pin-Out | | |
|---------|----------------------|----------------------|
| Pin | Single | Dual |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | +Vout | +Vout |
| 4 | No pin | Common |
| 5 | -Vout | -Vout |
| 6 | Case ground (option) | Case ground (option) |

Pin diameter \varnothing 1.0 ±0.05 (0.039 ±0.002)

Specifications can be changed any time without notice.