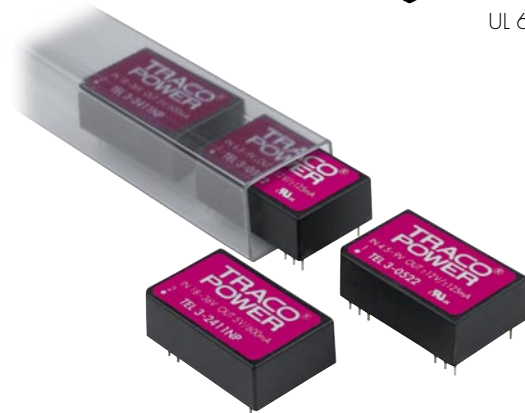




Features

- ◆ Wide 2:1 and 3:1 Input Range
- ◆ High Efficiency up to 81%
- ◆ DIL-24 Plastic Package
- ◆ Indefinite Short-Circuit Protection
- ◆ I/O Isolation 1500 VDC
- ◆ Available with Industry Standard Pinout (NP)
- ◆ Operating Temp. Range
-25°C to +75°C
- ◆ 3 Year Product Warranty



The TEL 3 series is a range of isolated 3 Watt converters in DIL-24 package offering wide 2:1 and 3:1 input voltage ranges. Further features are high efficiency which allows operation temperature up to 75°C at full load and low output noise. This product series provides an economical solution for many cost critical applications in industrial and consumer electronics.

| Models | | | | |
|-------------------|---------------------|----------------|---------------------|-----------------|
| Ordercode | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
| * TEL 3-0511 (NP) | 4.5 – 9.0 VDC | 5 VDC | 600 mA | 70 % |
| * TEL 3-0512 (NP) | | 12 VDC | 250 mA | 74 % |
| TEL 3-0513 | | 15 VDC | 200 mA | 74 % |
| * TEL 3-0522 (NP) | | ±12 VDC | ± 125 mA | 74 % |
| * TEL 3-0523 (NP) | | ±15 VDC | ± 100 mA | 74 % |
| * TEL 3-1211 (NP) | 9 – 18 VDC | 5 VDC | 600 mA | 76 % |
| * TEL 3-1212 (NP) | | 12 VDC | 250 mA | 80 % |
| TEL 3-1213 | | 15 VDC | 200 mA | 80 % |
| * TEL 3-1222 (NP) | | ±12 VDC | ± 125 mA | 80 % |
| * TEL 3-1223 (NP) | | ±15 VDC | ± 100 mA | 80 % |
| TEL 3-2011 | 10 – 30 VDC | 5 VDC | 600 mA | 76 % |
| TEL 3-2012 | | 12 VDC | 250 mA | 80 % |
| TEL 3-2013 | | 15 VDC | 200 mA | 80 % |
| TEL 3-2022 | | ±12 VDC | ± 125 mA | 80 % |
| TEL 3-2023 | | ±15 VDC | ± 100 mA | 80 % |
| * TEL 3-2411 (NP) | 18 – 36 VDC | 5 VDC | 600 mA | 77 % |
| * TEL 3-2412 (NP) | | 12 VDC | 250 mA | 81 % |
| TEL 3-2413 | | 15 VDC | 200 mA | 81 % |
| * TEL 3-2422 (NP) | | ±12 VDC | ± 125 mA | 81 % |
| * TEL 3-2423 (NP) | | ±15 VDC | ± 100 mA | 81 % |
| TEL 3-4811 | 36 – 75 VDC | 5 VDC | 600 mA | 77 % |
| TEL 3-4812 | | 12 VDC | 250 mA | 81 % |
| TEL 3-4813 | | 15 VDC | 200 mA | 81 % |
| TEL 3-4822 | | ±12 VDC | ± 125 mA | 81 % |
| TEL 3-4823 | | ±15 VDC | ± 100 mA | 81 % |

* suffix NP (Example: TEL 3-2411NP): models available with Industry Standard Pinout

Input Specifications

| | | |
|-----------------------------|---------------|-------------|
| Input current (no load) | 5 Vin models | 40 mA typ. |
| | 12 Vin models | 20 mA typ. |
| | 20 Vin models | 15 mA typ. |
| | 24 Vin models | 5 mA typ. |
| | 48 Vin models | 3 mA typ. |
| Input current (full load) | 5 Vin models | 820 mA typ. |
| | 12 Vin models | 320 mA typ. |
| | 20 Vin models | 190 mA typ. |
| | 24 Vin models | 155 mA typ. |
| | 48 Vin models | 80 mA typ. |
| Surge voltage (1 sec. max.) | 5 Vin models | 11 VDC |
| | 12 Vin models | 25 VDC |
| | 20 Vin models | 50 VDC |
| | 24 Vin models | 50 VDC |
| | 48 Vin models | 100 VDC |
| Reverse voltage protection | | 1.0 A max. |

Output Specifications

| | | |
|-------------------------------------|--|------------------------------------|
| Voltage set accuracy | | ± 1 % |
| Regulation | – Input variation Vin min. to Vin max. | 0.5 % max. |
| | – Load variation 10 – 100 % | |
| | single output models | 0.5 % max. |
| | dual output models balanced load | 1.0 % max. |
| | dual output models unbalanced load | 2.0 % max |
| Ripple and noise (20 MHz Bandwidth) | | <60 mVpk-pk typ. |
| Temperature coefficient | | ± 0.02 %/°K |
| Output current limitation | | > 110% Iout max., constant current |
| Short circuit protection | | indefinite (automatic recovery) |
| Capacitive load | single output models | 2000 µF max. |
| | dual output models | 1000 µF max. |

General Specifications

| | | |
|--|--------------------------|---|
| Temperature ranges | – Operating | – 25 °C ... + 75 °C |
| | – Case | + 95 °C max. |
| | – Storage | – 40 °C ... + 125 °C |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217E ground benign) | | >1 Mio. h @ + 25 °C |
| Isolation voltage (60 sec) | – Input/Output/Case | 1500 VDC |
| Isolation capacity | – Input/Output | 500 pF typ |
| Isolation resistance | – Input/Output (500 VDC) | > 1'000 M Ohm |
| Switching frequency | | 300 kHz typ. (Pulse frequency modulation PFM) |
| Safety standards | | UL 60950-1, EN 60950-1, IEC 60950-1 Compliance up to 60 VDC input voltage (SELV limit) |
| Safety approvals | | CSA File No. 226037 (-NP models pending) http://directories.csa-international.org |

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

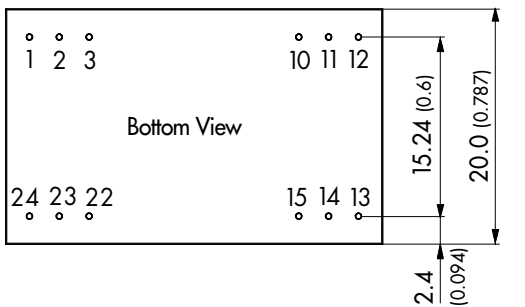
Physical Specifications

| | |
|-----------------------|------------------------------|
| Case material | non conductive black plastic |
| Potting material | epoxy (UL94V-0 rated) |
| Weight | 12 g (0.42 oz) |
| Soldering temperature | max. 265 °C / 10 sec. |

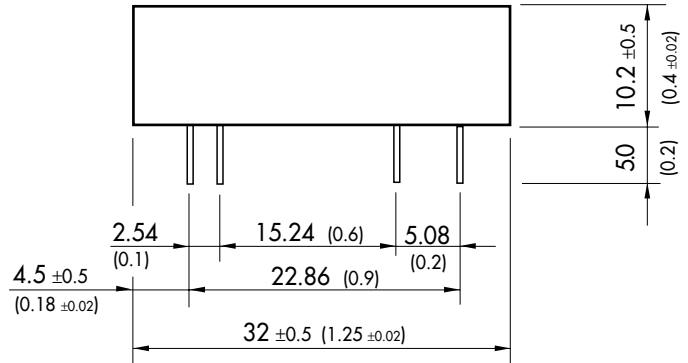
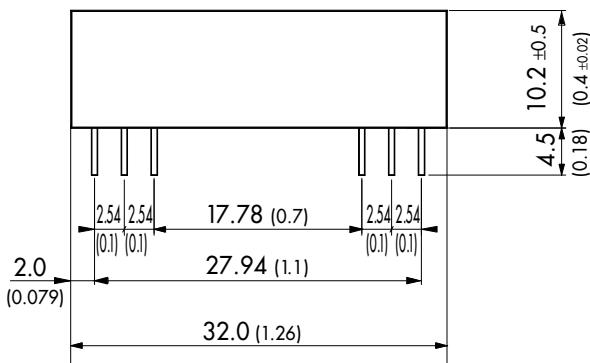
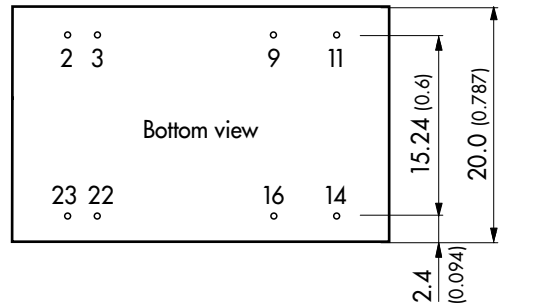
Outline Dimensions mm (inches)

Standard Pinout:

compatible with TED / TEM-3 Series)



Pinout NP Version:



Pin diameter $\varnothing 0.5 \pm 0.05$ (0.02) ± 0.002
Tolerances ± 0.5 (0.02)

| Pin-Out | | |
|---------|------------|------------|
| Pin | Single | Dual |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | No con. | -Vout |
| 3 | No con. | Common |
| 10 | -Vout | Common |
| 11 | +Vout | +Vout |
| 12 | -Vin (GND) | -Vin (GND) |
| 13 | -Vin (GND) | -Vin (GND) |
| 14 | +Vout | +Vout |
| 15 | -Vout | Common |
| 22 | No con. | Common |
| 23 | No con. | -Vout |
| 24 | +Vin (Vcc) | +Vin (Vcc) |

| Pin-Out | | |
|---------|------------|------------|
| Pin | Single | Dual |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | -Vin (GND) | -Vin (GND) |
| 9 | No pin | Common |
| 11 | No con. | -Vout |
| 14 | +Vout | +Vout |
| 16 | -Vout | Common |
| 22 | +Vin (Vcc) | +Vin (Vcc) |
| 23 | +Vin (Vcc) | +Vin (Vcc) |

Specifications can be changed any time without notice