



Features

- ◆ Single-in-Line (SIL) Package
- ◆ Single and Dual Output Models
- ◆ I/O-Isolation 1'000 VDC
- ◆ High Efficiency up to 81%
- ◆ Operating Temperature -40°C to $+85^{\circ}\text{C}$
- ◆ Industry Standard Pinout
- ◆ 100% Burn-in (8 h)
- ◆ Lead free Design, RoHS compliant
- ◆ 3 Year Product Warranty



The TMA series are miniature, isolated 1 W DC/DC-converters in a Single-in-Line package (SIP). Requiring only 1.2 cm² board space they offer the ideal solution in many space critical applications for board level power distribution. The use of SMD-technology makes it possible to offer a product with high performance at low cost.

| Models | | | | |
|-----------|------------------|----------------|---------------------|-----------------|
| Ordercode | Input voltage | Output voltage | Output current max. | Efficiency typ. |
| TMA 0505S | 5 VDC \pm 10% | 5 VDC | 200 mA | 71 % |
| TMA 0512S | | 12 VDC | 80 mA | 78 % |
| TMA 0515S | | 15 VDC | 65 mA | 78 % |
| TMA 0505D | | \pm 5 VDC | \pm 100 mA | 72 % |
| TMA 0512D | | \pm 12 VDC | \pm 40 mA | 78 % |
| TMA 0515D | | \pm 15 VDC | \pm 35 mA | 79 % |
| TMA 1205S | 12 VDC \pm 10% | 5 VDC | 200 mA | 73 % |
| TMA 1212S | | 12 VDC | 80 mA | 80 % |
| TMA 1215S | | 15 VDC | 65 mA | 80 % |
| TMA 1205D | | \pm 5 VDC | \pm 100 mA | 74 % |
| TMA 1212D | | \pm 12 VDC | \pm 40 mA | 81 % |
| TMA 1215D | | \pm 15 VDC | \pm 35 mA | 81 % |
| TMA 1505S | 15 VDC \pm 10% | 5 VDC | 200 mA | 73 % |
| TMA 1512S | | 12 VDC | 80 mA | 80 % |
| TMA 1515S | | 15 VDC | 65 mA | 80 % |
| TMA 1505D | | \pm 5 VDC | \pm 100 mA | 74 % |
| TMA 1512D | | \pm 12 VDC | \pm 40 mA | 81 % |
| TMA 1515D | | \pm 15 VDC | \pm 35 mA | 81 % |
| TMA 2405S | 24 VDC \pm 10% | 5 VDC | 200 mA | 71 % |
| TMA 2412S | | 12 VDC | 80 mA | 78 % |
| TMA 2415S | | 15 VDC | 65 mA | 79 % |
| TMA 2405D | | \pm 5 VDC | \pm 100 mA | 72 % |
| TMA 2412D | | \pm 12 VDC | \pm 40 mA | 79 % |
| TMA 2415D | | \pm 15 VDC | \pm 35 mA | 80 % |

Input Specifications

| | |
|----------------------------------|---|
| Input current no load /full load | 5 Vin models: 30 mA / 260 mA typ. 12 Vin models: 12 mA / 110 mA typ. 15 Vin models: 12 mA / 100 mA typ. 24 Vin models: 7 mA / 55 mA typ. |
| Surge voltage (1 sec. max.) | 5 Vin models: 9 V max. 12 Vin models: 18 V max. 15 Vin models: 21 V max. 24 Vin models: 30 V max. |
| Reverse voltage protection | 0.3 A max. |
| Reflected input ripple current | can be reduced by ext. 1–3.3 µF polyester film capacitor |
| Input filter | internal capacitors |

Output Specifications

| | |
|--------------------------------------|---|
| Voltage set accuracy | ± 3 % |
| Voltage balance (dual output models) | ± 1 % max. |
| Regulation | – Input variation ± 1.2 % / 1 % change Vin – Load variation 20 – 100 % ± 10 % max. |
| Ripple and noise (20 MHz Bandwidth) | 75 mV pk-pk max. |
| Temperature coefficient | ± 0.02 % / K |
| Short circuit protection | limited 1 sec. max. |
| Capacitive load | – Single output models 220 µF max. – Dual output models 100 µF max. |

General Specifications

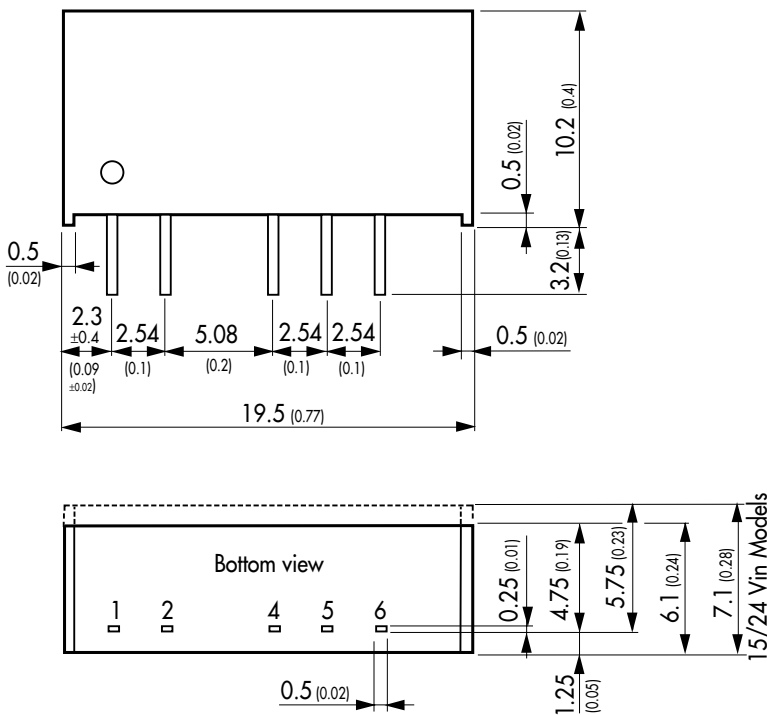
| | |
|--|---|
| Temperature ranges | – Operating –40 °C ... +85 °C – Case temperature +95 °C max. – Storage –40 °C ... +105 °C |
| Humidity (non condensing) | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217E) | >2'000'000 h @ 25 °C |
| Isolation voltage (input/output) | 1'000 VDC |
| Isolation capacity (input/output) | 60 pF typ. |
| Isolation resistance (input/output) | >1'000 Mohm |
| Switching frequency | 100 kHz typ. (frequency modulation) |
| Frequency change over line and load | ± 30 % max. |

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 (UL 94V-0 rated) | |
| Package weight | Single output models: 2.1 g (0.07 oz) | Dual output models: 2.6 g (0.09 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) |
| 4 | -Vout | -Vout |
| 5 | No pin | Common |
| 6 | +Vout | +Vout |

Tolerances ±0.25 (0.01)
pins ±0.05 (0.002)

Specifications can be changed without notice