

#### Features

- Single-in-Line Package (SIP)
- Single and Dual Output Models
- I/O-Isolation 1'000 VDC
- High Efficiency up to 81%
- Operating Temperature -40°C to +85°C
- Pin-compatible with other Manufacturers
- 100% Burn-in (8 h)
- 2 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 cm<sup>2</sup> 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 TMA 0512S TMA 0515S TMA 0505D TMA 0512D TMA 0515D	5 VDC ± 10%	5 VDC 12 VDC 15 VDC ± 5 VDC ±12 VDC ±15 VDC	200 mA 80 mA 65 mA ±100 mA ± 40 mA ± 30 mA	71 % 78 % 78 % 72 % 78 % 79 %
TMA 1205S TMA 1212S TMA 1215S TMA 1205D TMA 1212D TMA 1215D	12 VDC ± 10%	5 VDC 12 VDC 15 VDC ± 5 VDC ±12 VDC ±15 VDC	200 mA 80 mA 65 mA ±100 mA ± 40 mA ± 30 mA	73 % 80 % 80 % 74 % 81 % 81 %
TMA 1505S TMA 1512S TMA 1515S TMA 1505D TMA 1512D TMA 1515D	15 VDC ± 10%	5 VDC 12 VDC 15 VDC ± 5 VDC ±12 VDC ±15 VDC	200 mA 80 mA 65 mA ±100 mA ± 40 mA ± 30 mA	73 % 80 % 80 % 74 % 81 % 81 %
TMA 2405S TMA 2412S TMA 2415S TMA 2405D TMA 2412D TMA 2415D	24 VDC ± 10%	5 VDC 12 VDC 15 VDC ± 5 VDC ±12 VDC ±15 VDC	200 mA 80 mA 65 mA ±100 mA ± 40 mA ± 30 mA	71 % 78 % 79 % 72 % 79 % 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 – Load variation 20 – 100 %	± 1.2 % / 1 % change Vin ± 10 % max.
Ripple and noise (20 MHz Bandwidth)		75 mV pk-pk max.
Temperature coefficient		± 0.02 % / °C
Short circuit protection		limited 1 sec. max.
Capacitive load	– Single output models – Dual output models	220 µF max. 100 µF max.

### General Specifications

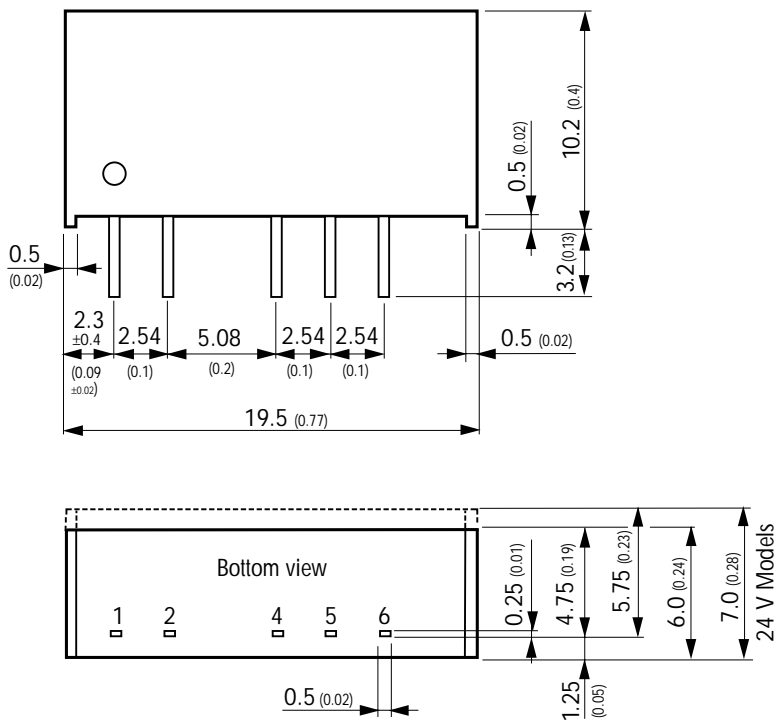
Temperature ranges	– Operating – Case temperature – Storage	– 40 °C ... +85 °C +95 °C max. – 40 °C ... +105 °C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		>2'000'000 h @ 25 °C
Isolation voltage	Input/Output	1'000 VDC
Isolation capacity	Input/Output	60 pF 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 (flammability to UL 94-V0)
Package weight	– Single output models – Dual output models	2.1 g (0.07 oz) 2.6 g (0.09 oz)
Soldering temperature		max. 260°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