

### Features

- ◆ Single-in-line (SIP) package
- ◆ Single and dual output models
- ◆ I/O isolation 1'000 VDC
- ◆ High efficiency up to 81%
- ◆ Operating temp. range -40°C to +85°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 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	5 VDC ± 10%	5 VDC	200 mA	71 %
TMA 0512S		12 VDC	80 mA	78 %
TMA 0515S		15 VDC	65 mA	78 %
TMA 0505D		± 5 VDC	±100 mA	72 %
TMA 0512D		±12 VDC	± 40 mA	78 %
TMA 0515D		±15 VDC	±35 mA	79 %
TMA 1205S	12 VDC ± 10%	5 VDC	200 mA	73 %
TMA 1212S		12 VDC	80 mA	80 %
TMA 1215S		15 VDC	65 mA	80 %
TMA 1205D		±5 VDC	±100 mA	74 %
TMA 1212D		±12 VDC	±40 mA	81 %
TMA 1215D		±15 VDC	±35 mA	81 %
TMA 1505S	15 VDC ± 10%	5 VDC	200 mA	73 %
TMA 1512S		12 VDC	80 mA	80 %
TMA 1515S		15 VDC	65 mA	80 %
TMA 1505D		±5 VDC	±100 mA	74 %
TMA 1512D		±12 VDC	±40 mA	81 %
TMA 1515D		±15 VDC	±35 mA	81 %
TMA 2405S	24 VDC ± 10%	5 VDC	200 mA	71 %
TMA 2412S		12 VDC	80 mA	78 %
TMA 2415S		15 VDC	65 mA	79 %
TMA 2405D		±5 VDC	±100 mA	72 %
TMA 2412D		±12 VDC	±40 mA	79 %
TMA 2415D		±15 VDC	±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

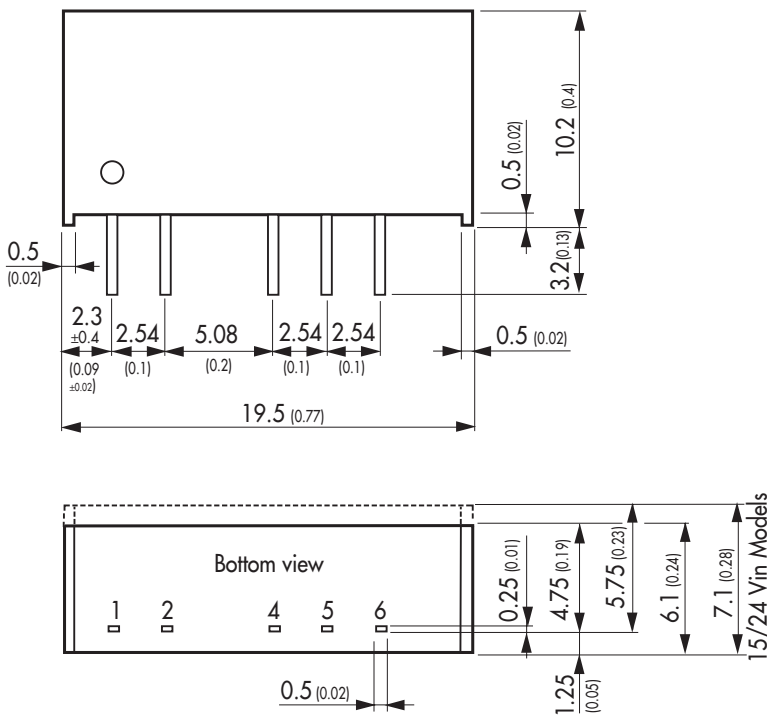
Temperature ranges	– Operating      –40°C to +85°C – Case temperature      +95°C max. – Storage      –40°C to +105°C
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, @ +25°C, ground benign)	>2'000'000 h
Isolation voltage (input/output)	1'000 VDC
Isolation capacity (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**

Casing material	non conductive black plastic (UL 94V-0 rated)	
Package weight	Single output models: <b>2.1 g</b> (0.07 oz)	Dual output models: <b>2.6 g</b> (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 any time without notice.