



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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#### 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  $-40^{\circ}\text{C}$  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 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 $\pm$ 10%	5 VDC	200 mA	71 %
TMA 0512S		12 VDC	84 mA	78 %
TMA 0515S		15 VDC	67 mA	78 %
TMA 0505D		$\pm$ 5 VDC	$\pm$ 100 mA	72 %
TMA 0512D		$\pm$ 12 VDC	$\pm$ 42 mA	78 %
TMA 0515D		$\pm$ 15 VDC	$\pm$ 34 mA	79 %
TMA 1205S	12 VDC $\pm$ 10%	5 VDC	200 mA	73 %
TMA 1212S		12 VDC	84 mA	80 %
TMA 1215S		15 VDC	67 mA	80 %
TMA 1205D		$\pm$ 5 VDC	$\pm$ 100 mA	74 %
TMA 1212D		$\pm$ 12 VDC	$\pm$ 42 mA	81 %
TMA 1215D		$\pm$ 15 VDC	$\pm$ 34 mA	81 %
TMA 1505S	15 VDC $\pm$ 10%	5 VDC	200 mA	72 %
TMA 1512S		12 VDC	84 mA	79 %
TMA 1515S		15 VDC	67 mA	79 %
TMA 1505D		$\pm$ 5 VDC	$\pm$ 100 mA	72 %
TMA 1512D		$\pm$ 12 VDC	$\pm$ 42 mA	80 %
TMA 1515D		$\pm$ 15 VDC	$\pm$ 34 mA	80 %
TMA 2405S	24 VDC $\pm$ 10%	5 VDC	200 mA	71 %
TMA 2412S		12 VDC	84 mA	78 %
TMA 2415S		15 VDC	67 mA	79 %
TMA 2405D		$\pm$ 5 VDC	$\pm$ 100 mA	72 %
TMA 2412D		$\pm$ 12 VDC	$\pm$ 42 mA	79 %
TMA 2415D		$\pm$ 15 VDC	$\pm$ 34 mA	80 %

### Input Specifications

Input current no load /full load	5 Vin models: 30 mA / 270 mA typ. 12 Vin models: 12 mA / 110 mA typ. 15 Vin models: 11 mA / 90 mA typ. 24 Vin models: 7 mA / 55 mA typ.
Surge voltage (1 s max.)	5 Vin models: 9 V max. 12 Vin models: 18 V max. 15 Vin models: 18 V max. 24 Vin models: 30 V max.
Reverse polarity input current	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	±1 % typ. / ±3 % max.
Voltage balance (dual output models, balanced loads)	±0.1 % typ. / ±1 % max.
Regulation	– Input variation (1 % change Vin) 1.2 % typ. / 1.5 % max. – Load variation (20 – 100 %) 5 to 10 % max. (depending on model)
Ripple and noise (20 MHz Bandwidth)	50 mVp-p typ. / 75 mVp-p max.
Temperature coefficient	±0.01 %/K typ. / ±0.02 %/K max.
Short circuit protection	limited 0.5 s 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 +90°C max. – Storage –50°C to +125°C
Derating	3.3, 5 and ±5 VDC output models: 4 %/K above 75°C all other output models: 4 %/K above 80°C
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	>2'000'000 h
Isolation Test Voltage (Input/Output, 60s)	1'000 VDC
Insulation System	Functional
Isolation Capacitance (Input/Output)	60 pF typ. / 100 pF max.
Isolation Resistance (Input/Output)	>1'000 MOhm
Switching Frequency	70 to 120 kHz (frequency modulation)
Environmental Compliance	– Reach <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> – RoHS RoHS directive 2011/65/EU

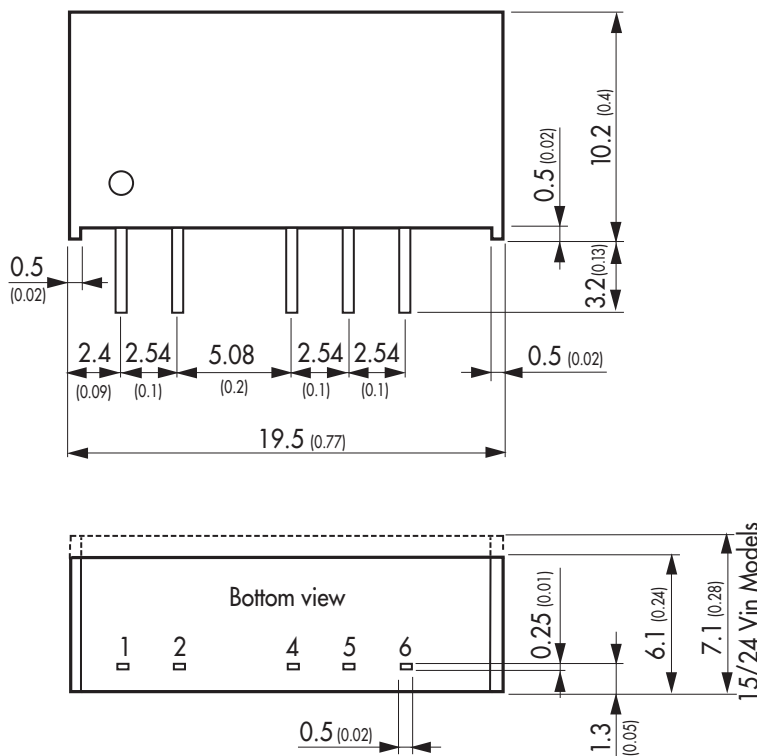
**Supporting documents:** [www.tracopower.com/overview/tma](http://www.tracopower.com/overview/tma)

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	5 & 12 Vin models: <b>2.2 g (0.07 oz)</b>	15 % 24 Vin models: <b>2.6 g (0.09 oz)</b>
Potting material	Epoxy	
Soldering temperature	max. 260°C / 10 s	

**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  $\pm 0.25$  ( $\pm 0.01$ )  
Pin pitch tolerances  $\pm 0.13$  ( $\pm 0.005$ )  
pins  $\pm 0.05$  ( $\pm 0.002$ )

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)