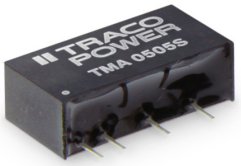
DC/DC Converters

TMA Series, 1 Watt

Features

- Single-in-line (SIP) package
- Single and dual output models
- I/O isolation 1'000 VDC
- Unregulated device
- 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^2 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	84 mA	78 %
TMA 0515S		15 VDC	67 mA	78 %
TMA 0505D		± 5 VDC	±100 mA	72 %
TMA 0512D		±12 VDC	±42 mA	78 %
TMA 0515D		±15 VDC	±34 mA	79 %
TMA 1205S	12 VDC ± 10%	5 VDC	200 mA	73 %
TMA 1212S		12 VDC	84 mA	80 %
TMA 1215S		15 VDC	67 mA	80 %
TMA 1205D		±5 VDC	±100 mA	74 %
TMA 1212D		±12 VDC	±42 mA	81 %
TMA 1215D		±15 VDC	±34 mA	81 %
TMA 1505S	15 VDC ± 10%	5 VDC	200 mA	72 %
TMA 1512S		12 VDC	84 mA	79 %
TMA 1515S		15 VDC	67 mA	79 %
TMA 1505D		±5 VDC	±100 mA	72 %
TMA 1512D		±12 VDC	±42 mA	80 %
TMA 1515D		±15 VDC	±34 mA	80 %
TMA 2405S	24 VDC ± 10%	5 VDC	200 mA	71 %
TMA 2412S		12 VDC	84 mA	78 %
TMA 2415S		15 VDC	67 mA	79 %
TMA 2405D		±5 VDC	±100 mA	72 %
TMA 2412D		±12 VDC	±42 mA	79 %
TMA 2415D		±15 VDC	±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	www.tracopower.com/products/reach-declaration.pdf
	– RoHS	RoHS directive 2011/65/EU

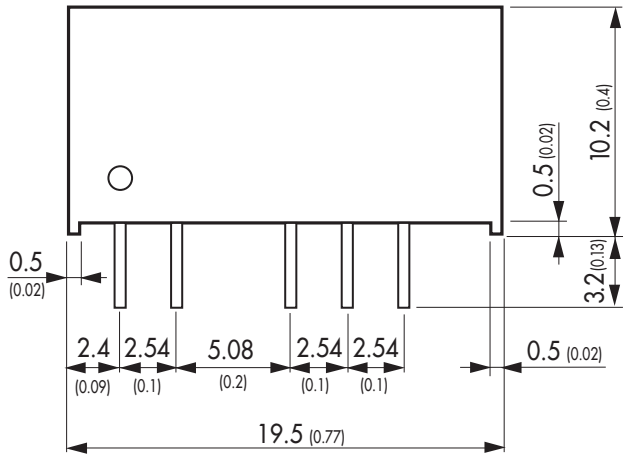
Supporting documents: www.tracopower.com/overview/tma

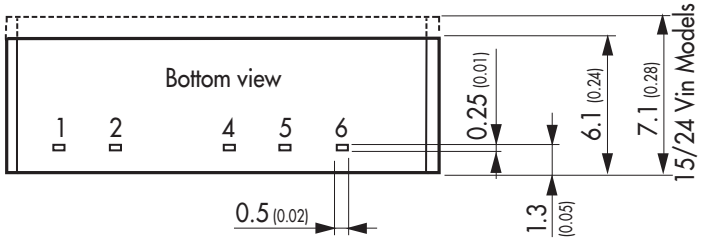
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Physical Specifications

Casing material		non conductive black plastic (UL 94V-0 rated)
Package weight	5 & 12 Vin models: 15 % 24 Vin models:	2.2 g (0.07 oz) 2.6 g (0.09 oz)
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 ±0.25 (±0.01)
Pin pitch tolerances ±0.13 (±0.005)
pins ±0.05 (±0.002)