

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 $+85^{\circ}\text{C}$
- ◆ 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 μ F 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 μ F max. – Dual output models 100 μ F max.

General Specifications

Temperature ranges	– Operating -40°C to $+85^{\circ}\text{C}$ – Case temperature $+95^{\circ}\text{C}$ max. – Storage -40°C to $+105^{\circ}\text{C}$
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, @ $+25^{\circ}\text{C}$, 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 $+25^{\circ}\text{C}$ after warm-up time unless otherwise stated.

Casing 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	

Figure 1 shows the mechanical drawings of the PCB. The top drawing is the front view, and the bottom drawing is the bottom view.

Front View Dimensions:

- Total width: 19.5 (0.77)
- Total height: 10.2 (0.4)
- Slot widths (from left to right): 2.3 (0.09), 2.54 (0.1), 5.08 (0.2), 2.54 (0.1), 2.54 (0.1)
- Slot spacings (from left to right): 0.5 (0.02), 0.5 (0.02), 0.5 (0.02), 0.5 (0.02)
- Distance from top edge to slot openings: 0.5 (0.02)
- Distance from bottom edge to slot openings: 3.2 (0.13)

Bottom View Dimensions:

- Total width: 19.5 (0.77)
- Total height: 10.2 (0.4)
- Pad widths (from left to right): 0.25 (0.01), 4.75 (0.19), 5.75 (0.23), 6.1 (0.24), 7.1 (0.28)
- Pad spacings (from left to right): 0.5 (0.02), 0.5 (0.02), 0.5 (0.02), 0.5 (0.02)
- Distance from top edge to pad openings: 0.25 (0.01)
- Distance from bottom edge to pad openings: 1.25 (0.05)

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.