

## **DC/DC Converters**

**TMH Series, 2 Watt** 

## **Features**

- Single-in-line package (SIP)
- ◆ Fully SMD-design
- Isolated single and dual output
- ♦ I/O isolation 1'000 VDC
- ♦ High efficiency up to 83 %
- ♦ Industry standard pinout
- ◆ 100% burn-in (8 h)
- Lead free design, RoHS compliant
- 3-year product warranty





The TMH series are ultra miniature, isolated 2 Watt DC/DC-converters in a Single-in-Line package (SIP). Requiring only 1.5 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.
TMH 0505S		5 VDC	400 mA	76 %
TMH 0512S		12 VDC	165 mA	80 %
TMH 0515S	5 VDC ±10%	15 VDC	130 mA	80 %
TMH 0505D		±5 VDC	±200 mA	77 %
TMH 0512D		±12 VDC	±80 mA	79 %
TMH 0515D		±15 VDC	±65 mA	79 %
TMH 1205S		5 VDC	400 mA	78 %
TMH 1212S		12 VDC	165 mA	82 %
TMH 1215S	12 VDC ±10%	15 VDC	130 mA	83 %
TMH 1205D		±5 VDC	±200 mA	79 %
TMH 1212D		±12 VDC	±80 mA	82 %
TMH 1215D		±15 VDC	±65 mA	82 %
TMH 2405S		5 VDC	400 mA	77 %
TMH 2412S		12 VDC	165 mA	81 %
TMH 2415S	24 VDC ±10%	15 VDC	130 mA	82 %
TMH 2405D		±5 VDC	±200 mA	79 %
TMH 2412D		±12 VDC	±80 mA	81 %
TMH 2415D		±15 VDC	±65 mA	82 %



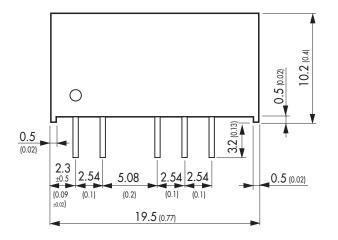
Input Specifications					
Input current no load / full load		12 Vin models	50 mA / 510 mA typ. 20 mA / 200 mA typ. 10 mA / 100 mA typ.		
Surge voltage (1 sec. max.)		5 Vin models 12 Vin models 24 Vin models	9 V max. 18 V max. 30 V max.		
Reverse voltage protection			0.3 A max.		
Reflected input ripple current			can be reduced by ext. 1–3.3 $\mu F$ polyester film capacitor		
Input filter			internal capacitors		
<b>Output Specification</b>	S				
Voltage set accuracy			±3 %		
Voltage balance (dual outpu	ut models)		1 % max.		
Regulation	– Input variation – Load variation 20 – 100 %		1.2 % / 1 % change Vin 10 % max.		
Ripple and noise (20 MHz Bandwidth) 5 Vin models 12 /24 Vin models		75 mV pk-pk max. 150 mV pk-pk max			
Temperature coefficient			±0.02 % / K		
Short circuit protection			limited 1 sec. max.		
Capacitive load	– Single output models – Dual output models		470 μF max. 390 μF max.		
<b>General Specificatio</b>	ns				
Temperature ranges	<ul><li>Operating</li><li>Case temperature</li><li>Storage</li></ul>		−40°C to +85°C +90°C max. −40°C to +125°C		
Derating (convection cooling	g)		3 %/K above +70°C		
Humidity (non condensing)			95 % rel H max.		
Derating (convection cooling	g)		3 %/K above +70°C		
Reliability, calculated MTBF	(MIL-HDBK-217F at +25°C, ground	d benign)	>2′000′000 h		
Isolation voltage (60sec.)	Input/Output		1'000 VDC		
Isolation capacitance	Input/Output		80 pF typ.		
Isolation resistance	Input/Output		>1′000 Mohm		
Switching frequency		80 kHz typ. (frequency modulation)			
Frequency change over line and load			±30 % max.		
Environmental compliance	- Reach - RoHS		www.tracopower.com/products/tmh-reach.pdf RoHS directive 2002/95/EC		

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 94-V0 rated)
Package weight	<b>2.7</b> g (0.1oz)
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		

1	2	Bottom view	6	0.25 (0.01)	<b>—</b>	7.5 (0.3)
		0.5 (0.02)			1.25	

Tolerances  $\pm 0.25 \ (\pm 0.01)$ pins  $\pm 0.05 \ (\pm 0.002)$ 

Specifications can be changed any time without notice.

