

- ◆ Ultra compact SIP-7 package
- ◆ Very high I/O-isolation 5'200 VDC (5'700 Vpk)
- ◆ Dedicated for IGBT applications
- ◆ Operating temperature range -40°C to +85°C
- ◆ Industry standard pinout
- ◆ 3-year product warranty



The TMV 2HI series is a range of 2 Watt non regulated DC/DC converters with high I/O-isolation. They come in a very compact SIP-7 package.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TMV 2-0503SHI	5 VDC ±10 %	3.3 VDC	500 mA	74 %
TMV 2-0505SHI		5.0 VDC	400 mA	80 %
TMV 2-0509SHI		9.0 VDC	222 mA	81 %
TMV 2-0512SHI		12 VDC	168 mA	82 %
TMV 2-0515SHI		15 VDC	132 mA	79 %
TMV 2-0505DHI		±5.0 VDC	±200 mA	78 %
TMV 2-0509DHI		±9.0 VDC	±112 mA	80 %
TMV 2-0512DHI		±12 VDC	±84 mA	80 %
TMV 2-0515DHI		±15 VDC	±66 mA	79 %
TMV 2-05159HI		+15 / -9 VDC	+66 / -110 mA	80 %
TMV 2-1203SHI		12 VDC ±10 %	3.3 VDC	500 mA
TMV 2-1205SHI	5.0 VDC		400 mA	79 %
TMV 2-1209SHI	9.0 VDC		222 mA	81 %
TMV 2-1212SHI	12 VDC		168 mA	83 %
TMV 2-1215SHI	15 VDC		132 mA	82 %
TMV 2-1205DHI	±5.0 VDC		±200 mA	79 %
TMV 2-1209DHI	±9.0 VDC		±112 mA	81 %
TMV 2-1212DHI	±12 VDC		±84 mA	82 %
TMV 2-1215DHI	±15 VDC		±66 mA	83 %
TMV 2-12159HI	+15 / -9 VDC		+66 / -110 mA	81 %
TMV 2-1503SHI	15 VDC ±10 %		3.3 VDC	500 mA
TMV 2-1505SHI		5.0 VDC	400 mA	79 %
TMV 2-1509SHI		9.0 VDC	222 mA	83 %
TMV 2-1512SHI		12 VDC	168 mA	83 %
TMV 2-1515SHI		15 VDC	132 mA	85 %
TMV 2-1505DHI		±5.0 VDC	±200 mA	81 %
TMV 2-1509DHI		±9.0 VDC	±112 mA	84 %
TMV 2-1512DHI		±12 VDC	±84 mA	82 %
TMV 2-1515DHI		±15 VDC	±66 mA	82 %
TMV 2-15159HI		+15 / -9 VDC	+66 / -110 mA	83 %
TMV 2-2403SHI		24 VDC ±10 %	3.3 VDC	500 mA
TMV 2-2405SHI	5.0 VDC		400 mA	77 %
TMV 2-2409SHI	9.0 VDC		222 mA	81 %
TMV 2-2412SHI	12 VDC		168 mA	82 %
TMV 2-2415SHI	15 VDC		132 mA	82 %
TMV 2-2405DHI	±5.0 VDC		±200 mA	77 %
TMV 2-2409DHI	±9.0 VDC		±112 mA	81 %
TMV 2-2412DHI	±12 VDC		±84 mA	81 %
TMV 2-2415DHI	±15 VDC		±66 mA	80 %
TMV 2-24159HI	+15 / -9 VDC		+66 / -110 mA	81 %

### Input Specifications

Input current no load	5 Vin models:	35 mA typ.
	12 Vin models:	17 mA typ.
	15 Vin models:	16 mA typ.
	24 Vin models:	12 mA typ.
Surge voltage (1 sec. max.)	5 Vin models:	9 V max.
	12 Vin models:	18 V max.
	15 Vin models:	20 V max.
	24 Vin models:	30 V max.
Input filter	internal capacitor	

### Output Specifications

Voltage set accuracy	±5 % max.		
Voltage balance (dual output models, balanced loads)	0.1 % typ. / 1 % max.		
Regulation	– Input variation (1 % change of Vin)	1.2 % typ.	
	– Load variation (20 – 100 %)	3.3 Vout models:	< 20 %
		(±)5 Vout models:	< 15 %
		other models:	< 10 %
Ripple and noise (20 MHz Bandwidth)	100 mVp-p max.		
Short circuit protection	continuous, automatic recovery		
Temperature coefficient	±0.01 %/K typ. / ±0.02 %/K max.		
Capacitive load	– Single output	3.3 Vout models:	1650 µF max.
		5.0 & 9.0 Vout models:	940 µF max.
		12 & 15 Vout models:	440 µF max.
	– Dual output	±5.0 & ±9.0 Vout models:	440 µF max. (each output)
		±12 & ±15 Vout models:	200 µF max. (each output)
		+15 / –9 Vout models:	200 / 440 µF max.

### Isolation /Safety

Isolation voltage	– Isolation test voltage (tested for 1 s)	5'700 Vpk
	– I/O isolation voltage (60 s)	5'200 VDC
Isolation capacitance (input/output)	7 pF typ.	
Isolation resistance (input/output)	>10 Gohm	
Common mode transient immunity (dv/dt)	15 kV/µs min.	

### General Specifications

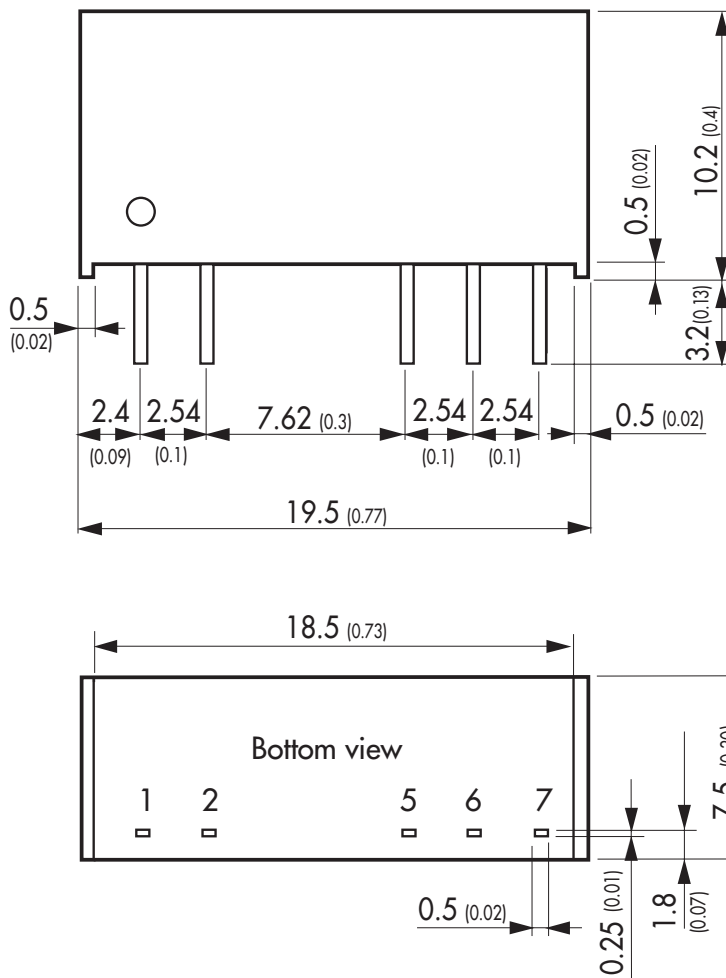
Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+95°C max.
	– Storage temperature	–55°C to +125°C
Derating	6.7 %/K above +80°C	
Humidity (non condensing)	95 % rel H max.	
Altitude during operation	4000 m	
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)	>1'109'000 h	
Switching frequency	100 kHz typ.	
Safety standards	CAN/CSA-C22.2 No 60950-1-07, 2nd ed; A1:2011	
	ANSI/UL No. 60950-1, 2nd ed.; A1:2011 IEC 60950-1:2005 (2nd edition); Am 1:2009 EN 60950-1:2006/A11:2009/A1:2010/A12:2011 <a href="http://www.tracopower.com/overview/tmv2hi">www.tracopower.com/overview/tmv2hi</a>	
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

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

### Physical Specifications

Casing material	non-conducting FR4 (UL 94V-0 rated)
Pin material	tinned copper
Package weight	2.4 g (0.085oz)
Soldering temperature	max. 260°C / 10 s

### Outline Dimensions



Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
5	-Vout	-Vout
6	No pin	Common
7	+Vout	+Vout

Dimensions in mm (inch)  
 Tolerances  $\pm 0.5$  ( $\pm 0.02$ )  
 Pin pitch tolerances  $\pm 0.25$  ( $\pm 0.01$ )  
 pins  $\pm 0.05$  ( $\pm 0.002$ )