

- Very high 5200 VDC I/O-isolation (5700 Vpk)
- Unregulated device
- Dedicated for IGBT applications
- Operating temperature range $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$
- 3-year product warranty



UL 62368-1 IEC 62368-1

The TMV-2HI series is a range of 2 Watt non regulated Dc/DC-converters with very high I/O-isolation of 5700 Vpk. They come in a compact SIP-7 package.

Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TMV 2-0503SHI	4.5 - 5.5 VDC (5 VDC nom.)	3.3 VDC	500 mA			74 %
TMV 2-0505SHI		5 VDC	400 mA			80 %
TMV 2-0509SHI		9 VDC	222 mA			81 %
TMV 2-0512SHI		12 VDC	168 mA			82 %
TMV 2-0515SHI		15 VDC	132 mA			79 %
TMV 2-0505DHI		+5 VDC	200 mA	-5 VDC	200 mA	78 %
TMV 2-0509DHI		+9 VDC	112 mA	-9 VDC	112 mA	80 %
TMV 2-0512DHI		+12 VDC	84 mA	-12 VDC	84 mA	80 %
TMV 2-0515DHI		+15 VDC	66 mA	-15 VDC	66 mA	79 %
TMV 2-05159HI		+15 VDC	66 mA	-9 VDC	110 mA	80 %
TMV 2-1203SHI		10.8 - 13.2 VDC (12 VDC nom.)	3.3 VDC	500 mA		
TMV 2-1205SHI	5 VDC		400 mA			79 %
TMV 2-1209SHI	9 VDC		222 mA			81 %
TMV 2-1212SHI	12 VDC		168 mA			83 %
TMV 2-1215SHI	15 VDC		132 mA			82 %
TMV 2-1205DHI	+5 VDC		200 mA	-5 VDC	200 mA	79 %
TMV 2-1209DHI	+9 VDC		112 mA	-9 VDC	112 mA	81 %
TMV 2-1212DHI	+12 VDC		84 mA	-12 VDC	84 mA	82 %
TMV 2-1215DHI	+15 VDC		66 mA	-15 VDC	66 mA	83 %
TMV 2-12159HI	+15 VDC		66 mA	-9 VDC	110 mA	81 %
TMV 2-1503SHI	13.5 - 16.5 VDC (15 VDC nom.)		3.3 VDC	500 mA		
TMV 2-1505SHI		5 VDC	400 mA			79 %
TMV 2-1509SHI		9 VDC	222 mA			83 %
TMV 2-1512SHI		12 VDC	168 mA			83 %
TMV 2-1515SHI		15 VDC	132 mA			85 %
TMV 2-1505DHI		+5 VDC	200 mA	-5 VDC	200 mA	81 %
TMV 2-1509DHI		+9 VDC	112 mA	-9 VDC	112 mA	84 %
TMV 2-1512DHI		+12 VDC	84 mA	-12 VDC	84 mA	82 %
TMV 2-1515DHI		+15 VDC	66 mA	-15 VDC	66 mA	82 %
TMV 2-15159HI		+15 VDC	66 mA	-9 VDC	110 mA	83 %
TMV 2-2403SHI		21.6 - 26.4 VDC (24 VDC nom.)	3.3 VDC	500 mA		
TMV 2-2405SHI	5 VDC		400 mA			77 %
TMV 2-2409SHI	9 VDC		222 mA			81 %
TMV 2-2412SHI	12 VDC		168 mA			82 %
TMV 2-2415SHI	15 VDC		132 mA			82 %
TMV 2-2405DHI	+5 VDC		200 mA	-5 VDC	200 mA	77 %
TMV 2-2409DHI	+9 VDC		112 mA	-9 VDC	112 mA	81 %
TMV 2-2412DHI	+12 VDC		84 mA	-12 VDC	84 mA	81 %
TMV 2-2415DHI	+15 VDC		66 mA	-15 VDC	66 mA	80 %
TMV 2-24159HI	+15 VDC		66 mA	-9 VDC	110 mA	81 %

Input Specifications

Input Current	- At 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.
	- At full load	5 Vin models: 500 mA typ. 12 Vin models: 205 mA typ. 15 Vin models: 160 mA typ. 24 Vin models: 105 mA typ.
Surge Voltage		5 Vin models: 9 VDC max. (1 s max.) 12 Vin models: 18 VDC max. (1 s max.) 15 Vin models: 20 VDC max. (1 s max.) 24 Vin models: 30 VDC max. (1 s max.)
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Voltage Set Accuracy		±5% max.
Regulation	- Input Variation (1% Vin step)	single output models: 1.2% max. dual output models: 1.2% max.
	- Load Variation (20 - 100%)	single output models: 20% max. (3.3 Vout models) 15% max. (5 Vout models) 10% max. (other models) dual output models: 10% max. (Output 1) 10% max. (Output 2) (15% max. for ±5 Vout models)
	- Voltage Balance (symmetrical load)	dual output models: 1% max.
Ripple and Noise	- 20 MHz Bandwidth	100 mVp-p max.
Capacitive Load	- single output	3.3 Vout models: 1'650 µF max. 5 Vout models: 940 µF max. 9 Vout models: 940 µF max. 12 Vout models: 440 µF max. 15 Vout models: 440 µF max.
	- dual output	5 / -5 Vout models: 440 / 440 µF max. 9 / -9 Vout models: 440 / 440 µF max. 12 / -12 Vout models: 200 / 200 µF max. 15 / -15 Vout models: 200 / 200 µF max. 15 / -9 Vout models: 200 / 440 µF max.
Minimum Load		2 % of Iout max.
Temperature Coefficient		±0.02 %/K max.
Short Circuit Protection		Continuous, Automatic recovery

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tmv2hi
Pollution Degree		PD 2

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

General Specifications

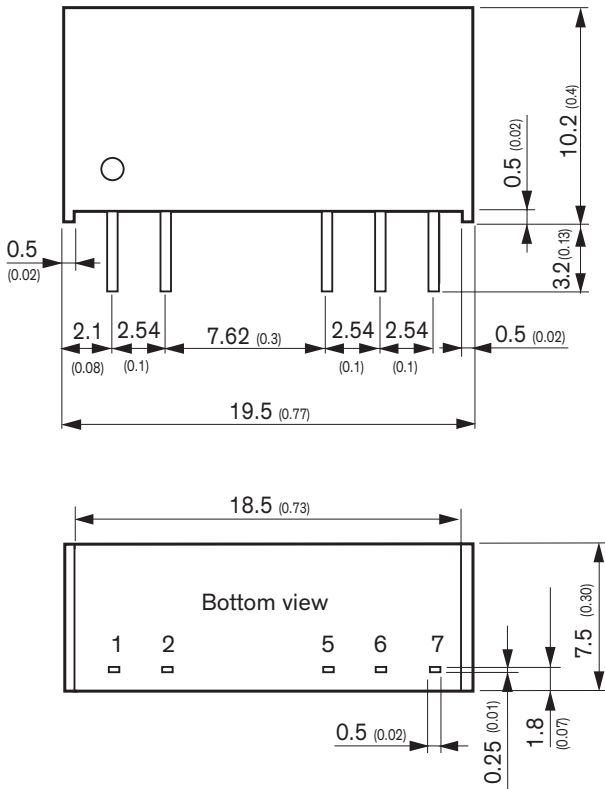
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	-40°C to +85°C +95°C max. -55°C to +125°C
Power Derating	- High Temperature	6.7 %/K above 80°C
Cooling System		Natural convection (20 LFM)
Altitude During Operation		6'000 m max.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s - Input to Output, 1 s	5'200 VDC 5'700 VDC
Isolation Resistance	- Input to Output, 500 VDC	10'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	7 pF typ.
Common Mode Transient Immunity		15 kV/μs min.
Reliability	- Calculated MTBF	1'110'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Allowed (hermetical product) See Cleaning Guideline: www.tracopower.com/info/cleaning.pdf
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Epoxy (UL 94 V-0 rated)
Pin Material		Nickel-Iron (Alloy 42)
Pin Foundation Plating		Nickel (1 μm min.)
Pin Surface Plating		Tin (3 - 5 μm), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP7
Soldering Profile		Wave Soldering 260°C / 10 s max.
Weight		2.4 g
Environmental Compliance	- REACH Declaration - RoHS Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-1 (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tmv2hi
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All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Outline Dimensions



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