

## DC/DC Converter

## TMR 2WISM Series, 2 Watt

- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit
- Remote On/Off
- 3-year product warranty



The TMR 2WISM Series is a set of 2 Watt SMD DC/DC converters. They operate up to 70°C environment temperature at full load or up to 80°C with a 50% load derating. With UL 60950-1 certification, 1'500 VDC I/O-isolation voltage, external On/Off and short current protection they cover a wide range of application when space is limited. The input of the converters is designed for a wide voltage range (4:1) and minimum load is not required.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TMR 2-0511WISM	<b>4.5 – 12 VDC</b> (9 VDC nominal)	5.0 VDC	400 mA	80 %
TMR 2-0512WISM		12 VDC	167 mA	84 %
TMR 2-0513WISM		15 VDC	134 mA	83 %
TMR 2-0515WISM		24 VDC	83 mA	84 %
TMR 2-0522WISM		±12 VDC	±83 mA	83 %
TMR 2-0523WISM		±15 VDC	±67 mA	82 %
TMR 2-2411WISM	<b>9 – 36 VDC</b> (24 VDC nominal)	5.0 VDC	400 mA	80 %
TMR 2-2412WISM		12 VDC	167 mA	84 %
TMR 2-2413WISM		15 VDC	134 mA	85 %
TMR 2-2415WISM		24 VDC	83 mA	85 %
TMR 2-2422WISM		±12 VDC	±83 mA	83 %
TMR 2-2423WISM		±15 VDC	±67 mA	83 %
TMR 2-4811WISM	<b>18 – 75 VDC</b> (48 VDC nominal)	5.0 VDC	400 mA	78 %
TMR 2-4812WISM		12 VDC	167 mA	82 %
TMR 2-4813WISM		15 VDC	134 mA	83 %
TMR 2-4815WISM		24 VDC	83 mA	84 %
TMR 2-4822WISM		±12 VDC	±83 mA	82 %
TMR 2-4823WISM		±15 VDC	±67 mA	82 %

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## Input Specifications

Input current no load	9 Vin models: 40 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 10 mA typ.
Surge voltage (1 sec. max.)	9 Vin models: 15 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start-up voltage	9 Vin models: 4.5 VDC (or lower) 24 Vin models: 9 VDC (or lower) 48 Vin models: 18 VDC (or lower)
Electromagnetic compatibility (EMC), Emissions – Conducted RI suppression on input	EN 55032 class A
Electromagnetic compatibility (EMC), Immunity – Electrostatic discharge (ESD)  – Radiated RF field immunity – Electrical fast transient / burst immunity  – Surge immunity  – Immunity to conducted RF disturbances – Magnetic field immunity	EN 55024 IEN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A with external capacitor: 220 µF / 100V EN 61000-4-5, ±1 kV, perf. criteria A with external capacitor: 220 µF / 100V EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 3 A/m, perf. criteria A
Input filter	Pi-filter
Short Circuit Input Power	1500 mW max.

## Output Specifications

Voltage set accuracy	±1 % max.
Voltage balance (dual output models)	2 % max.
Regulation – Input variation – Load variation 0 – 100 % – cross regulation - dual output:	0.5 % max. 1 % max. 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	±0.02 %/K max.
Minimum load	not required
Ripple and noise (20 MHz Bandwidth)	50 mVp-p max.
Start up time(constant resistive load)	30 ms max.
Transient response (25% load step change) – recovery time – deviation	250 µs typ. 5 % max.
Current limitation	160% of lout nom. typ. (foldback)
Short circuit protection	continuous, automatic recovery
Capacitive load –Single output  –Dual output	5.0 VDC models: 1680 µF max. 12 VDC models: 820 µF max. 15 VDC models: 680 µF max. 24 VDC models: 390 µF max. ±12 VDC models: 470 µF max. (each output) +15 VDC models: 330 µF max. (each output)

## General Specifications

Temperature ranges – Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature	–40°C to +80°C +95°C max. –55°C to +125°C
Derating	4%/K above 70°C
Humidity (non condensing)	95 % rel H max.

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

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## General Specifications

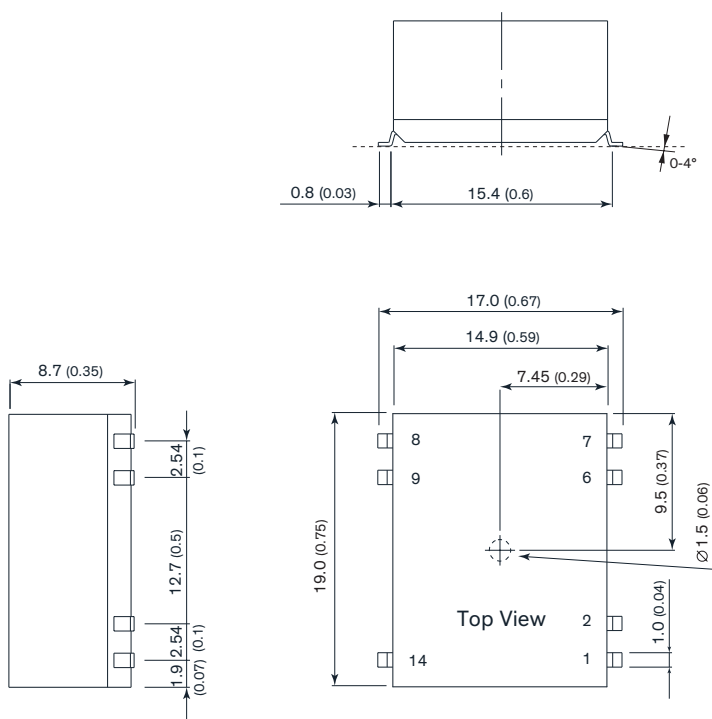
Isolation voltage	– I/O isolation voltage (60 sec.) – I/O isolation voltage (1 sec.)	1'500 VDC 1'800 VDC
Isolation capacitance (@ 100 kHz / 1V)		500 pF typ.
Isolation resistance (@ 500 VDC)		>1 Gohm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		6'400'000 h min.
Switching frequency		100 kHz min. Pulse frequency modulation.
Safety standards		IEC/EN 60950-1 UL 60950-1 <a href="http://www.tracopower.com/overview/tmr2wism">www.tracopower.com/overview/tmr2wism</a>
Remote On/Off	– On: – Off: – Off idle current:	open circuit or high impedance 2 – 4 mA current applied via 1kOhm resistor 2.5 mA typ.
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> RoHS directive 2011/65/EU
Moisture sensitivity level (MSL)		IPC J-STD-020D.1 Level 2
Washing process		not recommended, product non-hermetical

## Physical Specifications

Casing material		non-conducting FR4 (UL 94V-0 rated)
Pin material		tinned copper
Package weight		3.5g (0.12oz)
Lead-free reflow solder process		according to IPC J-STD-020D.1

**Supporting Documents:** [www.tracopower.com/overview/tmr2wism](http://www.tracopower.com/overview/tmr2wism)

## Outline Dimensions



### Pin-Out

Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	On/Off	On/Off
6	no con.	Com.
7	no con.	–Vout
8	+Vout	+Vout
9	–Vout	Com.
14	+Vin (Vcc)	+Vin (Vcc)

Dimensions in [mm], () = Inch

Tolerances: x.x ±0.5 (±0.02)

x.xx ±0.25 (±0.01)

Pin dimension tolerance ±0.05 (±0.002)

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