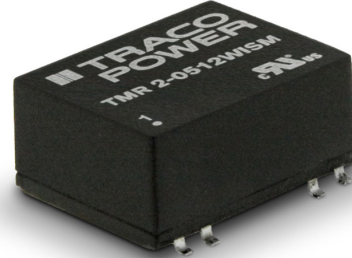


**DC/DC Converter**

**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 %

## 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 s 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	EN 55032 class A
– Conducted RI suppression on input	
Electromagnetic compatibility (EMC), Immunity	EN 55024
– Electrostatic discharge (ESD)	IEN 61000-4-2, air $\pm 8$ kV, contact $\pm 6$ kV, perf. criteria A
– Radiated RF field immunity	EN 61000-4-3, 10 V/m, perf. criteria A
– Electrical fast transient / burst immunity	EN 61000-4-4, $\pm 2$ kV, perf. criteria A with external capacitor: 220 $\mu$ F / 100V
– Surge immunity	EN 61000-4-5, $\pm 1$ kV, perf. criteria A with external capacitor: 220 $\mu$ F / 100V
– Immunity to conducted RF disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A
– Magnetic field immunity	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	$\pm 1$ % max.
Voltage balance (dual output models)	2 % max.
Regulation	– Input variation: 0.5 % max. – Load variation 0 – 100 %: 1 % max. – Cross regulation - dual output: 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	$\pm 0.02$ %/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: 250 $\mu$ s typ. – Deviation: 5 % max.
Current limitation	160 % of Iout nom. typ. (foldback)
Short circuit protection	continuous, automatic recovery
Capacitive load	– Single output: 5.0 VDC models: 1680 $\mu$ F max. 12 VDC models: 820 $\mu$ F max. 15 VDC models: 680 $\mu$ F max. 24 VDC models: 390 $\mu$ F max. – Dual output: $\pm 12$ VDC models: 470 $\mu$ F max. (each output) $\pm 15$ VDC models: 330 $\mu$ F max. (each output)

## General Specifications

Temperature ranges	– Operating (convection cooling: 20 LFM, 0.1 m/s): $-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ – Case temperature: $+95^{\circ}\text{C}$ max. – Storage temperature: $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
Derating	4 %/K above $70^{\circ}\text{C}$
Humidity (non condensing)	95 % rel H max.

All specifications valid at nominal input voltage, full load and  $+25^{\circ}\text{C}$  after warm-up time unless otherwise stated.

**General Specifications**

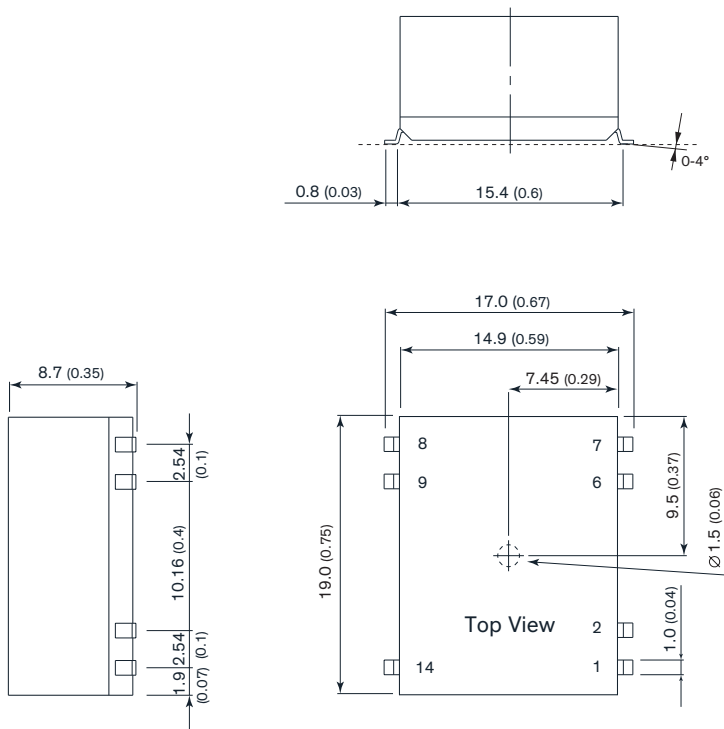
Isolation voltage	– I/O isolation voltage (60 s) – I/O isolation voltage (1 s)	1'500 VDC 1'800 VDC
Isolation capacitance (@ 100kHz / 1V)		500 pF typ.
Isolation resistance (@ 500 VDC)		>1 Gohm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		6'400'000 h min.
Switching frequency		100 kHz min. Pulse frequency modulation.
Safety standards		IEC/EN 60950-1 UL 60950-1
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	RoHS directive 2011/65/EU
Moisture sensitivity level (MSL)		IPC J-STD-033C 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		3.5 g (0.12 oz)
Lead-free reflow solder process		IPC J-STD-020D

**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)