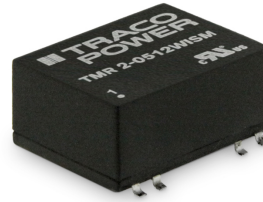


- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty



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 Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
TMR 2-0511WISM	4.5 - 12 VDC (9 VDC nom.)	5 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	-12 VDC	83 mA	83 %
TMR 2-0523WISM		+15 VDC	67 mA	-15 VDC	67 mA	82 %
TMR 2-2411WISM	9 - 36 VDC (24 VDC nom.)	5 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	-12 VDC	83 mA	83 %
TMR 2-2423WISM		+15 VDC	67 mA	-15 VDC	67 mA	83 %
TMR 2-4811WISM	18 - 75 VDC (48 VDC nom.)	5 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	-12 VDC	83 mA	82 %
TMR 2-4823WISM		+15 VDC	67 mA	-15 VDC	67 mA	82 %

### Input Specifications

Input Current	- At no load	9 Vin models: <b>40 mA typ.</b> 24 Vin models: <b>20 mA typ.</b> 48 Vin models: <b>10 mA typ.</b>
	- At full load	9 Vin models: <b>490 mA typ.</b> 24 Vin models: <b>100 mA typ.</b> 48 Vin models: <b>50 mA typ.</b>
Surge Voltage		9 Vin models: <b>15 VDC max.</b> (1 s max.) 24 Vin models: <b>50 VDC max.</b> (1 s max.) 48 Vin models: <b>100 VDC max.</b> (1 s max.)
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)
Input Filter		<b>Internal Pi-Type</b>
Short Circuit Input Power		<b>1.5 W max.</b>

### Output Specifications

Voltage Set Accuracy		<b>±1% max.</b>
Regulation	- Input Variation (Vmin - Vmax)	single output models: <b>0.5% max.</b> dual output models: <b>0.5% max.</b>
	- Load Variation (0 - 100%)	single output models: <b>1% max.</b> dual output models: <b>1% max.</b> (Output 1) <b>1% max.</b> (Output 2)
	- Voltage Balance (symmetrical load)	dual output models: <b>2% max.</b>
	- Cross Regulation (25% / 100% asym. load)	dual output models: <b>5% max.</b>
Ripple and Noise	- 20 MHz Bandwidth	<b>50 mVp-p max.</b>
Capacitive Load	- single output	5 Vout models: <b>1'680 µF max.</b> 12 Vout models: <b>820 µF max.</b> 15 Vout models: <b>680 µF max.</b> 24 Vout models: <b>390 µF max.</b>
	- dual output	12 / -12 Vout models: <b>470 / 470 µF max.</b> 15 / -15 Vout models: <b>330 / 330 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Start-up Time		<b>30 ms max.</b>
Short Circuit Protection		<b>Automatic recovery</b>
Overload Protection		<b>Foldback Mode</b>
Output Current Limitation		<b>160% typ. of Iout max.</b>
Transient Response	- Response Deviation	<b>5% max.</b> (25% Load Step)
	- Response Time	<b>250 µs typ.</b> (25% Load Step)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	<b>EN 62368-1</b> <b>IEC 62368-1</b> <b>UL 62368-1</b>
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmr2wism">www.tracopower.com/overview/tmr2wism</a>
Pollution Degree		<b>PD 3</b>

### EMC Specifications

EMI Emissions	- Conducted Emissions	<b>EN 55032 class A</b> (internal filter) <b>FCC Part 15 class A</b> (internal filter)
	- Radiated Emissions	<b>EN 55032 class A</b> (internal filter) <b>FCC Part 15 class A</b> (internal filter)

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

EMS Immunity	<ul style="list-style-type: none"> <li>- Electrostatic Discharge</li> <li>- RF Electromagnetic Field</li> <li>- EFT (Burst) / Surge</li> <li>- Conducted RF Disturbances</li> <li>- PF Magnetic Field</li> </ul>	EN 55024 (IT Equipment) Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 6$ kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, $\pm 2$ kV, perf. criteria A EN 61000-4-5, $\pm 1$ kV, perf. criteria A Ext. input component: Capacitor: 220 $\mu$ F / 100 V EN 61000-4-6, 10 Vrms, perf. criteria A Continuous: EN 61000-4-8, 3 A/m, perf. criteria A
--------------	--	---

## General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	<ul style="list-style-type: none"> <li>- Operating Temperature</li> <li>- Case Temperature</li> <li>- Storage Temperature</li> </ul>	-40°C to +80°C +95°C max. -55°C to +125°C
Power Derating	<ul style="list-style-type: none"> <li>- High Temperature</li> </ul>	4 %/K above 70°C See application note: <a href="http://www.tracopower.com/overview/tmr2wism">www.tracopower.com/overview/tmr2wism</a>
Cooling System		Natural convection (20 LFM)
Remote Control	<ul style="list-style-type: none"> <li>- Voltage Controlled Remote</li> <li>- Current Controlled Remote</li> <li>- Off Idle Input Current</li> </ul>	On: < 0.6 VDC or open circuit Off: 4.7 to 15 VDC Refers to 'Remote' and '-Vin' Pin On: open circuit Off: 2 to 4 mA current 3 mA max.
Altitude During Operation		5'000 m max.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	<ul style="list-style-type: none"> <li>- Input to Output, 60 s</li> <li>- Input to Output, 1 s</li> </ul>	1'500 VDC 1'800 VDC
Isolation Resistance	<ul style="list-style-type: none"> <li>- Input to Output, 500 VDC</li> </ul>	1'000 M $\Omega$ min.
Isolation Capacitance	<ul style="list-style-type: none"> <li>- Input to Output, 100 kHz, 1 V</li> </ul>	500 pF typ.
Reliability	<ul style="list-style-type: none"> <li>- Calculated MTBF</li> </ul>	6'430'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2 (J-STD-033C)
Washing Process		Not allowed (vent-hole without membrane)
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Pin Material		Phosphor Bronze (C5191)
Pin Foundation Plating		Copper (1 - 3 $\mu$ m)
Pin Surface Plating		Tin (7.5 $\mu$ m min.), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		SMD (Surface-Mount Device)
Footprint Type		SMD14
Soldering Profile		Reflow Soldering (J-STD-020E)
Weight		3.5 g
Environmental Compliance	<ul style="list-style-type: none"> <li>- REACH Declaration</li> <li>- RoHS Declaration</li> </ul>	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a (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.)

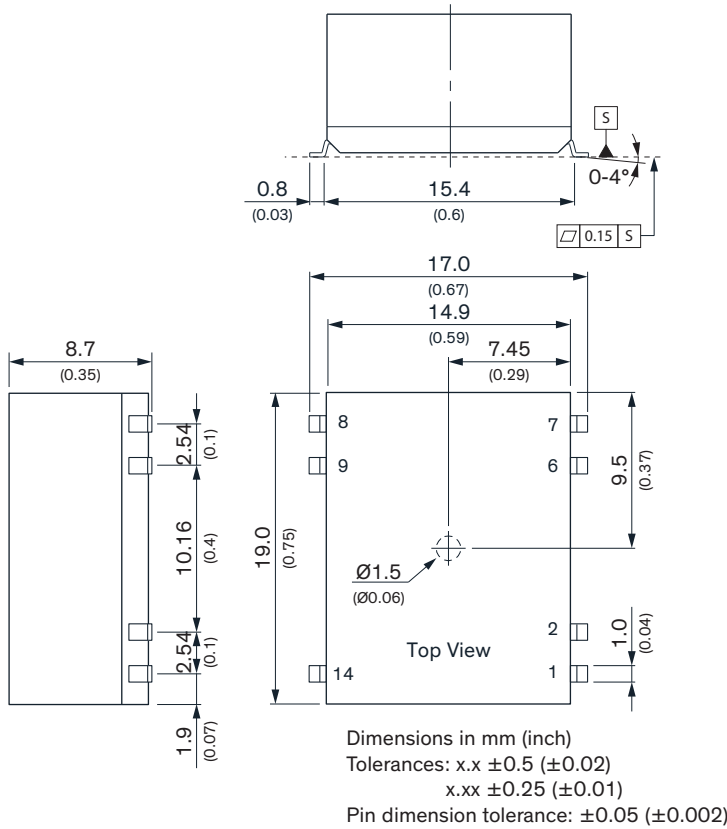
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

### Supporting Documents

[Overview Link](#) (for additional Documents)

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

### Outline Dimensions



Pinout		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	Remote	Remote
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

NC: No Connection

### Recommended Solder Pad Layout

