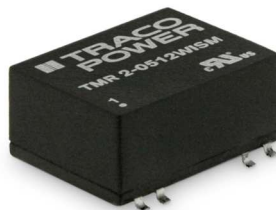


DC/DC Converter

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 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 _{max}	Vnom	I _{max}	
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: 40 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 10 mA typ.
	- At full load	9 Vin models: 490 mA typ. 24 Vin models: 100 mA typ. 48 Vin models: 50 mA typ.
Surge Voltage		9 Vin models: 15 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 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 Pi-Type
Short Circuit Input Power		1.5 W max.

Output Specifications

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

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tmr2wism
Pollution Degree		PD 3

EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)
	- Radiated Emissions	EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)

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

EMS (Immunity)		EN 55024 (IT Equipment)
		EN 55035 (Multimedia)
- Electrostatic Discharge	Air:	EN 61000-4-2, ± 8 kV, perf. criteria A
	Contact:	EN 61000-4-2, ± 6 kV, perf. criteria A
		EN 61000-4-3, 10 V/m, perf. criteria A
		EN 61000-4-4, ± 2 kV, perf. criteria A
- RF Electromagnetic Field		EN 61000-4-5, ± 1 kV, perf. criteria A
	Ext. input component:	Capacitor: 220 μ F / 100 V
		EN 61000-4-6, 10 Vrms, perf. criteria A
	Continuous:	EN 61000-4-8, 3 A/m, perf. criteria A
- EFT (Burst) / Surge		
- Conducted RF Disturbances		
- PF Magnetic Field		

General Specifications		
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +80°C
	- Case Temperature	+95°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	4 %/K above 70°C
	See application note: www.tracopower.com/overview/tmr2wism	
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote (passive = on)	On: < 0.6 VDC or open circuit Off: 4.7 to 15 VDC Refers to 'Remote' and '-Vin' Pin
	- Current Controlled Remote (passive = on)	On: open circuit Off: 2 to 4 mA current
	- Off Idle Input Current	3 mA max.
Altitude During Operation		5'000 m max.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'500 VDC
	- Input to Output, 1 s	1'800 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	500 pF typ.
Reliability	- Calculated MTBF	6'430'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2 (J-STD-033C)
Washing Process		Not allowed
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Pin Material		Phosphor Bronze (C5191)
Pin Foundation Plating		Copper (1 - 3 μ m)
Pin Surface Plating		Tin (7.5 μ m min.), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		SMD (Surface-Mount Device)
Footprint Type		SMD14
Soldering Profile		Lead-Free Reflow Soldering (acc. J-STD-020E)
	See application note: www.tracopower.com/info/reflow-soldering.pdf	
Weight		3.5 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a) (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	89a118d2-489f-4d56-b893-caef8277e3a4

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

Additional Information

Supporting Documents

www.tracopower.com/overview/tmr2wism

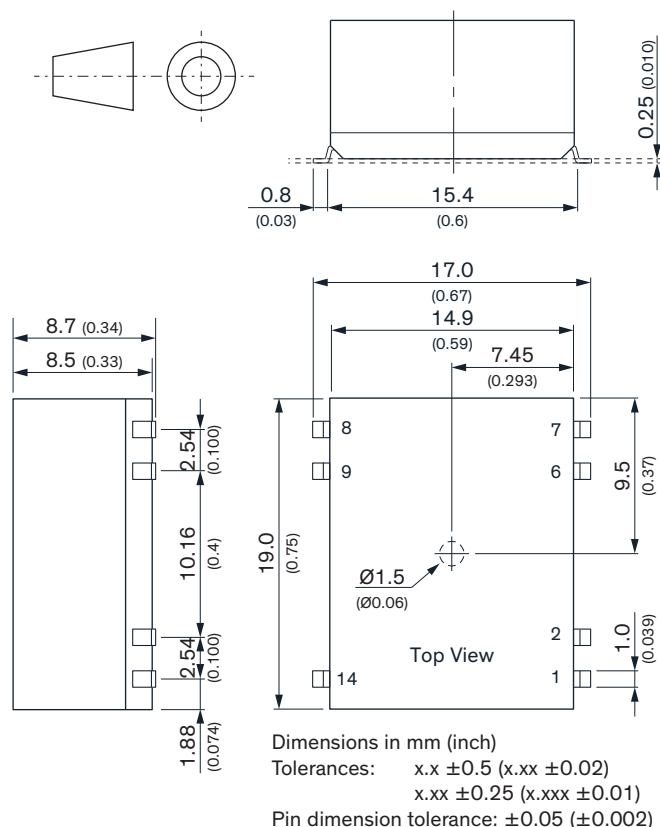
Frequently Asked Questions

www.tracopower.com/glossary-faq

Glossary

www.tracopower.com/info/glossary.pdf

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: Not connected

Recommended Solder Pad Layout

