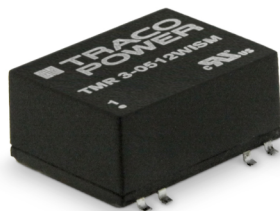


DC/DC Converter

TMR 3WISM Series, 3 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 3WISM Series is a set of 3 Watt SMD DC/DC converters. They operate up to 65°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 3-0511WISM	4.5 - 12 VDC (9 VDC nom.)	5 VDC	600 mA			81 %
TMR 3-0512WISM		12 VDC	250 mA			84 %
TMR 3-0513WISM		15 VDC	200 mA			84 %
TMR 3-0515WISM		24 VDC	125 mA			84 %
TMR 3-0522WISM		+12 VDC	125 mA	–12 VDC	125 mA	83 %
TMR 3-0523WISM		+15 VDC	100 mA	–15 VDC	100 mA	83 %
TMR 3-2411WISM	9 - 36 VDC (24 VDC nom.)	5 VDC	600 mA			80 %
TMR 3-2412WISM		12 VDC	250 mA			85 %
TMR 3-2413WISM		15 VDC	200 mA			85 %
TMR 3-2415WISM		24 VDC	125 mA			85 %
TMR 3-2422WISM		+12 VDC	125 mA	–12 VDC	125 mA	84 %
TMR 3-2423WISM		+15 VDC	100 mA	–15 VDC	100 mA	84 %
TMR 3-4811WISM	18 - 75 VDC (48 VDC nom.)	5 VDC	600 mA			80 %
TMR 3-4812WISM		12 VDC	250 mA			84 %
TMR 3-4813WISM		15 VDC	200 mA			84 %
TMR 3-4815WISM		24 VDC	125 mA			85 %
TMR 3-4822WISM		+12 VDC	125 mA	–12 VDC	125 mA	83 %
TMR 3-4823WISM		+15 VDC	100 mA	–15 VDC	100 mA	82 %

Input Specifications

Input Current	- At no load	9 Vin models: 40 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 13 mA typ.
	- At full load	9 Vin models: 730 mA typ. 24 Vin models: 150 mA typ. 48 Vin models: 75 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 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tmr3wism
Pollution Degree		PD 3

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

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)
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
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV, perf. criteria A
	- Conducted RF Disturbances	Ext. input component: 220 μ F / 100 V EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: EN 61000-4-8, 3 A/m, perf. criteria A

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	3.3 %/K above 65°C
	See application note: www.tracopower.com/overview/tmr3wism	
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	5'090'000 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

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

www.tracopower.com/info/reach-declaration.pdf

www.tracopower.com/info/rohs-declaration.pdf

(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)

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- SCIP Reference Number

Supporting Documents

www.tracopower.com/overview/tmr3wism

Frequently Asked Questions

www.tracopower.com/glossary-faq

Glossary

www.tracopower.com/info/glossary.pdf

Technical drawing of a mechanical part showing three views: a side view, a top view, and a front view.

Side View: Shows a tapered profile with a height of 0.25 (0.010).

Top View: Shows a rectangular plate with overall dimensions 17.0 (0.67) by 14.9 (0.59). The central hole has a diameter of 1.5 (0.06). The plate is divided into four quadrants by a vertical centerline and a horizontal centerline. The quadrants are labeled 1, 2, 7, and 8. The dimensions 19.0 (0.75) and 9.5 (0.37) are shown for the vertical and horizontal distances from the centerline to the outer edge, respectively. The dimensions 1.88 (0.074) and 1.0 (0.039) are shown for the vertical and horizontal distances from the centerline to the inner edge, respectively.

Front View: Shows a rectangular plate with overall dimensions 8.7 (0.34) by 8.5 (0.33). The central hole has a diameter of 1.5 (0.06). The dimensions 10.16 (0.4) and 2.54 (0.100) are shown for the vertical and horizontal distances from the centerline to the outer edge, respectively. The dimensions 2.54 (0.100) and 1.88 (0.074) are shown for the vertical and horizontal distances from the centerline to the inner edge, respectively.

Dimensions in mm (inch)

Tolerances: $x.x \pm 0.5$ ($x.xx \pm 0.02$)
 $x.xx \pm 0.25$ ($x.xxx \pm 0.01$)

Pin dimension tolerance: ± 0.05 (± 0.002)

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

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

Recommended Solder Pad Layout

