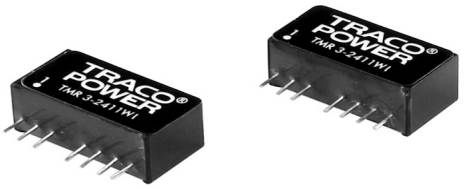
DC/DC Converters

TMR 3WI Series, 3 Watt

Features

- Highest power density in SIP package
- Ultra wide 4:1 input range
- Small footprint: 21.8 x 9.2 mm
- Temperature range –40° to +85°C
- High efficiency up to 82%
- Excellent load and line regulation
- Short-circuit protection
- I/O isolation 1500 VDC
- Remote On/Off control
- 3-year product warranty



The TMR-3WI series is a new family of isolated 3W DC/DC converters with regulated output, featuring ultra-wide 4:1 input voltage range. The product comes in a ultra-compact SIP plastic package with a small footprint occupying only 2.0 cm2 (0.3 square in.) of board space. An excellent efficiency allows –40° to +85°C operation temperatures.
Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in battery-powered equipment and instrumentation.

Models

Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TMR 3-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	74 %
TMR 3-1211WI		5 VDC	600 mA	78 %
TMR 3-1212WI		12 VDC	250 mA	80 %
TMR 3-1213WI		15 VDC	200 mA	80 %
TMR 3-1221WI		±5 VDC	±300 mA	80 %
TMR 3-1222WI		±12 VDC	±125 mA	80 %
TMR 3-1223WI		±15 VDC	±100 mA	80 %
TMR 3-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	75 %
TMR 3-2411WI		5 VDC	600 mA	80 %
TMR 3-2412WI		12 VDC	250 mA	82 %
TMR 3-2413WI		15 VDC	200 mA	82 %
TMR 3-2421WI		±5 VDC	±300 mA	79 %
TMR 3-2422WI		±12 VDC	±125 mA	81 %
TMR 3-2423WI		±15 VDC	±100 mA	81 %
TMR 3-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	74 %
TMR 3-4811WI		5 VDC	600 mA	80 %
TMR 3-4812WI		12 VDC	250 mA	81 %
TMR 3-4813WI		15 VDC	200 mA	81 %
TMR 3-4821WI		±5 VDC	±300 mA	79 %
TMR 3-4822WI		±12 VDC	±125 mA	81 %
TMR 3-4823WI		±15 VDC	±100 mA	81 %

Input Specifications

Input current at full load	12 Vin models:	340 mA max.
	24 Vin models:	170 mA max.
	48 Vin models:	85 mA max.
Input current at no load	12 Vin models:	40 mA max.
	24 Vin models:	25 mA typ.
	48 Vin models:	15 mA typ.
Surge voltage (100 msec. max.)	12 Vin models:	25 V max.
	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Input filter		internal capacitor
ESD (electrostatic discharge)		EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A
Radiated immunity		EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / Surge		EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV perf. criteria A With external input capacitor e.g. Nippon chemi-con KY 100 µF, 100 V, ESR 110 mOhm
Conducted immunity		EN 61000-4-6, 10 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy		±1 % max
Regulation	– Input variation Vin min. to Vin max.	0.2 % max.
	– Load variation 0 – 100% single output models:	1.0 % max.
	dual output models:	1.0 % max. balanced load
	– Load cross regulation 25/100%	5.0 % max. (dual output models)
Minimum load		not required
Temperature coefficient		0.02 %/K
Ripple and noise (20 MHz Bandwidth)		30 mVpk-pk max.
Start up time	– Power On	30 ms typ.
(constant resistive load)	– Remote On	30 ms typ.
Transient response setting time (25% load step change)		250 µs typ.
Short circuit protection		continuous, automatic recovery
Capacitive load	3.3 VDC models:	1'760 µF max.
	5 VDC models:	1'000 µF max.
	12 VDC models:	170 µF max.
	15 VDC models:	110 µF max.
	±5 VDC models:	±470 µF max.
	±12 VDC models:	±100 µF max.
	±15 VDC models:	±47 µF max.

General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+100°C max.
	– Storage	–55°C to +125°C
Load derating		3.3 %/K above 70°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1.7 Mio h

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

General Specifications

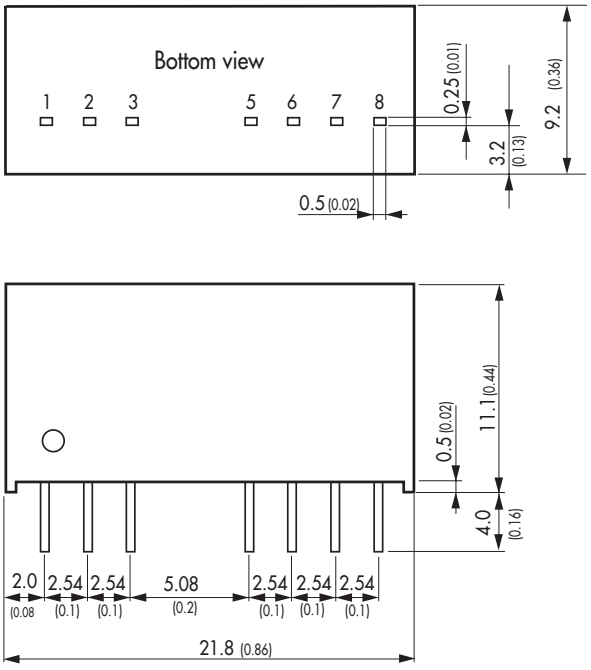
Isolation voltage (60 sec.)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	200 pF max.
Isolation resistance	– Input/Output (500 VDC)	>1 GOhm
Switching frequency		100 kHz min. (PFM)
Remote On/Off	– On: – Off: – Off stand by input current	open or high impedance 2...4 mA to applied via 1 kOhm resistor 2.5 mA max.
Vibration and thermal shock		MIL-STD-810E
Safety standards		UL /cUL 60950-1, IEC 60950-1:2005 (2nd Edition); +A1:2009
Safety approvals	– CB test certificate (IEC 60950-1 2nd edition) – UL/cUL	www.tracopower.com/products/tmr3wi-cb.pdf www.ul.com -> certifications -> File: e188913
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/tmr3wi-reach.pdf RoHS Directive 2011/65/EU
Altitude	– operation – non operation – test report	< 40'000ft (12'000m) < 50'000ft (15'000m) www.tracopower.com/products/tmr3wi-altitude.pdf

Physical Specifications

Casing material	non-conductive plastic
Potting material	silicon, UL 94V-0 rated
Weight	4.8 g (0.17oz)

Application note: www.tracopower.com/products/tmr3wi-application.pdf

Outline Dimensions



Pin-Out		
Pin	**Single**	**Dual**
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+Vout	+Vout
7	–Vout	Common
8	No con.	–Vout

Dimensions in [mm], () = Inch
Pin dimension tolerances 0.1 (0.004)
Pin pitch tolerances: ±0.25 (±0.01)
Tolerances: ±0.5 (±0.02)