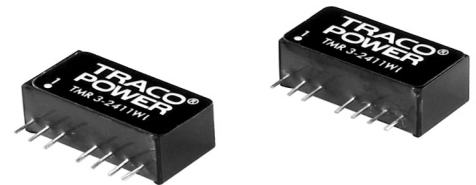


#### Features

- ◆ Highest power density in SIP package
- ◆ Ultra wide 4:1 input range
- ◆ Small footprint: 21.8 x 9.2 mm
- ◆ Temperature range  $-40^{\circ}$  to  $+85^{\circ}\text{C}$
- ◆ 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 an ultra-compact SIP plastic package with a small footprint occupying only 2.0 cm<sup>2</sup> (0.3 square in.) of board space. An excellent efficiency allows  $-40^{\circ}$  to  $+85^{\circ}\text{C}$  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		$\pm 5$ VDC	$\pm 300$ mA	80 %
TMR 3-1222WI		$\pm 12$ VDC	$\pm 125$ mA	80 %
TMR 3-1223WI		$\pm 15$ VDC	$\pm 100$ mA	80 %
TMR 3-2410WI		9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA
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	$\pm 5$ VDC		$\pm 300$ mA	79 %
TMR 3-2422WI	$\pm 12$ VDC		$\pm 125$ mA	81 %
TMR 3-2423WI	$\pm 15$ VDC		$\pm 100$ mA	81 %
TMR 3-4810WI	18 – 75 VDC (48 VDC nominal)		3.3 VDC	700 mA
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		$\pm 5$ VDC	$\pm 300$ mA	79 %
TMR 3-4822WI		$\pm 12$ VDC	$\pm 125$ mA	81 %
TMR 3-4823WI		$\pm 15$ VDC	$\pm 100$ 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 $\pm 8$ kV, contact $\pm 6$ kV, perf. criteria A
Radiated immunity	EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / Surge	EN 61000-4-4, $\pm 2$ kV, perf. criteria A EN 61000-4-5, $\pm 1$ kV perf. criteria A With external input capacitor e.g. Nippon chemi-con KY 100 $\mu$ F, 100 V, ESR 110 mOhm
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A

### Output Specifications

Voltage set accuracy	$\pm 1$ % 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 (constant resistive load)	– Power On 30 ms typ. – Remote On 30 ms typ.
Transient response setting time (25% load step change)	250 $\mu$ s typ.
Short circuit protection	continuous, automatic recovery
Capacitive load	3.3 VDC models: 1'760 $\mu$ F max. 5 VDC models: 1'000 $\mu$ F max. 12 VDC models: 170 $\mu$ F max. 15 VDC models: 110 $\mu$ F max. $\pm 5$ VDC models: $\pm 470$ $\mu$ F max. $\pm 12$ VDC models: $\pm 100$ $\mu$ F max. $\pm 15$ VDC models: $\pm 47$ $\mu$ F max.

### General Specifications

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

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 (60 sec)	- Input/Output	1'500 VDC
Isolation capacity	- 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	<a href="http://www.tracopower.com/products/tmr3wi-cb.pdf">www.tracopower.com/products/tmr3wi-cb.pdf</a> pending
Environmental compliance	- Reach - RoHS	<a href="http://www.tracopower.com/products/tmr3wi-reach.pdf">www.tracopower.com/products/tmr3wi-reach.pdf</a> RoHS Directive 2011/65/EU
Altitude	- operation - non operation - test report	< 40'000ft (12'000m) < 50'000ft (15'000m) <a href="http://www.tracopower.com/products/tmr3wi-altitude.pdf">www.tracopower.com/products/tmr3wi-altitude.pdf</a>

**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](http://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)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)