

### Features

- ◆ Wide 2:1 input voltage range
- ◆ Fully regulated output voltage
- ◆ Compact SIP-8 package
- ◆ Models with 1'500 VDC and 3'000 VDC I/O isolation (functional insulation)
- ◆ Small footprint
- ◆ Temperature range  $-40^{\circ}$  to  $+85^{\circ}\text{C}$
- ◆ High efficiency up to 85%
- ◆ Short-circuit protection
- ◆ Remote On/Off control
- ◆ 3-year product warranty



The TMR-3 series is a new family of isolated 3W dc-dc converter modules with regulated output, featuring wide 2:1 input voltage ranges. The product comes in a compact SIP-8 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 compact dimensions of these converters make them an ideal solution for many space critical applications in communication equipment, instrumentation and industrial electronics.

### Models

Order code		Input voltage range	Output voltage	Output current max.	Efficiency typ.
1500 VDC isolation	3000 VDC isolation				
TMR 3-0510	TMR 3-0510HI	4.5 – 9.0 VDC (5 VDC nominal)	3.3 VDC	700 mA	75 %
TMR 3-0511	TMR 3-0511HI		5 VDC	600 mA	79 %
TMR 3-0512	TMR 3-0512HI		12 VDC	250 mA	81 %
TMR 3-0513	TMR 3-0513HI		15 VDC	200 mA	82 %
TMR 3-0521	TMR 3-0521HI		$\pm 5$ VDC	$\pm 300$ mA	78 %
TMR 3-0522	TMR 3-0522HI		$\pm 12$ VDC	$\pm 125$ mA	81 %
TMR 3-0523	TMR 3-0523HI		$\pm 15$ VDC	$\pm 100$ mA	81 %
TMR 3-1210	TMR 3-1210HI		9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA
TMR 3-1211	TMR 3-1211HI	5 VDC		600 mA	81 %
TMR 3-1212	TMR 3-1212HI	12 VDC		250 mA	83 %
TMR 3-1213	TMR 3-1213HI	15 VDC		200 mA	83 %
TMR 3-1221	TMR 3-1221HI	$\pm 5$ VDC		$\pm 300$ mA	82 %
TMR 3-1222	TMR 3-1222HI	$\pm 12$ VDC		$\pm 125$ mA	83 %
TMR 3-1223	TMR 3-1223HI	$\pm 15$ VDC		$\pm 100$ mA	83 %
TMR 3-2410	TMR 3-2410HI	18 – 36 VDC (24 VDC nominal)		3.3 VDC	700 mA
TMR 3-2411	TMR 3-2411HI		5 VDC	600 mA	82 %
TMR 3-2412	TMR 3-2412HI		12 VDC	250 mA	83 %
TMR 3-2413	TMR 3-2413HI		15 VDC	200 mA	84 %
TMR 3-2421	TMR 3-2421HI		$\pm 5$ VDC	$\pm 300$ mA	80 %
TMR 3-2422	TMR 3-2422HI		$\pm 12$ VDC	$\pm 125$ mA	83 %
TMR 3-2423	TMR 3-2423HI		$\pm 15$ VDC	$\pm 100$ mA	85 %
TMR 3-4810	TMR 3-4810HI		36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA
TMR 3-4811	TMR 3-4811HI	5 VDC		600 mA	79 %
TMR 3-4812	TMR 3-4812HI	12 VDC		250 mA	81 %
TMR 3-4813	TMR 3-4813HI	15 VDC		200 mA	82 %
TMR 3-4821	TMR 3-4821HI	$\pm 5$ VDC		$\pm 300$ mA	79 %
TMR 3-4822	TMR 3-4822HI	$\pm 12$ VDC		$\pm 125$ mA	82 %
TMR 3-4823	TMR 3-4823HI	$\pm 15$ VDC		$\pm 100$ mA	83 %

### Input Specifications

Input current at full load / at no load (nominal input voltage)	5 Vnom models: 810 mA max. / 60 mA typ. 12 Vnom models: 330 mA max. / 30 mA typ. 24 Vnom models: 160 mA max. / 18 mA typ. 48 Vnom models: 85 mA max. / 12 mA typ.
Surge voltage (100 msec. max.)	5 Vnom models: 15 V max. 12 Vnom models: 36 V max. 24 Vnom models: 50 V max. 48 Vnom models: 100 V max.
Input voltage variation (dv/dt)	5 V/ms, max. (complies with ETS300 132 part 4.4)
Input filter	capacitor type (see application note for compliance to EN 55022 class A/B)
Start up time (constant resistive load)	– Power On: 30 ms typ. – Remote On: 30 ms typ.

### Output Specifications

Voltage set accuracy	±1 % max
Regulation	– Input variation Vin min. to Vin max.: 0.2 % max. – Load variation 5 – 100% single output models: 0.5 % max. dual output models: 1.0 % max. balanced load – 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
Ripple and noise (20 MHz Bandwidth)	50 mVp-p max.
Transient response setting time (25% load step change)	500 µs typ.
Short circuit protection	continuous, automatic recovery
Capacitive load	3.3 VDC / 5 VDC output models: 3300 µF max. / 1680 µF max. 12 VDC / 15 VDC output models: 820 µF max. / 680 µF max. ±5 VDC / ±12 VDC output models: ±1000 µF max. / ±470 µF max. ±15 VDC output models: ±330 µF max.

### General Specifications

Temperature ranges	– Operating: –40°C to +85°C – Case temperature: +100°C max. – Storage: –55°C to +105°C
Load derating	3.3 %/K above 70°C
Humidity (non condensing)	5 – 95 % rel. H max.
Temperature coefficient	±0.02 %/K
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	>4.8 Mio h
Isolation voltage (60 sec.)	– Input/Output: 1600 VDC with suffix -HI: 3000 VDC
Isolation capacitance	– Input/Output: 200 pF max. with suffix -HI: 40 pF max.
Isolation resistance	– Input/Output (500 VDC): >1 GOhm
Switching frequency	100 kHz min. (PFM)
Remote On/Off	– On: open or high impedance – Off: 2...4 mA current applied via 1KOhm resistor – Off stand by input current: 2.5 mA max.

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

**General Specifications**

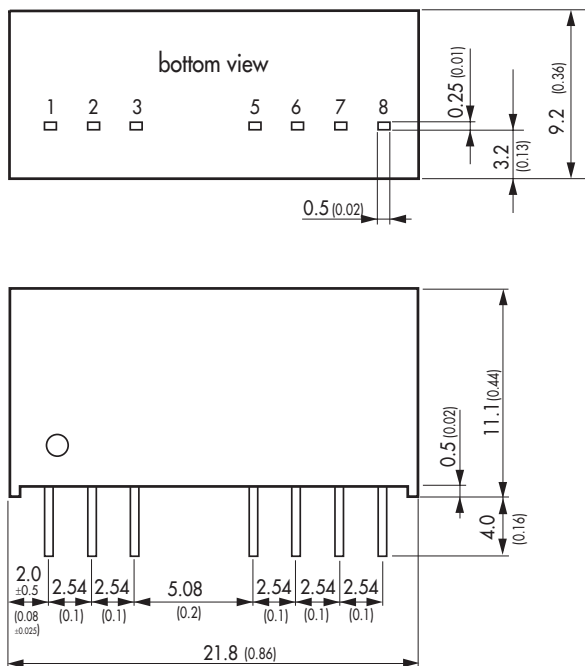
Safety standards		IEC/EN 60950-1, UL 60950-1
Safety approvals	- UL/cUL	<a href="http://www.ul.com">www.ul.com</a> > UL File no.: e188913
Environmental compliance	- Reach - RoHS	<a href="http://www.tracopower.com/products/tmr3-reach.pdf">www.tracopower.com/products/tmr3-reach.pdf</a> RoHS directive 2011/65/EU

**Physical Specifications**

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

**Application note:** [www.tracopower.com/products/tmr3-application.pdf](http://www.tracopower.com/products/tmr3-application.pdf)

**Outline Dimensions mm (inches)**



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

\*No pin 5 with HI version

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

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