DC/DC Converters

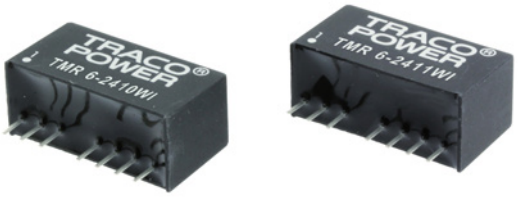
TMR 6WI Series, 6 Watt

pending

UL 60950-1

Features

- Highest power density in SIP package
- Wide 4:1 input voltage range
- Ultra-compact SIP-8 package
- Smallest footprint 6W converter
- Full SMD design
- Temperature range –40° to +71°C
- High efficiency up to 88%
- Indefinite short-circuit protection
- I/O isolation 1500 VDC
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty



The TMR-6WI series is a new family of isolated 6W dc-dc converter modules with regulated output, featuring wide 4:1 input voltage ranges. The product comes in a ultra-compact SIP-8 plastic package with a small footprint occupying only 2.0 cm2 (0.3 square in.) of board space.
An excellent efficiency allows –40° to +71°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 communication equipment, instrumentation and industrial electronics.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 6-2410WI	**9.0 – 36 VDC** (24 VDC nominal)	3.3 VDC	1500 mA	81 %
TMR 6-2411WI		5 VDC	1200 mA	84 %
TMR 6-2419WI		9 VDC	666 mA	86 %
TMR 6-2412WI		12 VDC	500 mA	87 %
TMR 6-2413WI		15 VDC	400 mA	88 %
TMR 6-2415WI		24 VDC	250 mA	87 %
TMR 6-2421WI		±5 VDC	±600 mA	84 %
TMR 6-2422WI		±12 VDC	±250 mA	87 %
TMR 6-2423WI		±15 VDC	±200 mA	87 %
TMR 6-4810WI	**18 – 75 VDC** (48 VDC nominal)	3.3 VDC	1500 mA	81 %
TMR 6-4811WI		5 VDC	1200 mA	84 %
TMR 6-4819WI		9 VDC	666 mA	85 %
TMR 6-4812WI		12 VDC	500 mA	87 %
TMR 6-4813WI		15 VDC	400 mA	87 %
TMR 6-4815WI		24 VDC	250 mA	87 %
TMR 6-4821WI		±5 VDC	±600 mA	84 %
TMR 6-4822WI		±12 VDC	±250 mA	87 %
TMR 6-4823WI		±15 VDC	±200 mA	87 %

Input Specifications

Input current at no load (nominal input voltage)		24 V models: 48 V models:	6 mA typ. 6 mA typ.
Surge voltage (100 msec. max.)		24 V models: 48 V models:	50 V max. 100 V max.
Input filter			**capacitor type** (application note for compliance to EN 55022 class A/B pending)
Recommended input fuse (normal blow, max. rating)		24 V models: 48 V models:	700 mA 315 mA
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 (with external input capacitor)			EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV perf. criteria A
	– external input capacitor	5 Vin models: other models:	Nippon chemi-con KY 330 µF, 50 V, ESR 55 mOhm Nippon chemi-con KY 220 µF, 100 V, ESR 48 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. – Load variation 0 – 100% – Load cross regulation 25/100%	 single output models: dual output models:	0.2 % max. 0.5 % max. 1.0 % max. balanced load 5.0 % max. (dual output models)
Minimum load			no minimum load required
Ripple and noise (20 MHz Bandwidth)			125 mVpk-pk max.
Transient response setting time (25% load step change)			250 µs typ.
Short circuit protection			indefinite, automatic recovery
Start up time (constant resistive load)	– Power On – Remote On		30 ms typ. 30 ms typ.
Capacitive load		3.3 VDC output models: 5 VDC output models: 9 VDC output models: 12 VDC output models: 15 VDC output models: 24 VDC output models: ±5 VDC output models: ±12 VDC output models: ±15 VDC output models:	4700 µF max. 2200 µF max. 1400 µF max. 1100 µF max. 1000 µF max. 470 µF max. ±1400 µF max. ±660 µF max. ±470 µF max.

General Specifications

Temperature ranges	– Operating – Case temperature – Storage	–40°C to +71°C (without derating) +100°C max. –55°C to +125°C
Load derating		3.45 %/K above 71°C
Thermal shock, mechanical shock & vibration	– Test conditions	EN 61373, MIL-STD-810F www.tracopower.com/products/mil810.pdf
Humidity (non condensing)		95 % rel. H max.
Temperature coefficient		±0.02 %/K

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

General Specifications

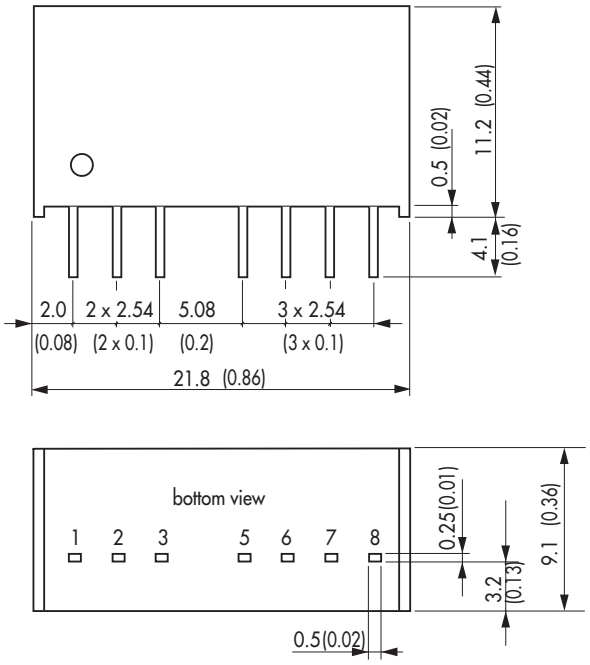
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>800'000 Mio h
Isolation voltage (60sec.)	– Input/Output	1500 VDC
Isolation capacitance	– Input/Output	50 pF max.
Isolation resistance	– Input/Output (500 VDC)	>1 GOhm
Switching frequency		522 kHz min. (PWM)
Remote On/Off	– On: – Off: – Off stand by input current	open or high impedance 2...4 mA current applied via 1KOhm resistor 1.0 mA typ.
Safety standards		IEC/EN 60950-1, UL 60950-1
Altitude during operation		4'000 m max. (13'120 ft) approved
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/tmr6wi-reach.pdf RoHS directive 2011/65/EU

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/tmr6wi-application.pdf pending

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 function	No function
6	+Vout	+Vout
7	–Vout	Common
8	No function	–Vout

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

Specifications can be changed any time without notice.