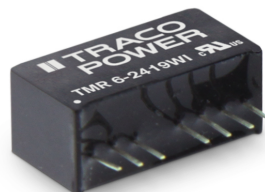


- Highest power density in SIP package
- Wide 4:1 input voltage range
- Ultra-compact SIP-8 package
- Smallest footprint 6 W converter
- Temperature range -40° to $+84^{\circ}\text{C}$
- High efficiency up to 88%
- Indefinite short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty



The TMR 6WI series is a new family of isolated 6 W 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 inch) of board space.

An excellent efficiency allows -40° to $+84^{\circ}\text{C}$ 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 communication equipment, instrumentation and industrial electronics.

Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TMR 6-2410WI	9 - 36 VDC (24 VDC nom.)	3.3 VDC	1'500 mA			81 %
TMR 6-2411WI		5 VDC	1'200 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	-5 VDC	600 mA	84 %
TMR 6-2422WI		+12 VDC	250 mA	-12 VDC	250 mA	87 %
TMR 6-2423WI		+15 VDC	200 mA	-15 VDC	200 mA	87 %
TMR 6-4810WI	18 - 75 VDC (48 VDC nom.)	3.3 VDC	1'500 mA			81 %
TMR 6-4811WI		5 VDC	1'200 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	-5 VDC	600 mA	84 %
TMR 6-4822WI		+12 VDC	250 mA	-12 VDC	250 mA	87 %
TMR 6-4823WI		+15 VDC	200 mA	-15 VDC	200 mA	87 %

Input Specifications

Input Current	- At no load	24 Vin models: 6 mA typ. 48 Vin models: 6 mA typ.
Surge Voltage		24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.)
Recommended Input Fuse		24 Vin models: 1'600 mA (slow blow) 48 Vin models: 1'000 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Voltage Set Accuracy		±1% max.
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (0 - 100%)	single output models: 0.2% max. single output models: 0.5% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise (20 MHz Bandwidth)	- single output	3.3 Vout models: 50 mVp-p max. 5 Vout models: 50 mVp-p max. 9 Vout models: 50 mVp-p max. 12 Vout models: 75 mVp-p max. 15 Vout models: 75 mVp-p max. 24 Vout models: 75 mVp-p max.
	- dual output	5 / -5 Vout models: 50 / 50 mVp-p max. 12 / -12 Vout models: 75 / 75 mVp-p max. 15 / -15 Vout models: 75 / 75 mVp-p max.
Capacitive Load	- single output	3.3 Vout models: 2'200 µF max. 5 Vout models: 1'100 µF max. 9 Vout models: 680 µF max. 12 Vout models: 470 µF max. 15 Vout models: 470 µF max. 24 Vout models: 180 µF max.
	- dual output	5 / -5 Vout models: 680 / 680 µF max. 12 / -12 Vout models: 330 / 330 µF max. 15 / -15 Vout models: 180 / 180 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		30 ms typ.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		180% typ. of Iout max.
Transient Response	- Response Time	250 µs typ. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tmr6wi
Pollution Degree		PD 2
Over Voltage Category		OVC I

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

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (with external filter)
	- Radiated Emissions	EN 55032 class B (with external filter)
External filter proposal:		www.tracopower.com/overview/tmr6wi
EMS Immunity	- Electrostatic Discharge	Air: EN 61000-4-2, ± 8 kV, perf. criteria A
	- RF Electromagnetic Field	Contact: EN 61000-4-2, ± 6 kV, perf. criteria A
- EFT (Burst) / Surge		EN 61000-4-3, 20 V/m, perf. criteria A
- Conducted RF Disturbances		EN 61000-4-4, ± 2 kV, perf. criteria A
- PF Magnetic Field		EN 61000-4-5, ± 2 kV, perf. criteria A
Ext. input component:		24 VDC models: KY 220 μ F // TVS (SMDJ70A)
		48 VDC models: KY 220 μ F //TVS (SMDJ120A)
Continuous:		EN 61000-4-6, 10 Vrms, perf. criteria A
		EN 61000-4-8, 100 A/m, perf. criteria A

General Specifications

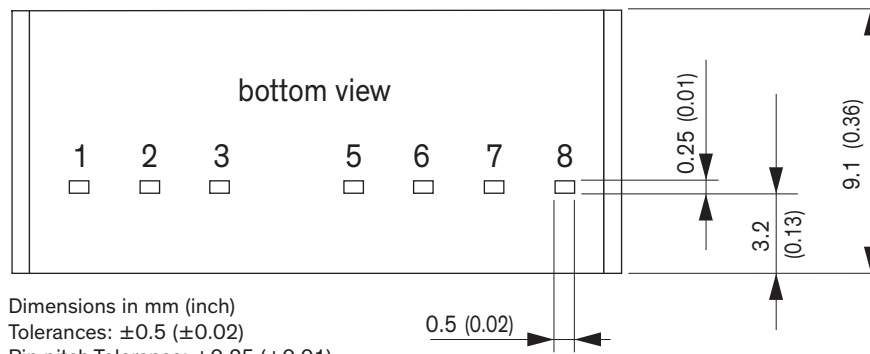
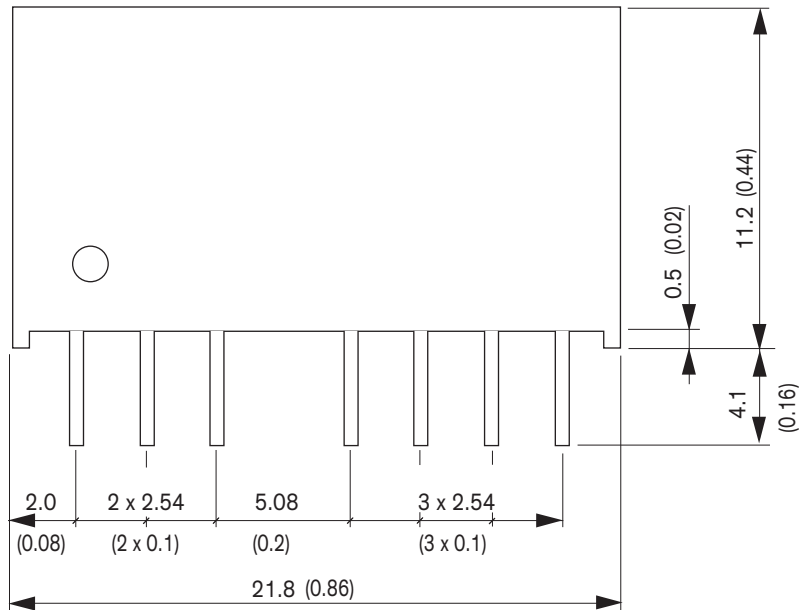
Relative Humidity	95% max. (non condensing)	
Temperature Ranges	- Operating Temperature	-40°C to +84°C
	- Case Temperature	+100°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	See application note: www.tracopower.com/overview/tmr6wi
Cooling System	Natural convection (20 LFM)	
Remote Control	- Voltage Controlled Remote	On: 0 to 0.5 VDC or open circuit Off: 3 to 12 VDC
Altitude During Operation	5'000 m max.	
Switching Frequency	522 - 638 kHz (PWM) 580 kHz typ. (PWM)	
Insulation System	Functional Insulation	
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	2'930'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F
Housing Material	Non-conductive Plastic (UL94 V-0 rated)	
Potting Material	Silicone (UL 94 V-0 rated)	
Pin Material	Copper	
Pin Foundation Plating	Nickel (2 - 3 μ m)	
Pin Surface Plating	Tin (3 - 5 μ m), matte	
Connection Type	THD (Through-Hole Device)	
Weight	4.8 g	
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tmr6wi
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All specifications valid at nominal voltage, full load and +25°C after warm-up time unless otherwise stated.

Outline Dimensions



Dimensions in mm (inch)
Tolerances: ± 0.5 (± 0.02)
Pin pitch Tolerance: ± 0.25 (± 0.01)

Pinout

Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

NC: No Connection