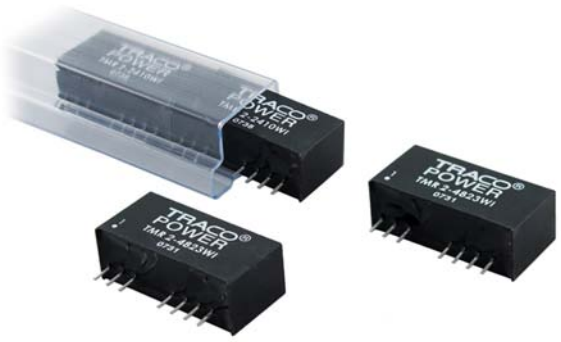
DC/DC Converters

TMR 2WI Series, 2 Watt

Features

- Ultra-wide 4:1 input range
- SIP-9 package
- Full SMD design
- Temperature range –40 to +85°C
- High efficiency
- Excellent load and line regulation
- Indefinite short-circuit protection
- I/O isolation 1500 VDC
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty



The TMR-2WI series is a new family of isolated 2W dc-dc converter modules with regulated output, featuring ultra-wide 4:1 input voltage ranges of 9-36 VDC or 18-75 VDC. The product comes in a ultra-compact SIP-9 plastic package.
An excellent efficiency up to 84% allows –40°C to +85°C operation temperatures at full load. Further features include remote On/Off control and continuous short circuit protection. Typical applications for these ultra-compact converters are battery operated equipment and distributed power architectures in communication, instrumentation and industrial electronics, everywhere where space on the PCB is critical.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 2-2410WI	**9 – 36 VDC** (24 VDC nominal)	3.3 VDC	500 mA	71 %
TMR 2-2411WI		5 VDC	400 mA	76 %
TMR 2-2412WI		12 VDC	165 mA	79 %
TMR 2-2413WI		15 VDC	135 mA	80 %
TMR 2-2421WI		±5 VDC	±200 mA	73 %
TMR 2-2422WI		±12 VDC	±85 mA	77 %
TMR 2-2423WI		±15 VDC	±65 mA	79 %
TMR 2-4810WI	**18 – 75 VDC** (48 VDC nominal)	3.3 VDC	500 mA	70 %
TMR 2-4811WI		5 VDC	400 mA	72 %
TMR 2-4812WI		12 VDC	165 mA	78 %
TMR 2-4813WI		15 VDC	135 mA	78 %
TMR 2-4821WI		±5 VDC	±200 mA	70 %
TMR 2-4822WI		±12 VDC	±85 mA	76 %
TMR 2-4823WI		±15 VDC	±65 mA	76 %

Input Specifications

Input current at no load (nominal input)	24 Vin models:	20 mA typ.
	48 Vin models:	15 mA typ.
Input current at full load (nominal input)	24 Vin models:	110 mA typ.
	48 Vin models:	55 mA typ.
Surge voltage (100 msec. max.)	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Reverse voltage protection		0.5 A max.
Input Filter		capacitor type
Start up time		<1ms (at nominal input and resistive load)

Output Specifications

Voltage set accuracy		±2 %
Regulation	– Input variation Vin min. to Vin max.	0.5 % max.
	– Load variation 25 – 100 % single output models:	0.75 % max.
	dual output models:	2.0 % max. (balanced load)
Minimum load		25 % of rated max current (operation at lower load condition is safe but a higher output ripple will be experianced)
Temperature coefficient		±0.1 %/°C
Ripple and noise (20 MHz Bandwidth)		50 mVpk-pk max
Transient response (25 % load step change)		300 µs max.
Short circuit protection		constant current (automatic recovery)
Capacitive load	3.3 VDC / 5 VDC models:	2'200 µF max. / 1'000 µF max.
	12 VDC / 15VDC models:	170 µF max. / 110 µF max.
	±5 VDC / ±12 VDC models:	470 µF max. / 100 µF max. (each output)
	±15 VDC models:	47 µF max. (each output)

General Specifications

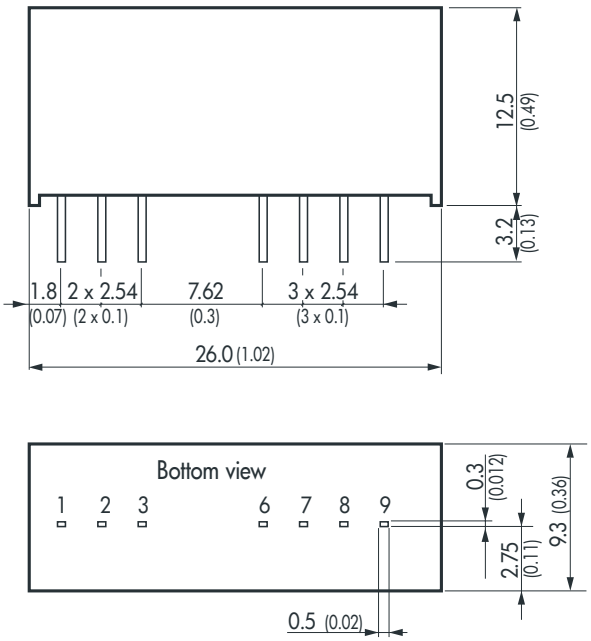
Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+90°C max.
	– Storage	–55°C to +105°C
Derating (convection cooling)		3.3 %/K above 70°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		>1 Mio h
Isolation voltage (60 sec.)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	500 pF max.
Isolation resistance	– Input/Output (500 VDC)	>1'000 M Ohm
Switching frequency		100 to 650 kHz (PFM)
Remote On/Off control	– On:	<0.6 VDC or open circuit
	– Off:	2.9 to 15 VDC
	– Off stand by input current	1 mA typ / 3 mA max.

Physical Specifications

Casing material		non-conductive plastic
Potting material		epoxy (UL 94V-0 rated)
Weight		6.5 g (0.23 oz)
Soldering temperature		max. 260°C / 10 sec.
Environmental compliance	– Reach	www.tracopower.com/products/tmr2wi-reach.pdf
	– RoHS directive 2002/95/EC	

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

Outline Dimensions



Pin-Out		
Pin	**Single**	**Dual**
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote On/Off	Remote On/Off
6	+Vout	+Vout
7	ntc	Common
8	ntc	ntc
9	–Vout	–Vout

(ntc = not to connect)

Dimensions in [mm], () = Inch
Pin diameter ⌀ 0.5 ±0.05 (0.02 ±0.002)
Tolerances ±0.5 (±0.02)
Pin pitch tolerances ±0.2 (±0.008)

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