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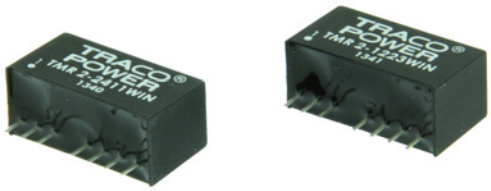
DC/DC Converters

TMR 2WIN Series, 2 Watt

Features

- Ultra-wide 4:1 input range
- Compact SIP-8 package
- Temperature range –40 to +90°C (up to +75°C at full load)
- High efficiency of 82%
- Excellent load and line regulation
- Continuouse short-circuit protection
- Overload protection
- I/O isolation 1500 VDC
- Remote On/Off control
- 3-year product warranty



The TMR-2WIN series is a family of isolated 2 W DC/DC converter modules with accurately regulated output voltages and ultra-wide 4:1 input voltage ranges. They require no minimum load and are protected against overload and short circuit.
An excellent efficiency along with the use of high grade components allows a compact construction in SIP-8 package; even the converters can reliably operate in an ambient temperature of –40°C to +75°C at full load and up to 90°C with 50% power derating. Typical applications for these converters are 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 2-1210WIN	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	500 mA	75 %
TMR 2-1211WIN		5 VDC	400 mA	80 %
TMR 2-1212WIN		12 VDC	167 mA	82 %
TMR 2-1213WIN		15 VDC	134 mA	82 %
TMR 2-1221WIN		±5 VDC	±200 mA	80 %
TMR 2-1222WIN		±12 VDC	±83 mA	82 %
TMR 2-1223WIN		±15 VDC	±67 mA	82 %
TMR 2-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	500 mA	75 %
TMR 2-2411WIN		5 VDC	400 mA	80 %
TMR 2-2412WIN		12 VDC	167 mA	82 %
TMR 2-2413WIN		15 VDC	134 mA	82 %
TMR 2-2421WIN		±5 VDC	±200 mA	80 %
TMR 2-2422WIN		±12 VDC	±83 mA	82 %
TMR 2-2423WIN		±15 VDC	±67 mA	82 %
TMR 2-4810WIN	18 – 75 VDC (48 VDC nominal)	3.3 VDC	500 mA	74 %
TMR 2-4811WIN		5 VDC	400 mA	80 %
TMR 2-4812WIN		12 VDC	167 mA	82 %
TMR 2-4813WIN		15 VDC	134 mA	82 %
TMR 2-4821WIN		±5 VDC	±200 mA	80 %
TMR 2-4822WIN		±12 VDC	±83 mA	82 %
TMR 2-4823WIN		±15 VDC	±67 mA	82 %

Input Specifications

Input current at no load (nominal input)	12 Vin models:	60 mA typ.
	24 Vin models:	30 mA typ.
	48 Vin models:	20 mA typ.
Surge voltage (1 sec. max.)	12 Vin models:	25 V max.
	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Short circuit input power		1500 mW
Input Filter		capacitor type
Recommended input fuse (DC slow blow)	12 Vin models:	1000 mA
	24 Vin models:	500 mA
	48 Vin models:	250 mA
Start up voltage / under voltage shutdown (hysteresis) long term operation with under-voltage may cause demage	12 Vin models:	4.5 / 4.0 V (or lower)
	24 Vin models:	9.0 / 8.0 V (or lower)
	48 Vin models:	18 / 16 V (or lower)
Recommended input fuse (DC slow blow)	12 Vin models:	1000 mA
	24 Vin models:	500 mA
	48 Vin models:	250 mA

Output Specifications

Voltage set accuracy		±2 %
Regulation	– Input variation Vin min. to Vin max.	0.5 % max.
	– Load variation 0 – 100 % single output models:	1.0 % max.
	dual output models:	2.0 % max. (balanced load)
Minimum load		no minimum load required
Temperature coefficient		±0.02 %/°C
Ripple and noise (20 MHz Bandwidth)		100 mVp-p max
Transient response (25 % load step change)		500 µs max.
Short circuit protection		continuous (automatic recovery)
Capacitive load	3.3 VDC / 5 VDC models:	1'000 µF max.
	12 VDC models:	170 µF max.
	15VDC models:	110 µF max.
	±5 VDC models:	470 µF max.
	±12 VDC models:	100 µF max. (each output)
	±15 VDC models:	47 µF max. (each output)

General Specifications

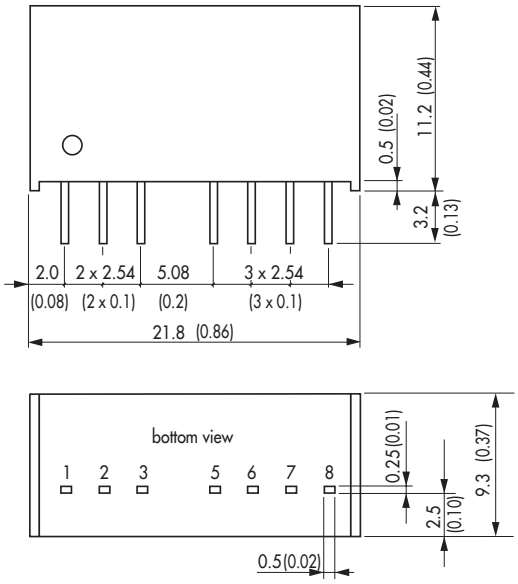
Temperature ranges	– Operating (natural convection 20 LFM)	–40°C to +90°C
	– Case temperature	+105°C max.
	– Storage	–55°C to +125°C
Derating (convection cooling)		3.3 %/K above 75°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		>1 Mio 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		300 kHz (PFM)
Safety standards		CAN/CSA-C22.2 No 60950-1-07, 2nd ed; A1:2011 ANSI/UL No. 60950-1, 2nd ed.; A1:2011 IEC 60950-1:2005 (2nd edition); Am 1:2009 EN 60950-1:2006/A11:2009/A1:2010/A12:2011
	– Certification documents	www.tracopower.com/overview/tmr2win

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

Physical Specifications

Remote On/Off	– On:	open or high impedance
	– Off:	2...4 mA input current (constant)
		or: 6...9 VDC via 1 kΩ resistor (Referenced to –Vin)
	– Off stand by input current	max. 2.5 mA
Casing material		non-conductive plastic
Potting material		epoxy (UL 94V-0 rated)
Weight		4.65 g (0.16 oz)
Soldering temperature		max. 260°C / 10 sec.
Environmental compliance	– Reach	www.tracopower.com/overview/tmr2win
	– RoHS	directive 2011/65/EU

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	ntc	ntc
6	+Vout	+Vout
7	–Vout	Common
8	ntc	–Vout

(ntc = not to connect)

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