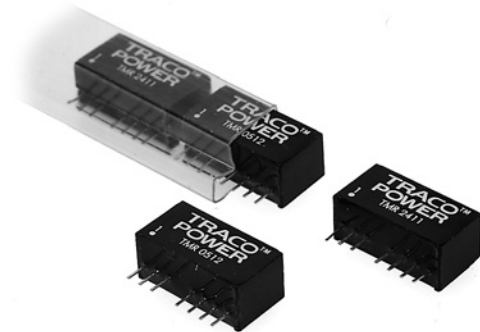


Features

- ◆ Wide 2:1 input voltage range
- ◆ Compact SIP-8 package
- ◆ Small footprint
- ◆ Full SMD design
- ◆ Temperature range -40° to $+85^{\circ}\text{C}$
- ◆ High efficiency
- ◆ Excellent load and line regulation
- ◆ Indefinite short-circuit protection
- ◆ I/O isolation 1000VDC
- ◆ Remote On/Off control
- ◆ Fully RoHS compliant
- ◆ 3-year product warranty



The TMR-2 series is a family of isolated 2W 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 small footprint occupying only 2.0 cm² (0.3 square in.) of board space.

An excellent efficiency allows -40° to $+85^{\circ}\text{C}$ operation temperatures. Further features include remote On/Off control and continuous short circuit protection. The ultra-compact dimensions of these converters make them an ideal solution for many space critical applications in communication equipment, instrumentation and industrial electronics.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 0510	4.5 – 9.0 VDC (5 VDC nominal)	3.3 VDC	500 mA	64 %
TMR 0511		5 VDC	400 mA	66 %
TMR 0512		12 VDC	165 mA	71 %
TMR 0521		± 5 VDC	± 200 mA	64 %
TMR 0522		± 12 VDC	± 85 mA	69 %
TMR 0523		± 15 VDC	± 65 mA	71 %
TMR 1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	500 mA	70 %
TMR 1211		5 VDC	400 mA	73 %
TMR 1212		12 VDC	165 mA	80 %
TMR 1221		± 5 VDC	± 200 mA	73 %
TMR 1222		± 12 VDC	± 85 mA	78 %
TMR 1223		± 15 VDC	± 65 mA	78 %
TMR 2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	500 mA	71 %
TMR 2411		5 VDC	400 mA	74 %
TMR 2412		12 VDC	165 mA	81 %
TMR 2421		± 5 VDC	± 200 mA	74 %
TMR 2422		± 12 VDC	± 85 mA	78 %
TMR 2423		± 15 VDC	± 65 mA	80 %
TMR 4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	500 mA	70 %
TMR 4811		5 VDC	400 mA	73 %
TMR 4812		12 VDC	165 mA	79 %
TMR 4821		± 5 VDC	± 200 mA	71 %
TMR 4822		± 12 VDC	± 85 mA	77 %
TMR 4823		± 15 VDC	± 65 mA	77 %

Input Specifications

Input current at full load (nominal input)	5 Vin models: 645 mA max. 12 Vin models: 242 mA max. 24 Vin models: 117 mA max. 48 Vin models: 62 mA max.
Surge voltage (100 msec. max.)	5 Vin models: 15 V max. 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Input voltage variation (dv/dt)	5 V/ms, max. (complies to ETS 300 132 part. 4.4)
Input Filter	capacitor type
Start up time	1 ms typ. (at nominal input and resistive load)

Output Specifications

Voltage set accuracy		±1 %
Regulation	– Input variation V_{in} min. to V_{in} max. – Load variation 10–100 %	0.5 % max. 3.3 VDC models: 0.85 % max. single output models: 0.75 % max. dual output models balanced load: 1.0 % max. dual output models asymmetric load: 5.0 % max. (25% / 100%)
Minimum load		10 % of rated max current (operation at lower load condition is safe but a higher output ripple will be experienced)
Ripple and noise (20 MHz Bandwidth)		50 mVpk-pk max.
Temperature coefficient		±0.1 %/°C
Short circuit protection		continuous, automatic recovery
Capacitive load	3.3 VDC / 5 VDC output models: 12 VDC / ±5 VDC output models: ±12 VDC / ±15 VDC output models:	2'200 µF max. / 1'000 µF max. 170 µF max. / ±470 µF max. 100 µF max. / ±47 µF max.

General Specifications

Temperature ranges	- Operating - Storage	-40°C to +85°C (with derating) -55°C to +100°C
Derating (convection cooling)		2 %/K above 75°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>2.3 Mio h
Isolation voltage (60 sec.)	- Input/Output	1'000 VDC
Isolation capacitance	- Input/Output	300 pF max.
Isolation resistance	- Input/Output (500 VDC)	>1'000 MOhm
Switching frequency		100 to 650 kHz (PFM)
Remote On/Off	- On: - Off: - Off stand by input current	open or high impedance 2...4 mA input current applied via 1KW resistor max. 2mA
Safety approvals	- UL/cUL	www.ul.com -> certifications -> File e188913
Environmental compliance	- Reach - RoHS	www.tracopower.com/products/tmr2-reach.pdf RoHS Directive 2002/95/EC
Altitude	- operation - non operation - test report	< 40'000ft (12'000m) < 50'000ft (15'000m) www.tracopower.com/products/tmr2-altitude.pdf

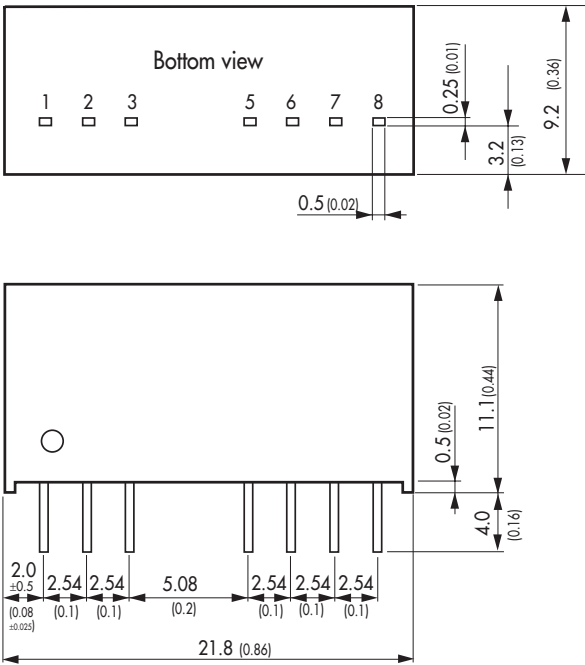
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Physical Specifications

Casing material	non-conductive plastic
Potting material	epoxy (UL 94V-0-rated)
Weight	4.8 g (0.17oz) Physical Specifications

Application note: www.tracopower.com/products/tmr2-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

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

Specifications can be changed any time without notice