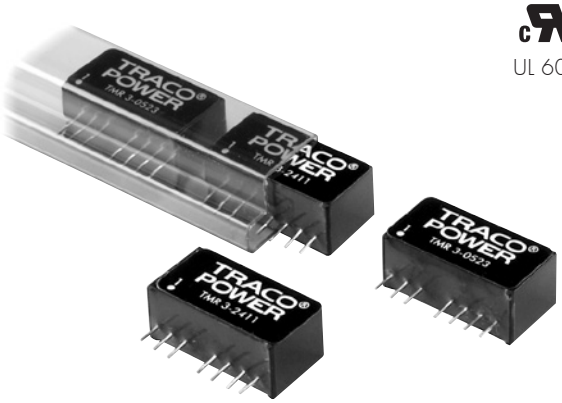
DC/DC Converters

TMR 3 Series, 3 Watt

UL 60950-1



Features

- Wide 2:1 input voltage range
- Ultra-compact SIP-8 package
- Small footprint
- 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-3 series is a new family of isolated 3W dc-dc converter modules with regulated output, featuring wide 2:1 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 +85°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 3-0510	4.5 – 9.0 VDC (5 VDC nominal)	3.3 VDC	700 mA	73 %
TMR 3-0511		5 VDC	600 mA	79 %
TMR 3-0512		12 VDC	250 mA	81 %
TMR 3-0513		15 VDC	200 mA	81 %
TMR 3-0521		±5 VDC	±300 mA	78 %
TMR 3-0522		±12 VDC	±125 mA	80 %
TMR 3-0523		±15 VDC	±100 mA	81 %
TMR 3-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	74 %
TMR 3-1211		5 VDC	600 mA	79 %
TMR 3-1212		12 VDC	250 mA	81 %
TMR 3-1213		15 VDC	200 mA	82 %
TMR 3-1221		±5 VDC	±300 mA	82 %
TMR 3-1222		±12 VDC	±125 mA	83 %
TMR 3-1223		±15 VDC	±100 mA	83 %
TMR 3-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	74 %
TMR 3-2411		5 VDC	600 mA	81 %
TMR 3-2412		12 VDC	250 mA	81 %
TMR 3-2413		15 VDC	200 mA	82 %
TMR 3-2421		±5 VDC	±300 mA	80 %
TMR 3-2422		±12 VDC	±125 mA	83 %
TMR 3-2423		±15 VDC	±100 mA	85 %
TMR 3-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	74 %
TMR 3-4811		5 VDC	600 mA	79 %
TMR 3-4812		12 VDC	250 mA	80 %
TMR 3-4813		15 VDC	200 mA	81 %
TMR 3-4821		±5 VDC	±300 mA	79 %
TMR 3-4822		±12 VDC	±125 mA	82 %
TMR 3-4823		±15 VDC	±100 mA	83 %

Input Specifications

Input current at full load / at no load (nominal input voltage)	4.5–9 Vin models:	810 mA max. / 80 mA typ.
	9-–18 Vin models:	330 mA max. / 45 mA typ.
	18–36 Vin models:	160 mA max. / 18 mA typ.
	36–75 Vin models:	85 mA max. / 12 mA typ.
Surge voltage (100 msec. max.)	4.5–9 Vin models:	15 V max.
	9-–18 Vin models:	36 V max.
	18–36 Vin models:	50 V max.
	36–75 Vin models:	100 V max.
Input voltage variation (dv/dt)		5 V/ms, max. (complies with ETS300 132 part 4.4)
Input filter		capacitor type (see application note for compliance to EN 55022 class A/B)
Start up time (constant resistive load)	– Power On	30 ms typ.
	– Remote On	30 ms typ.

Output Specifications

Voltage set accuracy			±1 % max
Regulation	– Input variation Vin min. to Vin max.		0.2 % max.
	– Load variation 5 – 100%	single output models:	0.5 % max.
		dual output models:	1.0 % max. balanced load
	– Load variation 0 – 100%	single output models:	1.0 % max.
		dual output models:	1.0 % max. balanced load
	– Load cross regulation 25/100%		5.0 % max. (dual output models)
Minimum load			0 % of rated max. load
Ripple and noise (20 MHz Bandwidth)			75 mVpk-pk max.
Transient response setting time (25% load step change)			500 µs typ.
Short circuit protection			indefinite, automatic recovery
Capacitive load		3.3 VDC / 5 VDC output models:	1760 µF max. / 1000 µF max.
		12 VDC / 15 VDC output models:	170 µF max. / 110 µF max.
		±5 VDC / ±15 VDC output models:	±470 µF max. / ± 100 µF max.
		±15 VDC output models:	±47 µF max.

General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+100°C max.
	– Storage	–55°C to +125°C
Load derating		3.3 %/K above 70°C
Humidity (non condensing)		95 % rel. H max.
Temperature coefficient		±0.02 %/K
Reliability, calculated MTTF (MIL-HDBK-217F, @ +25°C, ground benign)		>2.4 Mio h
Isolation voltage (60 sec.)	– Input/Output	1600 VDC
Isolation capacitance	– Input/Output	200 pF max.
Isolation resistance	– Input/Output (500 VDC)	>10 GOhm
Switching frequency		100 kHz min. (PFM)
Remote On/Off	– On:	open or high impedance
	– Off:	2...4 mA current applied via 1KOhm resistor
	– Off stand by input current	2.5 mA max.
Safety standards		IEC/EN 60950-1, UL 60950-1

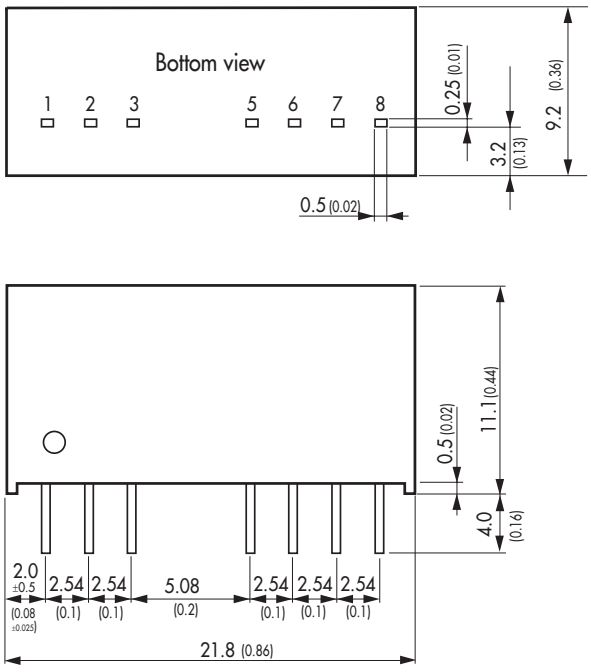
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Physical Specifications

Casing material	non-conductive plastic
Potting material	silicon, (UL 94V-0 rated)
Weight	4.8 g (0.17oz)

Application note: www.tracopower.com/products/tmr3-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
Tolerances: ±0.5 (±0.02)
Pin pich tolerances: ±0.25 (±0.01)

Specifications can be changed any time without notice.

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