Features

- **Wide 2:1 input voltage range**
- **Compact SIP-8 package**
- **Cost optimized design**
- **Temperature range –40°C to +85°C**
- **I/O isolation 1000VDC**
- **Remote On/Off control**
- **Fully RoHS compliant**
- **3-year product warranty**

The TMR-2E series is a family of isolated 2 W 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°C to +85°C operation temperature. Further features include remote On/Off control and continuous short circuit protection. The compact dimensions and cost optimized design make this converters an ideal solution for applications in communication equipment, instrumentation and industrial electronics.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 2-0510E	**4.5 – 9.0 VDC** (5 VDC nominal)	3.3 VDC	500 mA	70 %
TMR 2-0511E		5 VDC	400 mA	73 %
TMR 2-0512E		12 VDC	167 mA	75 %
TMR 2-1210E	**9 – 18 VDC** (12 VDC nominal)	3.3 VDC	500 mA	73 %
TMR 2-1211E		5 VDC	400 mA	77 %
TMR 2-1212E		12 VDC	167 mA	80 %
TMR 2-2410E	**18 – 36 VDC** (24 VDC nominal)	3.3 VDC	500 mA	72 %
TMR 2-2411E		5 VDC	400 mA	77 %
TMR 2-2412E		12 VDC	167 mA	81 %
TMR 2-4810E	**36 – 75 VDC** (48 VDC nominal)	3.3 VDC	500 mA	71 %
TMR 2-4811E		5 VDC	400 mA	73 %
TMR 2-4812E		12 VDC	167 mA	79 %

Input Specifications

Input current at no load (nominal input voltage)	5.0 Vin models:	40 mA typ.
	12 Vin models:	20 mA typ.
	24 Vin models:	10 mA typ.
	48 Vin models:	8 mA typ.
Input current at full load (nominal input voltage)	5.0 Vin models:	520 mA typ.
	12 Vin models:	200 mA typ.
	24 Vin models:	100 mA typ.
	48 Vin models:	50 mA typ.
Surge voltage (1000 msec. max.)	5.0 Vin models:	15 V max.
	12 Vin models:	25 V max.
	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Input filter		Internal capacitor
Input voltage variation (dv/dt)		5 V/ms, max. (complies with ETS300 132 part 4.4)
Reflected input ripple current	5.0 Vin models:	400 mA typ.
	12 Vin models:	300 mA typ.
	24 Vin models:	200 mA typ.
	48 Vin models:	500 mA typ.
Conducted noise (input)		EN 55022 level A, FCC part 15, level A with external capacitor

Output Specifications

Voltage set accuracy		±2 % max.
Regulation	– Input variation Vin min. to Vin max.	0.5 % max.
	– Load variation 25 – 100%	0.75 % max.
Minimum load		25 % of rated max. load (operation at lower load condition is safe but a higher output ripple will be experienced)
Temperature coefficient		0.02 %/K
Ripple and noise (20 MHz bandwidth)		50 mVpk-pk max.
Transient response setting time (25 % load step change)		100 µs typ.
Current limitation		>120 % of Iout max. constant current
Short circuit protection		continuous, automatic recovery
Capacitive load	3.3 VDC models:	2'200 µF max.
	5 VDC models:	1'000 µF max.
	12 VDC models:	170 µF max.

General Specifications

Temperature ranges	– Operating	–40°C to +85°C (with derating)
	– Case temperature	+90°C max.
	– Storage	–55°C to +105°C
Load derating		1.5 %/K above 65°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1 Mio h
Isolation voltage	– Input/Output	1'000 VDC (60 sec.)
		1'200 VDC (1 sec.)
Isolation capacitance	– Input/Output	120 pF max.
Isolation resistance	– Input/Output (500 VDC)	>1 GOhm

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

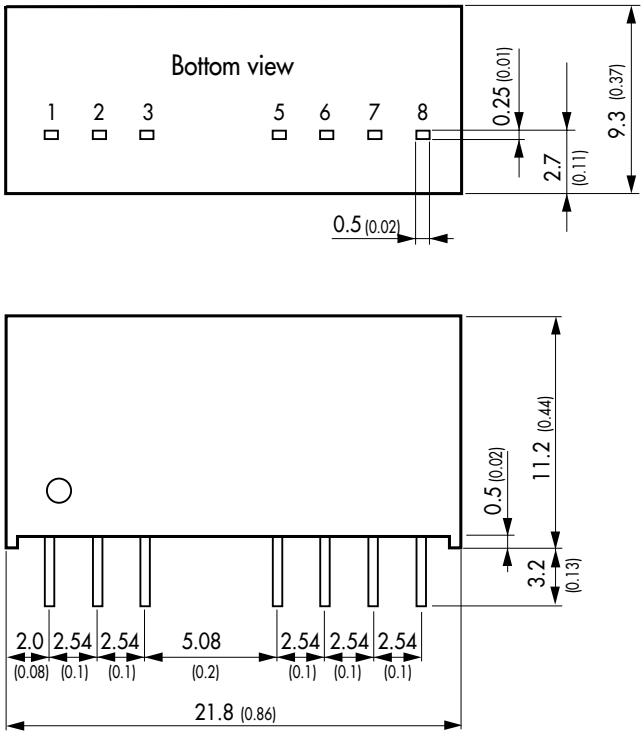
General Specifications

Switching frequency		100 – 650 kHz (FM)
Remote On/Off	– On: – Off: – Off control input current – Off idle current:	< 0.6 VDC (ref. to –Vin) or open circuit 2.7 to 15 VDC (ref. to –Vin) 1 mA max. 0.2 mA max.
Environmental compliance	– Reach – RoHS	 directive 2011/65/EU

Physical Specifications

Casing material	non-conductive plastic
Potting material	epoxy (UL 94V-0 rated)
Weight	4.8g (0.17 oz)
Soldering temperature	max. 260°C / 10 sec.

Outline Dimensions



Pin-Out	
Pin	
1	–Vin (GND)
2	+Vin (Vcc)
3	Remote On/Off
5	No con.
6	+Vout
7	–Vout
8	No con.

No con. = Pin to be isolated from circuitry

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