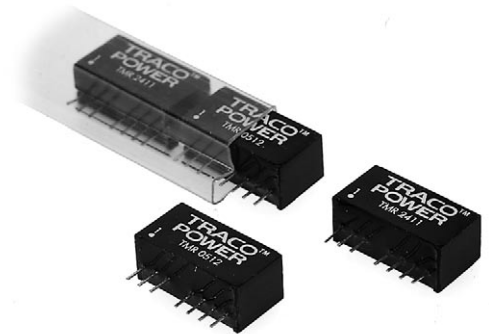




#### Features

- ◆ 2 Watt in SIL Package
- ◆ Regulated Output
- ◆ Wide 2 : 1 Input Range
- ◆ No external Capacitors needed
- ◆ Low Ripple and Noise
- ◆ Indefinite Short-Circuit Protection
- ◆ External On/Off - Control
- ◆ Lead free Design, RoHS compliant
- ◆ 3 Year Product Warranty



The TMR series is a range of miniature regulated 2 Watt DC/DC- converters in a SIL-package. Requiring only 2cm<sup>2</sup> board space they provide a state of art functionality. Wide 2:1 Input voltage range, 1000 VDC isolation voltage, external on/off control and a temperature range of -40°C – 75°C with no derating makes this converter suitable for many applications in telecommunication, control units and industrial equipments.

#### Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 0510	4.5 – 9.0 VDC	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	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	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	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: 667 mA max. 12 Vin models: 242 mA max. 24 Vin models: 119 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 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 %: ± 0.75 % max. for single output models ± 1.0% max. for dual output models
Ripple and noise (20 MHz Bandwidth)	50 mVpk-pk max
Temperature coefficient	± 0.1 % / °C
Short circuit protection	continuous, automatic recovery
Minimum load	25% of rated max current (operation at lower load condition is safe but a higher output ripple will be experienced)
Capacitive load	3.3 VDC / 5 VDC output models: 2'200 µF max. / 1'000 µF max. 12 VDC / ±5 VDC output models: 70 µF max. / ±470 µF max. ±12 VDC / ±15 VDC output models: 100 µF max. / ± 47 µF max.

### General Specifications

Temperature ranges	– Operating – 40 °C ... + 75 °C (no derating) – Storage – 55 °C ... + 105 °C
Humidity (non condensing)	95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217 F)	> 2.3 Mio h @ 25°C
Isolation voltage	– Input/Output 1'000 VDC
Isolation capacity	– Input/Output 300 pF max.
Isolation resistance	– Input/Output (500 VDC) > 1'000 M Ohm
Switching frequency	100 to 650 kHz (PFM)
Remote On/Off	ON: open or high impedance OFF: 3...6mA input current applied via 1KW resistor OFF stand by input current max 1mA

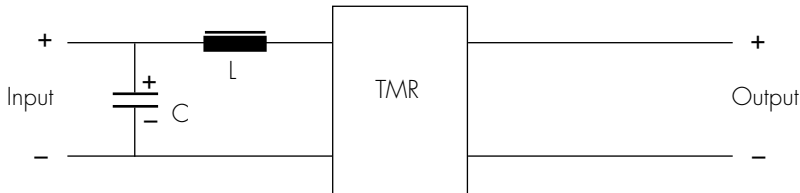
### Physical Specifications

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

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

**EMC Characteristics**

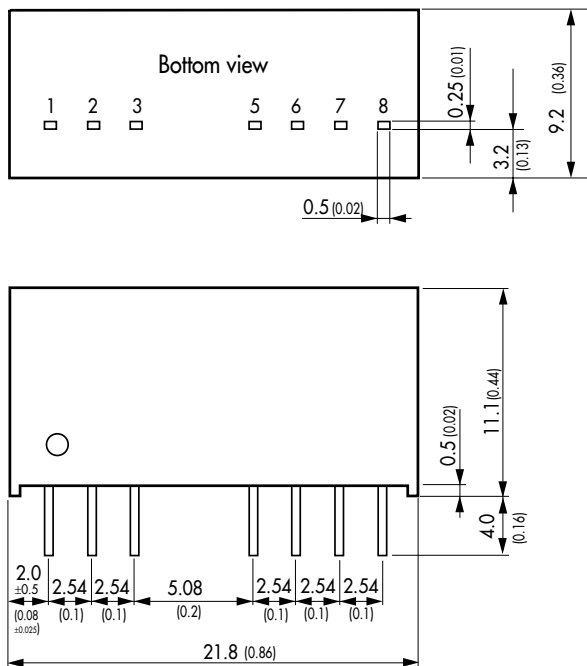
- Use an electrolytic low ESR capacitor at input side to reduce reflected ripple current.
- In order to meet EN55022 class B additionally use a choke to build an L/C filter as follows:



Recommended values for filter:

Input	C	L
5VDC	100µF	10µH
12VDC	100µF	10µH
24VDC	10µF	120µH
48VDC	10µF	120µH

**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

Specifications can be changed without notice