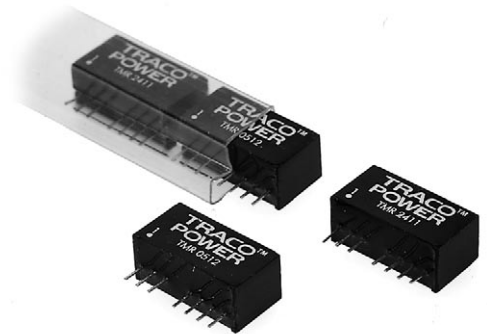




Features

- ◆ 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 2cm² 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 max 1mA OFF stand by input current |

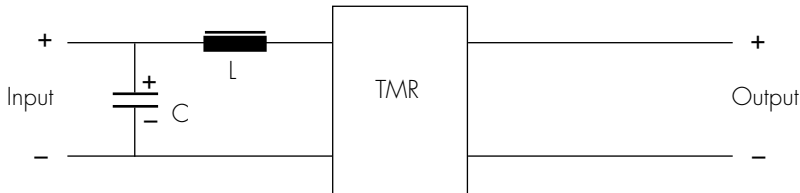
Physical Specifications

| | |
|------------------|-------------------------|
| 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

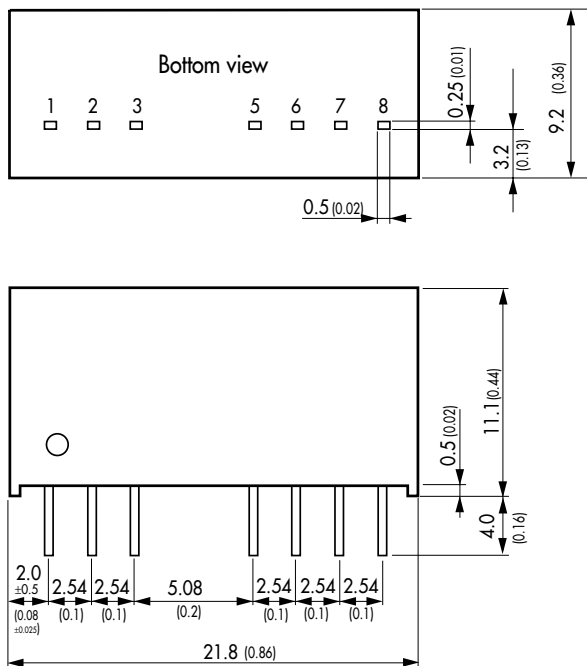
- Use an electrolytic low ESR capacitor at input side to reduce reflected ripple current.
- In order to meet EN55022 class B additionally use a choke to build an L/C filter as follows:



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