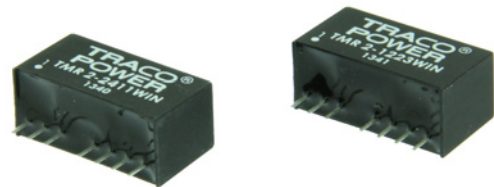


Features

- ◆ Ultra-wide 4:1 input range
- ◆ Compact SIP-8 package
- ◆ Temperature range -40 to $+90^{\circ}\text{C}$ (up to $+75^{\circ}\text{C}$ at full load)
- ◆ High efficiency of 82%
- ◆ Excellent load and line regulation
- ◆ Continuous short-circuit protection
- ◆ Overload protection
- ◆ I/O isolation 1500 VDC
- ◆ Remote On/Off control
- ◆ 3-year product warranty



The TMR-2WIN series is a family of isolated 2 W DC/DC converter modules with accurately regulated output voltages and ultra-wide 4:1 input voltage ranges. They require no minimum load and are protected against overload and short circuit. An excellent efficiency along with the use of high grade components allows a compact construction in SIP-8 package; even the converters can reliably operate in an ambient temperature of -40°C to $+75^{\circ}\text{C}$ at full load and up to 90°C with 50% power derating. Typical applications for these converters are distributed power architectures in communication, instrumentation and industrial electronics, everywhere where space on the PCB is critical.

Models

| Ordercode | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
|---------------|----------------------------------|----------------|---------------------|-----------------|
| TMR 2-1210WIN | 4.5 – 18 VDC (12 VDC nominal) | 3.3 VDC | 500 mA | 75 % |
| TMR 2-1211WIN | | 5 VDC | 400 mA | 80 % |
| TMR 2-1212WIN | | 12 VDC | 167 mA | 82 % |
| TMR 2-1213WIN | | 15 VDC | 134 mA | 82 % |
| TMR 2-1221WIN | | ± 5 VDC | ± 200 mA | 80 % |
| TMR 2-1222WIN | | ± 12 VDC | ± 83 mA | 82 % |
| TMR 2-1223WIN | | ± 15 VDC | ± 67 mA | 82 % |
| TMR 2-2410WIN | 9 – 36 VDC (24 VDC nominal) | 3.3 VDC | 500 mA | 75 % |
| TMR 2-2411WIN | | 5 VDC | 400 mA | 80 % |
| TMR 2-2412WIN | | 12 VDC | 167 mA | 82 % |
| TMR 2-2413WIN | | 15 VDC | 134 mA | 82 % |
| TMR 2-2421WIN | | ± 5 VDC | ± 200 mA | 80 % |
| TMR 2-2422WIN | | ± 12 VDC | ± 83 mA | 82 % |
| TMR 2-2423WIN | | ± 15 VDC | ± 67 mA | 82 % |
| TMR 2-4810WIN | 18 – 75 VDC (48 VDC nominal) | 3.3 VDC | 500 mA | 74 % |
| TMR 2-4811WIN | | 5 VDC | 400 mA | 80 % |
| TMR 2-4812WIN | | 12 VDC | 167 mA | 82 % |
| TMR 2-4813WIN | | 15 VDC | 134 mA | 82 % |
| TMR 2-4821WIN | | ± 5 VDC | ± 200 mA | 80 % |
| TMR 2-4822WIN | | ± 12 VDC | ± 83 mA | 82 % |
| TMR 2-4823WIN | | ± 15 VDC | ± 67 mA | 82 % |

Input Specifications

| | |
|---|---|
| Input current at no load (nominal input) | 12 Vin models: 60 mA typ. 24 Vin models: 30 mA typ. 48 Vin models: 20 mA typ. |
| Surge voltage (1 sec. max.) | 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Short circuit input power | 1500 mW |
| Input Filter | capacitor type |
| Recommended input fuse (DC slow blow) | 12 Vin models: 1000 mA 24 Vin models: 500 mA 48 Vin models: 250 mA |
| Start up voltage / under voltage shutdown (hysteresis) long term operation with under-voltage may cause damage | 12 Vin models: 4.5 / 4.0 V (or lower) 24 Vin models: 9.0 / 8.0 V (or lower) 48 Vin models: 18 / 16 V (or lower) |
| Recommended input fuse (DC slow blow) | 12 Vin models: 1000 mA 24 Vin models: 500 mA 48 Vin models: 250 mA |

Output Specifications

| | |
|--|---|
| Voltage set accuracy | ±2 % |
| Regulation | – Input variation Vin min. to Vin max. 0.5 % max. – Load variation 0 – 100 % single output models: 1.0 % max. dual output models: 2.0 % max. (balanced load) |
| Minimum load | no minimum load required |
| Temperature coefficient | ±0.02 %/°C |
| Ripple and noise (20 MHz Bandwidth) | 100 mVp-p max |
| Transient response (25 % load step change) | 500 µs max. |
| Short circuit protection | continuous (automatic recovery) |
| Capacitive load | 3.3 VDC / 5 VDC models: 1'000 µF max. 12 VDC models: 170 µF max. 15VDC models: 110 µF max. ±5 VDC models: 470 µF max. ±12 VDC models: 100 µF max. (each output) ±15 VDC models: 47 µF max. (each output) |

General Specifications

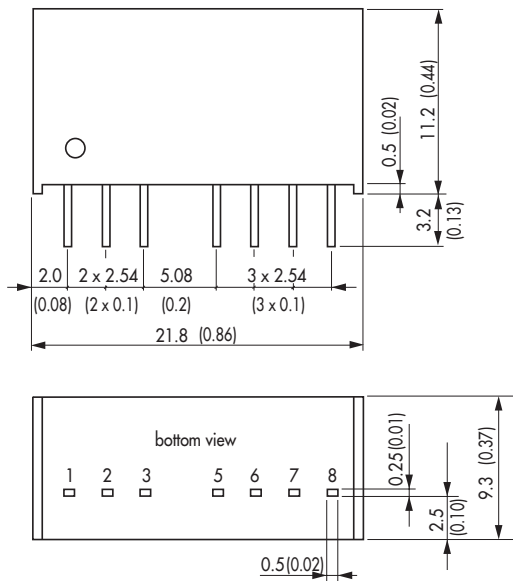
| | |
|--|---|
| Temperature ranges | – Operating (natural convection 20 LFM) –40°C to +90°C – Case temperature +105°C max. – Storage –55°C to +125°C |
| Derating (convection cooling) | 3.3 %/K above 75°C |
| Humidity (non condensing) | 95 % rel. H max. |
| Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign) | >1 Mio h |
| Isolation voltage (60 sec.) – Input/Output | 1'500 VDC |
| Isolation capacitance – Input/Output | 500 pF max. |
| Isolation resistance – Input/Output (500 VDC) | >1'000 M Ohm |
| Switching frequency | 300 kHz (PFM) |
| Safety standards | CAN/CSA-C22.2 No 60950-1-07, 2nd ed; A1:2011 ANSI/UL No. 60950-1, 2nd ed.; A1:2011 IEC 60950-1:2005 (2nd edition); Am 1:2009 EN 60950-1:2006/A11:2009/A1:2010/A12:2011 – Certification documents www.tracopower.com/overview/tmr2win |

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

Physical Specifications

| | | |
|--------------------------|--|---|
| Remote On/Off | <ul style="list-style-type: none"> - On: - Off: | <ul style="list-style-type: none"> open or high impedance 2...4 mA input current (constant) |
| | <ul style="list-style-type: none"> - Off stand by input current | <ul style="list-style-type: none"> or: 6...9 VDC via 1 kΩ resistor (Referenced to -Vin) max. 2.5 mA |
| Casing material | | non-conductive plastic |
| Potting material | | epoxy (UL 94V-0 rated) |
| Weight | | 4.65 g (0.16 oz) |
| Soldering temperature | | max. 260°C / 10 sec. |
| Environmental compliance | <ul style="list-style-type: none"> - Reach - RoHS | www.tracopower.com/overview/tmr2win directive 2011/65/EU |

Outline Dimensions



| Pin-Out | | |
|---------|---------------|---------------|
| Pin | Single | Dual |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | +Vin (Vcc) | +Vin (Vcc) |
| 3 | Remote On/Off | Remote On/Off |
| 5 | ntc | ntc |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | ntc | -Vout |

(ntc = not to connect)

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

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.tracopower.com

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