



Features

- ◆ Ultra-wide 4:1 Input Range
- ◆ SIP-9 Package
- ◆ Full SMD Design
- ◆ Temperature Range -40 to $+75^{\circ}\text{C}$
- ◆ 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-2WI series is a new family of isolated 2W dc-dc converter modules with regulated output, featuring ultra-wide 4:1 input voltage ranges of 9-36 VDC or 18-75 VDC. The product comes in a ultra-compact SIP-9 plastic package. An excellent efficiency up to 84% allows -40°C to $+75^{\circ}\text{C}$ operation temperatures at full load. Further features include remote On/Off control and continuous short circuit protection. Typical applications for these ultra-compact converters are battery operated equipment and 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 2-2410WI | 9 – 36 VDC (24 VDC nominal) | 3.3 VDC | 500 mA | 75 % |
| TMR 2-2411WI | | 5 VDC | 400 mA | 80 % |
| TMR 2-2412WI | | 12 VDC | 165 mA | 83 % |
| TMR 2-2413WI | | 15 VDC | 135 mA | 84 % |
| TMR 2-2421WI | | ± 5 VDC | ± 200 mA | 77 % |
| TMR 2-2422WI | | ± 12 VDC | ± 85 mA | 81 % |
| TMR 2-2423WI | | ± 15 VDC | ± 65 mA | 83 % |
| TMR 2-4810WI | 18 – 75 VDC (48 VDC nominal) | 3.3 VDC | 500 mA | 75 % |
| TMR 2-4811WI | | 5 VDC | 400 mA | 80 % |
| TMR 2-4812WI | | 12 VDC | 165 mA | 83 % |
| TMR 2-4813WI | | 15 VDC | 135 mA | 84 % |
| TMR 2-4821WI | | ± 5 VDC | ± 200 mA | 77 % |
| TMR 2-4822WI | | ± 12 VDC | ± 85 mA | 81 % |
| TMR 2-4823WI | | ± 15 VDC | ± 65 mA | 83 % |

Input Specifications

| | |
|--|---|
| Input current at no load (nominal input) | 24 Vin models: 20 mA typ. 48 Vin models: 15 mA typ. |
| Input current at full load (nominal input) | 24 Vin models: 110 mA typ. 48 Vin models: 55 mA typ. |
| Surge voltage (100 msec. max.) | 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Reverse voltage protection | 0.5 A max. |
| Input Filter | capacitor type |
| Start up time | < 1ms (at nominal input and resistive load) |

Output Specifications

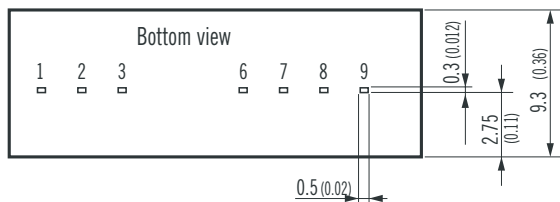
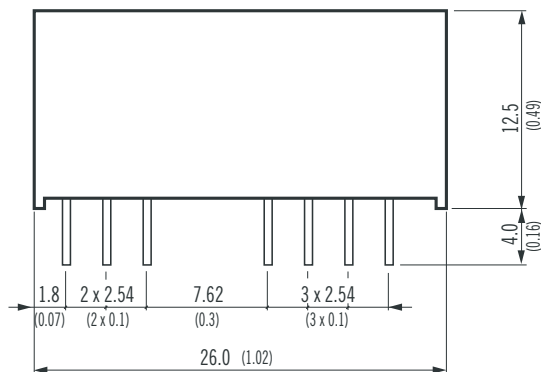
| | |
|---|---|
| Voltage set accuracy | ± 2 % |
| Regulation | – Input variation Vin min. to Vin max. 0.5 % max. – Load variation 10 – 100 % single output models: 0.75 % max. dual output models: 1.0% max. (balanced load) |
| Temperature coefficient | ± 0.1 %/°C |
| Ripple and noise (20 MHz Bandwidth) | 50 mVpk-pk max |
| Transient Response (25% load step change) | 300 µs typ. |
| Short circuit protection | constant current (automatic recovery) |
| Capacitive load | 3.3 VDC / 5 VDC models: 2'200 µF max. / 1'000 µF max. 12 VDC / 15VDC models: 170 µF max. / 110 µF max. ±5 VDC / ±12 VDC models: 470 µF max. / 100 µF max. (each output) ±15 VDC models: 47 µF max. (each output) |

General Specifications

| | |
|--|--|
| Temperature ranges | – Operating –40 °C ... +75 °C (no derating) – Case temperature +100 °C max. – Storage –55 °C ... +105 °C |
| Humidity (non condensing) | 95 % rel. H max. |
| Reliability, calculated MTBF (MIL-HDBK-217F ground benign) | > 1 Mio h @ 25°C |
| 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 | 100 to 650 kHz (PFM) |
| Remote On/Off control | – On: <0.6 VDC or open – Off: 2.7...15 VDC – Off stand by input current 0.2 mA max. |
| Case material | non-conductive plastic |
| Potting material | epoxy, UL94V-0 - rated |
| Weight | 6.5g (0.23oz) |

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

Outline Dimensions



| Pin-Out | | |
|---------|---------------|---------------|
| Pin | Single | Dual |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | +Vin (Vcc) | +Vin (Vcc) |
| 3 | Remote On/Off | Remote On/Off |
| 6 | +Vout | +Vout |
| 7 | No function | Common |
| 8 | No function | No function |
| 9 | -Vout | -Vout |

Dimensions in [mm], () = Inch
 Pin diameter $\varnothing 0.5 \pm 0.05$ (0.02 \pm 0.002)
 Tolerances ± 0.5 (0.02)
 Pin pitch tolerances ± 0.2 (0.008)

Specifications can be changed any time without notice.