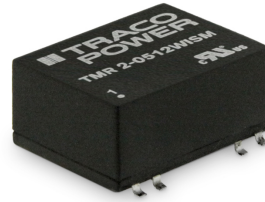


- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty



The TMR 2WISM Series is a set of 2 Watt SMD DC/DC converters. They operate up to 70°C environment temperature at full load or up to 80°C with a 50% load derating. With UL 60950-1 certification, 1'500 VDC I/O-isolation voltage, external On/Off and short current protection they cover a wide range of application when space is limited. The input of the converters is designed for a wide voltage range (4:1) and minimum load is not required.

| Models | | | | | | |
|----------------|------------------------------|----------|------------------|----------|------------------|-----------------|
| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TMR 2-0511WISM | 4.5 - 12 VDC (9 VDC nom.) | 5 VDC | 400 mA | | | 80 % |
| TMR 2-0512WISM | | 12 VDC | 167 mA | | | 84 % |
| TMR 2-0513WISM | | 15 VDC | 134 mA | | | 83 % |
| TMR 2-0515WISM | | 24 VDC | 83 mA | | | 84 % |
| TMR 2-0522WISM | | +12 VDC | 83 mA | -12 VDC | 83 mA | 83 % |
| TMR 2-0523WISM | | +15 VDC | 67 mA | -15 VDC | 67 mA | 82 % |
| TMR 2-2411WISM | 9 - 36 VDC (24 VDC nom.) | 5 VDC | 400 mA | | | 80 % |
| TMR 2-2412WISM | | 12 VDC | 167 mA | | | 84 % |
| TMR 2-2413WISM | | 15 VDC | 134 mA | | | 85 % |
| TMR 2-2415WISM | | 24 VDC | 83 mA | | | 85 % |
| TMR 2-2422WISM | | +12 VDC | 83 mA | -12 VDC | 83 mA | 83 % |
| TMR 2-2423WISM | | +15 VDC | 67 mA | -15 VDC | 67 mA | 83 % |
| TMR 2-4811WISM | 18 - 75 VDC (48 VDC nom.) | 5 VDC | 400 mA | | | 78 % |
| TMR 2-4812WISM | | 12 VDC | 167 mA | | | 82 % |
| TMR 2-4813WISM | | 15 VDC | 134 mA | | | 83 % |
| TMR 2-4815WISM | | 24 VDC | 83 mA | | | 84 % |
| TMR 2-4822WISM | | +12 VDC | 83 mA | -12 VDC | 83 mA | 82 % |
| TMR 2-4823WISM | | +15 VDC | 67 mA | -15 VDC | 67 mA | 82 % |

Input Specifications

| | | |
|---------------------------|----------------|--|
| Input Current | - At no load | 9 Vin models: 40 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 10 mA typ. |
| | - At full load | 9 Vin models: 490 mA typ. 24 Vin models: 100 mA typ. 48 Vin models: 50 mA typ. |
| Surge Voltage | | 9 Vin models: 15 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.) |
| Recommended Input Fuse | | (The need of an external fuse has to be assessed in the final application.) |
| Input Filter | | Internal Pi-Type |
| Short Circuit Input Power | | 1.5 W max. |

Output Specifications

| | | |
|---------------------------|--|---|
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) | single output models: 0.5% max. dual output models: 0.5% max. |
| | - Load Variation (0 - 100%) | single output models: 1% max. dual output models: 1% max. (Output 1) 1% max. (Output 2) |
| | - Voltage Balance (symmetrical load) | dual output models: 2% max. |
| | - Cross Regulation (25% / 100% asym. load) | dual output models: 5% max. |
| Ripple and Noise | - 20 MHz Bandwidth | 50 mVp-p max. |
| Capacitive Load | - single output | 5 Vout models: 1'680 µF max. 12 Vout models: 820 µF max. 15 Vout models: 680 µF max. 24 Vout models: 390 µF max. |
| | - dual output | 12 / -12 Vout models: 470 / 470 µF max. 15 / -15 Vout models: 330 / 330 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 30 ms max. |
| Short Circuit Protection | | Automatic recovery |
| Overload Protection | | Foldback Mode |
| Output Current Limitation | | 160% typ. of Iout max. |
| Transient Response | - Response Deviation | 5% max. (25% Load Step) |
| | - Response Time | 250 µs typ. (25% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | EN 62368-1 IEC 62368-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tmr2wism |
| Pollution Degree | | PD 3 |

EMC Specifications

| | | |
|---------------|-----------------------|---|
| EMI Emissions | - Conducted Emissions | EN 55032 class A (internal filter) FCC Part 15 class A (internal filter) |
| | - Radiated Emissions | EN 55032 class A (internal filter) FCC Part 15 class A (internal filter) |

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

| | | |
|--------------|--|--|
| EMS Immunity | <ul style="list-style-type: none"> - Electrostatic Discharge - RF Electromagnetic Field - EFT (Burst) / Surge - Conducted RF Disturbances - PF Magnetic Field | Air: EN 55024 (IT Equipment) Contact: EN 61000-4-2, ±8 kV, perf. criteria A EN 61000-4-2, ±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV, perf. criteria A Ext. input component: Capacitor: 220 µF / 100 V Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 3 A/m, perf. criteria A |
|--------------|--|--|

General Specifications

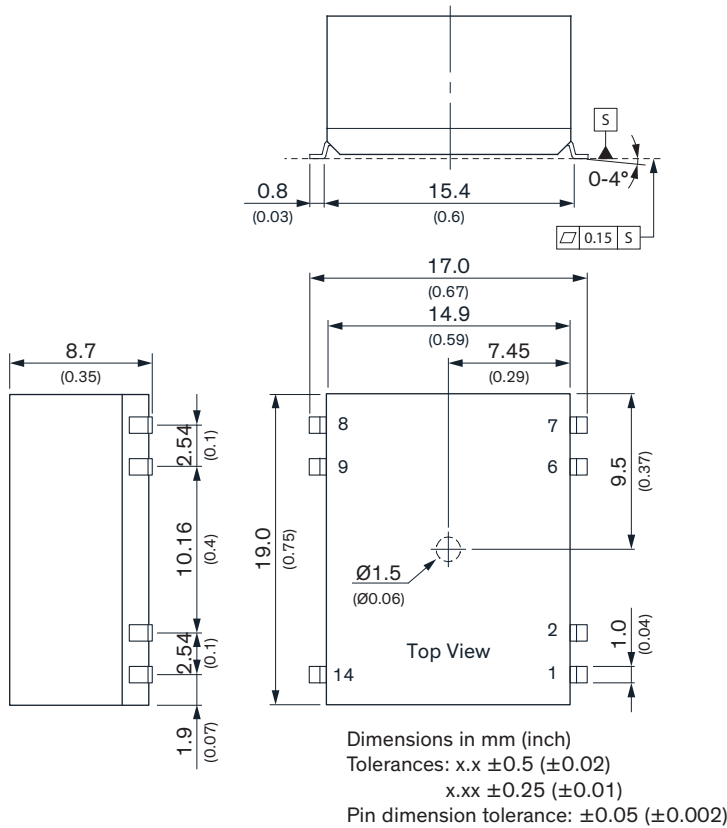
| | | |
|----------------------------|--|---|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | <ul style="list-style-type: none"> - Operating Temperature - Case Temperature - Storage Temperature | -40°C to +80°C +95°C max. -55°C to +125°C |
| Power Derating | - High Temperature | 4 %/K above 70°C |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | <ul style="list-style-type: none"> - Voltage Controlled Remote - Current Controlled Remote - Off Idle Input Current | On: < 0.6 VDC or open circuit Off: 4.7 to 15 VDC On: open circuit Off: 2 to 4 mA current 3 mA max. |
| Altitude During Operation | | 5'000 m max. |
| Switching Frequency | | 100 kHz min. (PFM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | <ul style="list-style-type: none"> - Input to Output, 60 s - Input to Output, 1 s | 1'500 VDC 1'800 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 MΩ min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 500 pF typ. |
| Reliability | - Calculated MTBF | 6'430'000 h (MIL-HDBK-217F, ground benign) |
| Moisture Sensitivity (MSL) | | Level 2 (J-STD-033C) |
| Washing Process | | Not allowed (non-hermetical product) |
| Housing Material | | Non-conductive Plastic (UL 94 V-0 rated) |
| Pin Material | | Phosphor Bronze (C5191) |
| Pin Foundation Plating | | Copper (1 - 3 µm) |
| Pin Surface Plating | | Tin (7.5 µm min.), matte |
| Soldering Profile | | Reflow Soldering (J-STD-020E) |
| Connection Type | | SMD (Surface-Mount Device) |
| Weight | | 3.5 g |
| Environmental Compliance | <ul style="list-style-type: none"> - REACH Declaration - RoHS Declaration | www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.) |

Supporting Documents

| | |
|--|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/tmr2wism |
|--|--|

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

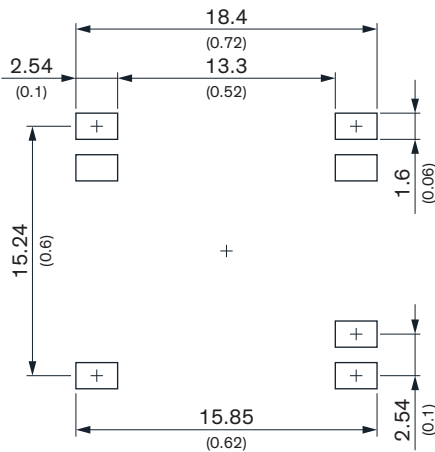
Outline Dimensions



| Pinout | | |
|--------|---------------|-------------|
| Pin | Single Output | Dual Output |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | Remote | Remote |
| 6 | NC | Common |
| 7 | NC | -Vout |
| 8 | +Vout | +Vout |
| 9 | -Vout | Common |
| 14 | +Vin (Vcc) | +Vin (Vcc) |

NC: No Connection

Recommended Solder Pad Layout



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