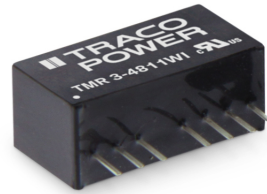


- Highest power density in SIP package
- Ultra wide 4:1 input range
- Small footprint: 21.8 x 9.2 mm
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 82%
- Excellent load and line regulation
- Short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty



The TMR 3WI series is a new family of isolated 3W DC/DC converters with regulated output, featuring ultra-wide 4:1 input voltage range. The product comes in a ultra-compact SIP plastic package with a small footprint occupying only 2.0 cm² (0.3 square inch) of board space. An excellent efficiency allows -40° to $+85^{\circ}\text{C}$ operation temperatures.

Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in battery-powered equipment and instrumentation.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|--------------|-------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TMR 3-1210WI | 4.5 - 18 VDC (12 VDC nom.) | 3.3 VDC | 700 mA | | | 74 % |
| TMR 3-1211WI | | 5 VDC | 600 mA | | | 78 % |
| TMR 3-1212WI | | 12 VDC | 250 mA | | | 80 % |
| TMR 3-1213WI | | 15 VDC | 200 mA | | | 80 % |
| TMR 3-1221WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 80 % |
| TMR 3-1222WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 80 % |
| TMR 3-1223WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 80 % |
| TMR 3-2410WI | 9 - 36 VDC (24 VDC nom.) | 3.3 VDC | 700 mA | | | 75 % |
| TMR 3-2411WI | | 5 VDC | 600 mA | | | 80 % |
| TMR 3-2412WI | | 12 VDC | 250 mA | | | 82 % |
| TMR 3-2413WI | | 15 VDC | 200 mA | | | 82 % |
| TMR 3-2421WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 79 % |
| TMR 3-2422WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 81 % |
| TMR 3-2423WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |
| TMR 3-4810WI | 18 - 75 VDC (48 VDC nom.) | 3.3 VDC | 700 mA | | | 74 % |
| TMR 3-4811WI | | 5 VDC | 600 mA | | | 80 % |
| TMR 3-4812WI | | 12 VDC | 250 mA | | | 81 % |
| TMR 3-4813WI | | 15 VDC | 200 mA | | | 81 % |
| TMR 3-4821WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 79 % |
| TMR 3-4822WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 81 % |
| TMR 3-4823WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |

Input Specifications

| | | |
|---------------|----------------|--|
| Input Current | - At no load | 12 Vin models: 40 mA typ. 24 Vin models: 25 mA typ. 48 Vin models: 15 mA typ. |
| | - At full load | 12 Vin models: 340 mA max. 24 Vin models: 170 mA max. 48 Vin models: 85 mA max. |
| Surge Voltage | | 12 Vin models: 36 VDC max. (100 ms max.) 24 Vin models: 50 VDC max. (100 ms max.) 48 Vin models: 100 VDC max. (100 ms max.) |
| Input Filter | | Internal Capacitor |

Output Specifications

| | | |
|--------------------------|---|--|
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) | single output models: 0.2% max. dual output models: 0.2% max. |
| | - Load Variation (5 - 100%) | single output models: 0.5% max. dual output models: 1% max. (Output 1) 1% max. (Output 2) |
| | - Cross Regulation (25% / 100% asym. load) | dual output models: 5% max. |
| Ripple and Noise | - 20 MHz Bandwidth | 30 mVp-p max. |
| Capacitive Load | - single output | 3.3 Vout models: 3'300 µF max. 5 Vout models: 1'680 µF max. 12 Vout models: 820 µF max. 15 Vout models: 680 µF max. |
| | - dual output | 5 / -5 Vout models: 1'000 / 1'000 µF max. 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 typ. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Transient Response | - Response Time | 250 µs typ. (25% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | IEC 60950-1 EN 60950-1 UL 60950-1 |
| | - Certification Documents | www.tracopower.com/overview/tmr3wi |

EMC Specifications

| | | |
|---------------|---|--|
| EMI Emissions | - Conducted Emissions | EN 55032 class A (with external filter) EN 55032 class B (with external filter) |
| | - Radiated Emissions | EN 55032 class A (with external filter) EN 55032 class B (with external filter) |
| | External filter proposal: | www.tracopower.com/overview/tmr3wi |
| EMS Immunity | - Electrostatic Discharge | Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A |
| | - RF Electromagnetic Field - EFT (Burst) / Surge | 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: | Nippon chemi-con KY, 100 µF / 110 mOhm |
| | - Conducted RF Disturbances - PF Magnetic Field | Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 100 A/m, perf. criteria A |

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

General Specifications

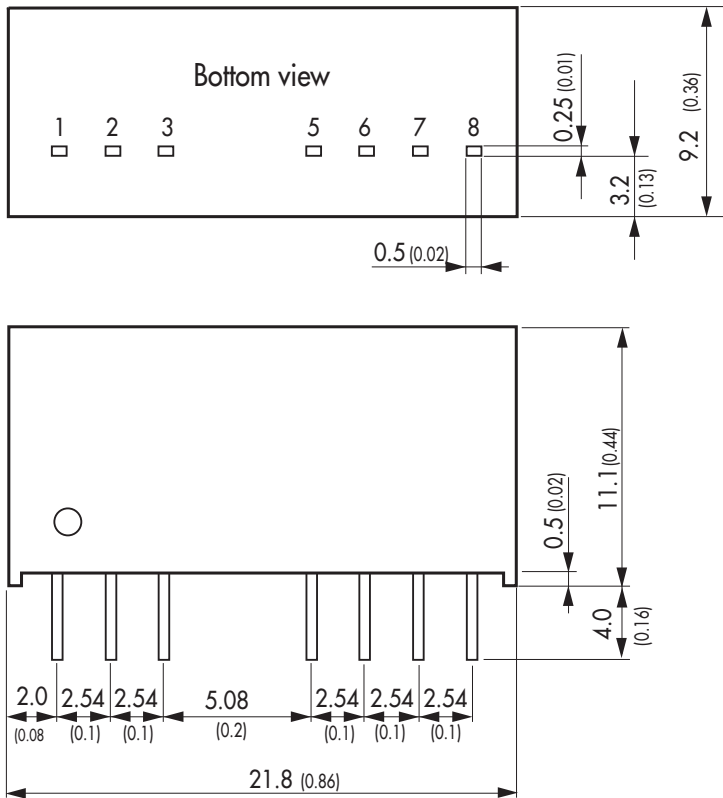
| | | |
|---------------------------|--|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature - Case Temperature - Storage Temperature | -40°C to +85°C +100°C max. -55°C to +125°C |
| Power Derating | - High Temperature | 3.3 %/K above 70°C |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Current Controlled Remote - Off Idle Input Current | On: open circuit Off: 2 to 4 mA current (internal 1 kΩ resistor) External circuit proposal: www.tracopower.com/info/current-remote.pdf 2.5 mA max. |
| Altitude During Operation | | 12'000 m max. (see altitude test report) |
| Switching Frequency | | 100 kHz min. (RCC) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 1'131 VAC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 MΩ min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 200 pF max. |
| Reliability | - Calculated MTBF | 3'400'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration - Thermal Shock | MIL-STD-810F MIL-STD-810F |
| Housing Material | | Non-conductive Plastic (UL94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Pin Material | | Copper |
| Pin Foundation Plating | | Nickel (2 - 3 μm) |
| Pin Surface Plating | | Tin (3 - 5 μm), matte |
| Connection Type | | THD (Through-Hole Device) |
| Weight | | 4.8 g |
| Environmental Compliance | - Reach - RoHS | www.tracopower.com/info/reach-declaration.pdf www.tracopower.com/info/rohs-declaration.pdf |

Supporting Documents

| | |
|--|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/tmr3wi |
|--|--|

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

Outline Dimensions



Dimensions in mm (inch)
 Pin diameter $\varnothing 0.5 \pm 0.05$ (0.02 \pm 0.002)
 Tolerances ± 0.5 (\pm 0.02)
 Pin pitch tolerance ± 0.2 (\pm 0.008)

| Pinout | | |
|--------|---------------|-------------|
| Pin | Single Output | Dual Output |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | +Vin (Vcc) | +Vin (Vcc) |
| 3 | Remote | Remote |
| 5 | NC | NC |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | NC | -Vout |

NC: No Connection