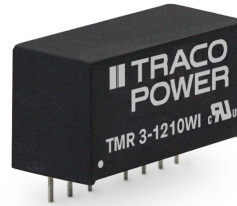




**THE DATASHEET OF
TMR 3-2412WI**



- 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.) |
| Recommended Input Fuse | | (The need of an external fuse has to be assessed in the final application.) |
| 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 | dual output models: 5% max. | |
| | (25% / 100% asym. load) | | |
| 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

| | | |
|-----------|-----------------------------|--|
| Standards | - IT / Multimedia Equipment | EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1 |
| | - 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 |

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

| | | |
|--------------|-----------------------------|---|
| EMS Immunity | - Electrostatic Discharge | Air: EN 61000-4-2, ± 8 kV, perf. criteria A |
| | - RF Electromagnetic Field | Contact: EN 61000-4-2, ± 6 kV, perf. criteria A |
| | - 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 |
| | - Conducted RF Disturbances | Ext. input component: Nippon chemi-con KY, 100 μ F / 110 mOhm |
| | - PF Magnetic Field | Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A |
| | | EN 61000-4-8, 100 A/m, perf. criteria A |

General Specifications

| | | |
|---------------------------|--|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +85°C |
| | - Case Temperature | +100°C max. |
| | - Storage Temperature | -55°C to +125°C |
| Power Derating | - High Temperature | Depending on model |
| | | See application note: www.tracopower.com/overview/tmr3wi |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Current Controlled Remote (passive = on) | On: open circuit Off: 2 to 4 mA current (internal 1 k Ω resistor) Refers to 'Remote' and '-Vin' Pin |
| | - Off Idle Input Current | External circuit proposal: www.tracopower.com/info/current-remote.pdf 2.5 mA max. |
| Altitude During Operation | | 5'000 m max. |
| Switching Frequency | | 100 kHz min. (RCC) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 1'600 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω 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) |
| Washing Process | | According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf |
| Environment | - Vibration | MIL-STD-810F |
| | - Thermal Shock | MIL-STD-810F |
| Housing Material | | Non-conductive Plastic (UL 94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Pin Material | | Copper |
| Pin Foundation Plating | | Nickel (2 - 3 μ m) |
| Pin Surface Plating | | Tin (3 - 5 μ m), matte |
| Housing Type | | Plastic Case |
| Mounting Type | | PCB Mount |
| Connection Type | | THD (Through-Hole Device) |
| Footprint Type | | SIP8 |
| Soldering Profile | | Lead-Free Wave Soldering |
| | | 260°C / 6 s max. |
| Weight | | 4.8 g |
| Environmental Compliance | - REACH Declaration | www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant |
| | - RoHS Declaration | www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule.)) |
| | - SCIP Reference Number | c463e4b5-9f69-4661-a424-6478acdbe545 |

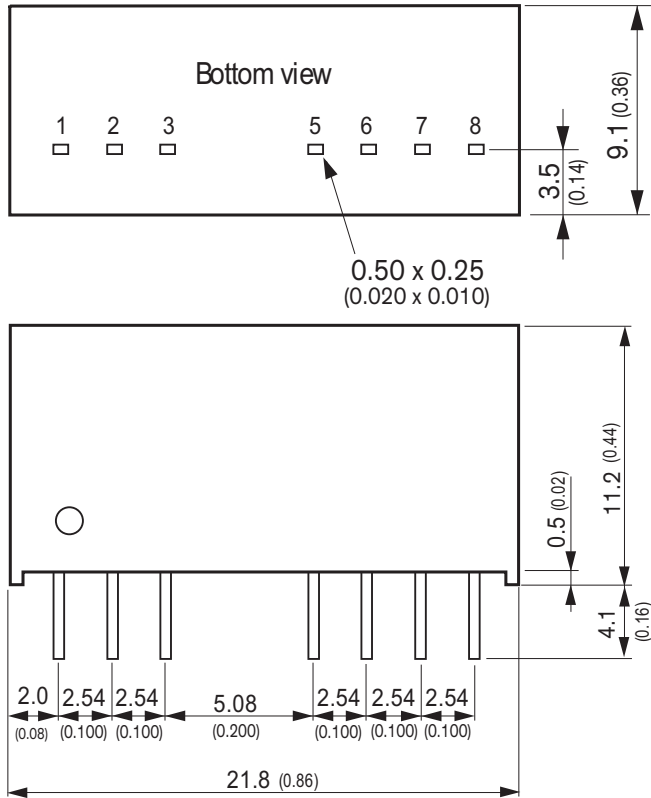
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Supporting Documents

[Overview Link](#) (for additional Documents)

www.tracopower.com/overview/tmr3wi

Outline Dimensions



Dimensions in mm (inch)
 Tolerances: x.x ±0.5 (x.xx ±0.02)
 x.xx ±0.25 (x.xxx ±0.01)
 Pin dimension tolerance: ±0.1 (±0.004)

| 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: Not connected

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View TMR 3-2412WI on WIN SOURCE](#)
- ⊖ [Traco Power Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management