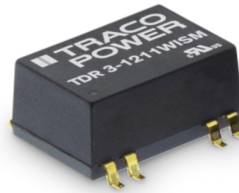


- Compact design in SMD package
- Ultra wide 4:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty



The TDR 3WISM series is a family of compact 3 W DC/DC-converters with 4:1 input voltage ranges and tightly regulated output voltages even under no load conditions. The product is available in SMD-package. They work with high efficiency over the full load range and come with a remote On/Off input. The usability in temperature ranges of up to $+85^{\circ}\text{C}$, continuous short circuit protection and excellent immunity against environmental influences make these converters very reliable. A TDR 3WISM converter is the ideal solution for space critical high end applications in communication equipment, instrumentation and industrial electronics.

| Models | | | | | | |
|----------------|-------------------------------|----------|------------------|----------|------------------|-----------------|
| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TDR 3-1211WISM | 4.5 - 18 VDC (12 VDC nom.) | 5 VDC | 600 mA | | | 81 % |
| TDR 3-1212WISM | | 12 VDC | 250 mA | | | 82 % |
| TDR 3-1213WISM | | 15 VDC | 200 mA | | | 82 % |
| TDR 3-1222WISM | | +12 VDC | 125 mA | -12 VDC | 125 mA | 82 % |
| TDR 3-1223WISM | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |
| TDR 3-2411WISM | 9 - 36 VDC (24 VDC nom.) | 5 VDC | 600 mA | | | 80 % |
| TDR 3-2412WISM | | 12 VDC | 250 mA | | | 82 % |
| TDR 3-2413WISM | | 15 VDC | 200 mA | | | 82 % |
| TDR 3-2422WISM | | +12 VDC | 125 mA | -12 VDC | 125 mA | 82 % |
| TDR 3-2423WISM | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |
| TDR 3-4811WISM | 18 - 75 VDC (48 VDC nom.) | 5 VDC | 600 mA | | | 80 % |
| TDR 3-4812WISM | | 12 VDC | 250 mA | | | 83 % |
| TDR 3-4813WISM | | 15 VDC | 200 mA | | | 82 % |
| TDR 3-4822WISM | | +12 VDC | 125 mA | -12 VDC | 125 mA | 82 % |
| TDR 3-4823WISM | | +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: 20 mA typ. 48 Vin models: 13 mA typ. |
| | - At full load | 12 Vin models: 330 mA max. 24 Vin models: 165 mA max. 48 Vin models: 80 mA max. |
| Surge Voltage | | 12 Vin models: 25 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.) |
| Reflected Ripple Current | | 12 Vin models: 80 mA_{p-p} typ. 24 Vin models: 40 mA_{p-p} typ. 48 Vin models: 30 mA_{p-p} typ. |
| Recommended Input Fuse | | 12 Vin models: 2'500 mA (slow blow) 24 Vin models: 1'500 mA (slow blow) 48 Vin models: 1'000 mA (slow blow) (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 (V _{min} - V _{max}) | single output models: 0.2% max. dual output models: 0.2% max. |
| | - Load Variation (0 - 100%) | single output models: 1% 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 mV_{p-p} typ. |
| Capacitive Load | - single output | 5 V _{out} models: 1'680 μF max. 12 V _{out} models: 820 μF max. 15 V _{out} models: 680 μF max. |
| | - dual output | 12 / -12 V _{out} models: 470 / 470 μF max. 15 / -15 V _{out} models: 330 / 330 μF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 5 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 | EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tdr3wism |
| Pollution Degree | | PD 2 |

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

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/tdr3wism |
| 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 | EN 61000-4-3, 10 V/m, perf. criteria A |
| | - EFT (Burst) / Surge | EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV, perf. criteria A |
| | - Conducted RF Disturbances | Ext. input component: 220 μ F / 100 V EN 61000-4-6, 10 Vrms, perf. criteria A |
| | - PF Magnetic Field | Continuous: EN 61000-4-8, 100 A/m, perf. criteria A 1 s: EN 61000-4-8, 1000 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 | 3.3 %/K above 70°C |
| | | See application note: www.tracopower.com/overview/tdr3wism |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Current Controlled Remote | On: open circuit Off: 2 to 4 mA current (internal 1 k Ω resistor) |
| | - 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 | | Basic 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 | 50 pF max. |
| Reliability | - Calculated MTBF | 5'700'000 h (MIL-HDBK-217F, ground benign) |
| Moisture Sensitivity (MSL) | | Level 2a (J-STD-033C) |
| Washing Process | | Allowed (hermetical product) |
| | | See 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 | | Epoxy (UL 94 V-0 rated) |
| Pin Material | | Copper |
| Pin Foundation Plating | | Nickel (40 - 120 μ m) |
| Pin Surface Plating | | Gold (25 - 75 nm), matte |
| Housing Type | | Overmold |
| Mounting Type | | PCB Mount |
| Connection Type | | SMD (Surface-Mount Device) |
| Footprint Type | | SMD14 |
| Soldering Profile | | Reflow Soldering (J-STD-020E) |
| Weight | | 4.5 g |

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

Environmental Compliance - REACH Declaration

www.tracopower.com/info/reach-declaration.pdf

- RoHS Declaration

REACH SVHC list compliant

REACH Annex XVII compliant

www.tracopower.com/info/rohs-declaration.pdf

Exemptions: 7a, 7c-I

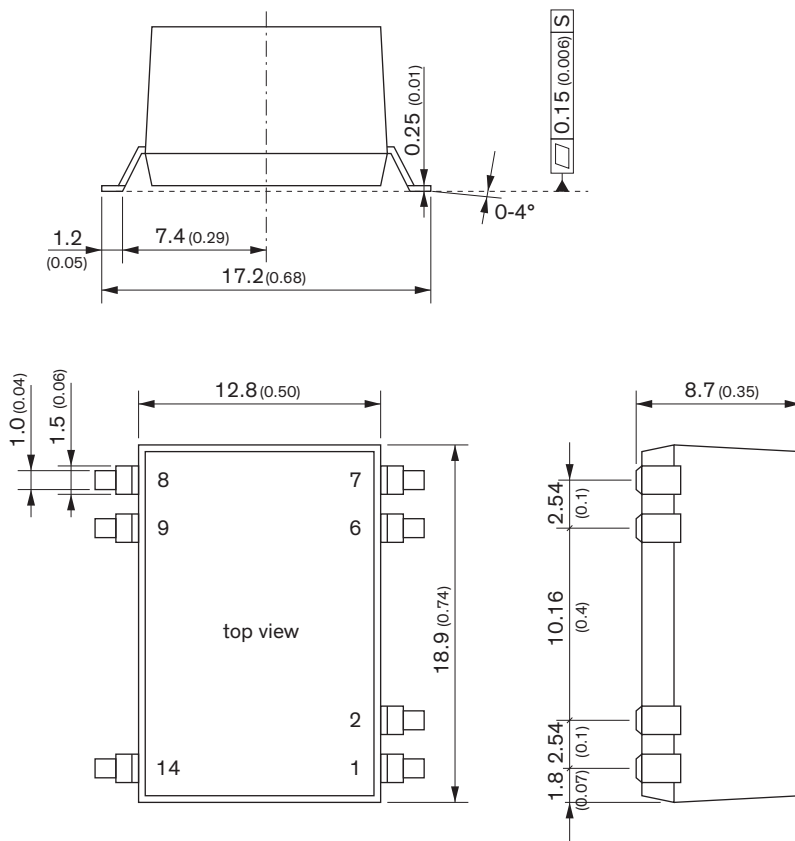
(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).
The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tdr3wism

Outline Dimensions



Dimensions in mm (inch)
Tolerances: ± 0.5 (± 0.02)
Pin pitch tolerances ± 0.25 (± 0.01)

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

NC: Not connected

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

Recommended Solder Pad Layout

