

DC/DC Converter

TDN 1WISM Series, 1 Watt

- Compact SMD package
13,2 × 9,1 × 10,2 mm
- Fully regulated outputs
- I/O-isolation 1'500 VDC
- Operating temperature range
-40°C to +90°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty



Also see:

TDN 1WI, DIP version

www.tracopower.com/products/tdn1wi.pdf

The TDN 1WISM Series comprises 1 Watt fully regulated, high performance DC/DC converters. They come in a compact cubical package of only 1.23 cm³. Full load operation is reliable up to 90°C environment temperature. With 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 | Output voltage | Output current max. | Efficiency typ. |
| TDN 1-1210WISM | 4.5 – 18 VDC (12 VDC nominal) | 3.3 VDC | 300 mA | 77 % |
| TDN 1-1211WISM | | 5.0 VDC | 200 mA | 79 % |
| TDN 1-1212WISM | | 12 VDC | 90 mA | 81 % |
| TDN 1-1213WISM | | 15 VDC | 70 mA | 81 % |
| TDN 1-1215WISM | | 24 VDC | 45 mA | 80 % |
| TDN 1-1221WISM | | ± 5.0 VDC | ±100 mA | 77 % |
| TDN 1-1222WISM | | ±12 VDC | ±45 mA | 80 % |
| TDN 1-1223WISM | | ±15 VDC | ±35 mA | 81 % |
| TDN 1-2410WISM | 9 – 36 VDC (24 VDC nominal) | 3.3 VDC | 300 mA | 76 % |
| TDN 1-2411WISM | | 5.0 VDC | 200 mA | 78 % |
| TDN 1-2412WISM | | 12 VDC | 90 mA | 81 % |
| TDN 1-2413WISM | | 15 VDC | 70 mA | 81 % |
| TDN 1-2415WISM | | 24 VDC | 45 mA | 80 % |
| TDN 1-2421WISM | | ± 5.0 VDC | ±100 mA | 77 % |
| TDN 1-2422WISM | | ±12 VDC | ±45 mA | 80 % |
| TDN 1-2423WISM | | ±15 VDC | ±35 mA | 81 % |
| TDN 1-4810WISM | 18 – 75 VDC (48 VDC nominal) | 3.3 VDC | 300 mA | 75 % |
| TDN 1-4811WISM | | 5.0 VDC | 200 mA | 78 % |
| TDN 1-4812WISM | | 12 VDC | 90 mA | 81 % |
| TDN 1-4813WISM | | 15 VDC | 70 mA | 81 % |
| TDN 1-4815WISM | | 24 VDC | 45 mA | 80 % |
| TDN 1-4821WISM | | ± 5.0 VDC | ±100 mA | 77 % |
| TDN 1-4822WISM | | ±12 VDC | ±45 mA | 80 % |
| TDN 1-4823WISM | | ±15 VDC | ±35 mA | 81 % |

Input Specifications

| | |
|--|--|
| Input current no load | 12 Vin models: 20 mA typ 24 Vin models: 10 mA typ. 48 Vin models: 5 mA typ. |
| Surge voltage (1 sec. max.) | 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Reflected ripple current | 12 Vin models: 15 mAp-p typ., 24 Vin models: 10 mAp-p typ. 48 Vin models: 5 mAp-p typ. |
| Conducted noise | EN 55022 class A or B with external components, see supporting documents |
| ESD (electrostatic discharge) | EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A |
| Radiated immunity | EN 61000-4-3, 10 V/m, perf. criteria A |
| Fast transient / surge (with external input capacitor) | EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV perf. criteria A all models: Nippon chemi-con KY 220 μ F/100V –external input capacitor |
| Conducted immunity | EN 61000-4-6, 10 Vrms, perf. criteria A |
| Magnetic field immunity | EN 61000-4-8, 100 A/m continuous, perf. criteria A 1000 A/m 1 second, perf criteria A |

Output Specifications

| | |
|---|---|
| Voltage set accuracy | ± 1 % max. |
| Regulation | – Input variation 0.2 % max. – Load variation 0 – 100 % 1 % max. – cross regulation - dual output: 5 % max. (asymmetrical load 25 % / 100 %) |
| Temperature coefficient | ± 0.02 %/K typ. |
| Ripple and noise (20 MHz Bandwidth) | 30 mVp-p typ. |
| Start up time | – Power ON 10 ms max. (constant resistive load) – Remote ON 10 ms max. |
| Transient response (25% load step change) | 500 μ s typ. |
| Short circuit protection | continuous, automatic recovery |
| Capacitive load | –Single output 3.3 VDC models: 1680 μ F max. 5.0 VDC models: 820 μ F max. 12 VDC models: 470 μ F max. 15 VDC models: 330 μ F max. 24 VDC models: 160 μ F max. –Dual output ± 5.0 VDC models: 470 μ F max. (each output) ± 12 VDC models: 330 μ F max. (each output) $+15$ VDC models: 220 μ F max. (each output) |

General Specifications

| | |
|----------------------------------|--|
| Temperature ranges | – Operating (convection cooling 20LFM, 0,1m/s) –40°C to +90°C (without derating) – Case temperature +95°C max. – Storage temperature –55°C to +125°C |
| Derating | 6.7%/K above 90°C |
| Humidity (non condensing) | 5 – 95 % rel H max. |
| Isolation voltage | – I/O isolation voltage (60 sec.) 1'500 VDC |
| Isolation capacitance | 50 pF max. |
| Isolation resistance (@ 500 VDC) | >1 Gohm |

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

General Specifications

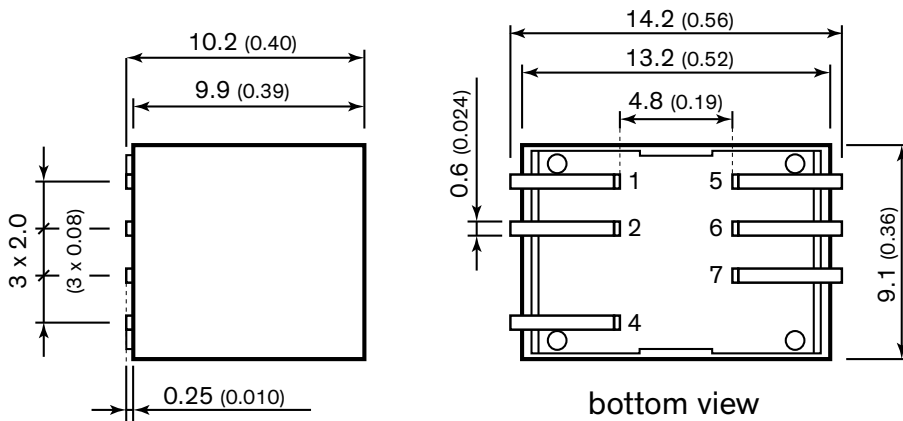
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|--|---|
| Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign) | 8'400'000 h |
| Switching frequency | 100 kHz min. Pulse frequency modulation. |
| Thermal shock & vibration | MIL-STD-810F |
| Remote On/Off | -On: -Off: -Off idle current: |
| | open circuit or high impedance 2 – 4 mA current applied via 1kOhm resistor 2.5 mA max. |
| Environmental compliance | - Reach - RoHS |
| | www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU |
| Moisture sensitivity level (MSL) | IPC J-STD-033B Level 2 |

Physical Specifications

| | |
|---------------------------------|-----------------------------|
| Casing material | non-conducting plastic |
| Potting material | silicone (UL 94V-0 rated) |
| Package weight | 2.7g (0.10oz) |
| Lead-free reflow solder process | according to IPC J-STD-020D |

Supporting Documents: www.tracopower.com/overview/tdn1wism

Outline Dimensions



Pin-Out

| Pin | Single | Dual |
|-----|------------|------------|
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | -Vin (GND) | -Vin (GND) |
| 4 | On/Off | On/Off |
| 5 | no con. | -Vout |
| 6 | -Vout | Common |
| 7 | +Vout | +Vout |

Dimensions in [mm], () = Inch

Tolerances: x.x ±0.5 (±0.02)

Pin pitch tolerances ±0.25 (±0.01)

Pin dimension tolerance ±0.1 (±0.004)