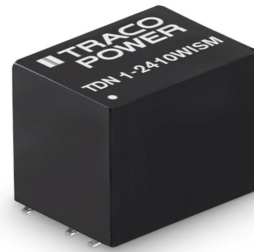


## DC/DC Converter

## TDN 1WISM Series, 1 Watt

- Compact SMD package  
13,2 × 9,1 × 10,2 mm
- Fully regulated outputs
- I/O-isolation 1'600 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](http://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 cm<sup>3</sup>. Full load operation is reliable up to 90°C environment temperature. With 1'600 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<br>(12 VDC nominal) | 3.3 VDC        | 300 mA              | 77 %            |
| TDN 1-1211WISM |                                  | 5.0 VDC        | 200 mA              | 79 %            |
| TDN 1-1219WISM |                                  | 9.0 VDC        | 112 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<br>(24 VDC nominal)   | 3.3 VDC        | 300 mA              | 76 %            |
| TDN 1-2411WISM |                                  | 5.0 VDC        | 200 mA              | 78 %            |
| TDN 1-2419WISM |                                  | 9.0 VDC        | 112 mA              | 79 %            |
| 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<br>(48 VDC nominal)  | 3.3 VDC        | 300 mA              | 75 %            |
| TDN 1-4811WISM |                                  | 5.0 VDC        | 200 mA              | 78 %            |
| TDN 1-4819WISM |                                  | 9.0 VDC        | 112 mA              | 79 %            |
| 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<br>24 Vin models: 10 mA typ.<br>48 Vin models: 5 mA typ.  |
| Surge voltage (1 sec. max.)                            | 12 Vin models: 25 V max.<br>24 Vin models: 50 V max.<br>48 Vin models: 100 V max.  |
| Reflected ripple current                               | 12 Vin models: 15 mA <sub>p-p</sub> typ.,<br>24 Vin models: 10 mA <sub>p-p</sub> typ.<br>48 Vin models: 5 mA <sub>p-p</sub> typ.                         |
| Conducted noise  | EN 55022 class A or B with external components, <a href="#">see supporting documents</a>   |
| 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<br>EN 61000-4-5, ±1 kV perf. criteria A<br>all models: Nippon chemi-con KY 220µF/100V<br>–external input capacitor |
| Conducted immunity                                     | EN 61000-4-6, 10 V <sub>rms</sub> , perf. criteria A   |
| Magnetic field immunity                                | EN 61000-4-8,<br>100 A/m continuous, perf. criteria A<br>1000 A/m 1 second, perf criteria A  |

## Output Specifications

|   |  |
|---|--|
| Voltage set accuracy                      | ±1 % max.  |
| Regulation                                | – Input variation 0.2 % max.<br>– Load variation 0 – 100 % 1 % max.<br>– cross regulation - dual output: 5 % max. (asymmetrical load 25 % / 100 %)   |
| Temperature coefficient                   | ±0.02 %/K typ.   |
| Ripple and noise (20 MHz Bandwidth)       | 30 mV <sub>p-p</sub> typ.  |
| Start up time                             | – Power ON 10 ms max.<br>(constant resistive load) – Remote ON 10 ms max.  |
| Transient response (25% load step change) | 500 µs typ.  |
| Short circuit protection                  | continuous, automatic recovery   |
| Capacitive load                           | –Single output 3.3 VDC models: 1680 µF max.<br>5.0 VDC models: 820 µF max.<br>9.0 VDC models: 630 µF max.<br>12 VDC models: 470 µF max.<br>15 VDC models: 330 µF max.<br>24 VDC models: 160 µF max.<br>–Dual output ±5.0 VDC models: 470 µF max. (each output)<br>±12 VDC models: 330 µF max. (each output)<br>+15 VDC models: 220 µF max. (each output) |

## General Specifications

|                                  |  |
|----------------------------------|--|
| Temperature ranges               | – Operating (convection cooling 20LFM, 0,1m/s) –40°C to +90°C (without derating)<br>– Case temperature +95°C max.<br>– 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.) 1'600 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

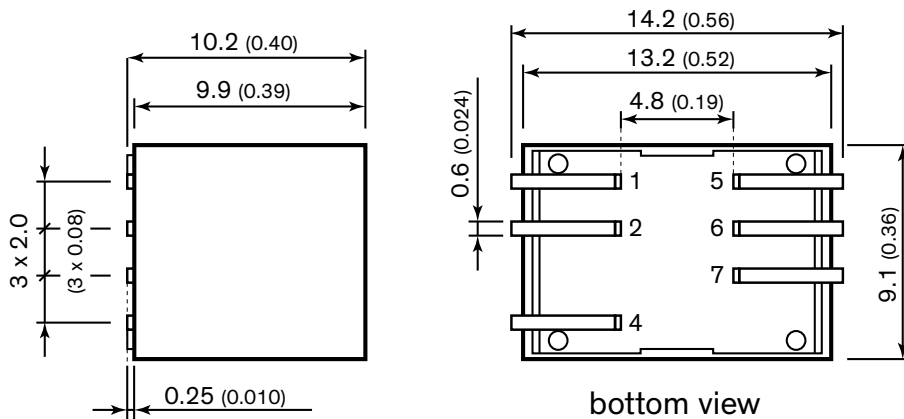
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|--|--|
| Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign) | 8'400'000 h                              |
| Switching frequency  | 100 kHz min. Pulse frequency modulation. |
| Thermal shock & vibration  | MIL-STD-810F                             |
| Remote On/Off  | -On:<br>-Off:<br>-Off idle current:      |
| Environmental compliance   | - Reach<br>- RoHS                        |
| 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](http://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)