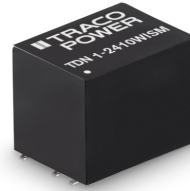


- Compact SMD package  
13.2 x 9.1 x 10.2 mm
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range  
-40°C to +90°C without derating
- Short circuit protection
- Remote On/Off
- Designed to meet UL 62368-1  
(UL 60950-1)
- 3-year product warranty



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.

The functional I/O-isolation system is designed to meet IEC/EN 62368-1 with a test voltage (60 s) of 1'600 VDC.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
TDN 1-1210WISM	4.5 - 18 VDC (12 VDC nom.)	3.3 VDC	300 mA			77 %
TDN 1-1211WISM		5 VDC	200 mA			79 %
TDN 1-1219WISM		9 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 VDC	100 mA	-5 VDC	100 mA	77 %
TDN 1-1222WISM		+12 VDC	45 mA	-12 VDC	45 mA	80 %
TDN 1-1223WISM		+15 VDC	35 mA	-15 VDC	35 mA	81 %
TDN 1-2410WISM	9 - 36 VDC (24 VDC nom.)	3.3 VDC	300 mA			76 %
TDN 1-2411WISM		5 VDC	200 mA			78 %
TDN 1-2419WISM		9 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 VDC	100 mA	-5 VDC	100 mA	77 %
TDN 1-2422WISM		+12 VDC	45 mA	-12 VDC	45 mA	80 %
TDN 1-2423WISM		+15 VDC	35 mA	-15 VDC	35 mA	81 %
TDN 1-4810WISM	18 - 75 VDC (48 VDC nom.)	3.3 VDC	300 mA			75 %
TDN 1-4811WISM		5 VDC	200 mA			78 %
TDN 1-4819WISM		9 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 VDC	100 mA	-5 VDC	100 mA	77 %
TDN 1-4822WISM		+12 VDC	45 mA	-12 VDC	45 mA	80 %
TDN 1-4823WISM		+15 VDC	35 mA	-15 VDC	35 mA	81 %

### Input Specifications

Input Current	- At no load	12 Vin models: <b>20 mA typ.</b> 24 Vin models: <b>10 mA typ.</b> 48 Vin models: <b>5 mA typ.</b>
Surge Voltage		12 Vin models: <b>25 VDC max.</b> (1 s max.) 24 Vin models: <b>50 VDC max.</b> (1 s max.) 48 Vin models: <b>100 VDC max.</b> (1 s max.)
Reflected Ripple Current		12 Vin models: <b>15 mA<sub>p-p</sub> typ.</b> 24 Vin models: <b>10 mA<sub>p-p</sub> typ.</b> 48 Vin models: <b>5 mA<sub>p-p</sub> typ.</b>
Recommended Input Fuse		12 Vin models: <b>500 mA</b> (slow blow) 24 Vin models: <b>315 mA</b> (slow blow) 48 Vin models: <b>160 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		<b>Internal Capacitor</b>

### Output Specifications

Voltage Set Accuracy		<b>±1% max.</b>
Regulation	- Input Variation (V <sub>min</sub> - V <sub>max</sub> )	single output models: <b>0.2% max.</b> dual output models: <b>0.2% max.</b>
	- Load Variation (0 - 100%)	single output models: <b>1% max.</b> dual output models: <b>1% max.</b> (Output 1) <b>1% max.</b> (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: <b>5% max.</b>
Ripple and Noise	- 20 MHz Bandwidth	<b>30 mV<sub>p-p</sub> typ.</b>
Capacitive Load	- single output	3.3 V <sub>out</sub> models: <b>1'680 µF max.</b> 5 V <sub>out</sub> models: <b>820 µF max.</b> 9 V <sub>out</sub> models: <b>630 µF max.</b> 12 V <sub>out</sub> models: <b>470 µF max.</b> 15 V <sub>out</sub> models: <b>330 µF max.</b> 24 V <sub>out</sub> models: <b>160 µF max.</b>
	- dual output	5 / -5 V <sub>out</sub> models: <b>470 / 470 µF max.</b> 12 / -12 V <sub>out</sub> models: <b>330 / 330 µF max.</b> 15 / -15 V <sub>out</sub> models: <b>220 / 220 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Start-up Time		<b>10 ms typ. / 20 ms max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Transient Response	- Response Time	<b>500 µs typ.</b> (25% Load Step)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	<b>Designed for EN 62368-1 (no certification)</b>
------------------	-----------------------------	---

### EMC Specifications

EMI Emissions	- Conducted Emissions	<b>EN 55032 class A</b> (with external filter) <b>EN 55032 class B</b> (with external filter)
	- Radiated Emissions	<b>EN 55032 class A</b> (with external filter) <b>EN 55032 class B</b> (with external filter)
	External filter proposal:	<a href="http://www.tracopower.com/overview/tdn1wism">www.tracopower.com/overview/tdn1wism</a>

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: KY 220 µF, 100 V
	- PF Magnetic Field	Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A
		1 s: 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 +90°C (without derating)
	- Case Temperature	+105°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	6.67 %/K above 90°C
	See application note:	<a href="http://www.tracopower.com/overview/tdn1wism">www.tracopower.com/overview/tdn1wism</a>
Cooling System		Natural convection (20 LFM)
Remote Control	- Current Controlled Remote	On: open circuit
		Off: 2 to 4 mA current (no internal resistor)
	External circuit proposal:	<a href="http://www.tracopower.com/info/current-remote.pdf">www.tracopower.com/info/current-remote.pdf</a>
	- Off Idle Input Current	2.5 mA max.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	8'400'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2 (J-STD-033C)
Washing Process		Allowed (hermetical product)
	See Cleaning Guideline:	<a href="http://www.tracopower.com/info/cleaning.pdf">www.tracopower.com/info/cleaning.pdf</a>
Environment	- Vibration	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Base 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 µm)
Pin Surface Plating		Tin (3 - 5 µm), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		SMD (Surface-Mount Device)
Footprint Type		SMD8
Soldering Profile		Reflow Soldering (J-STD-020E)
Weight		2.7 g
Environmental Compliance	- REACH Declaration	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a>
		REACH SVHC list compliant
		REACH Annex XVII compliant
	- RoHS Declaration	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>
		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.)

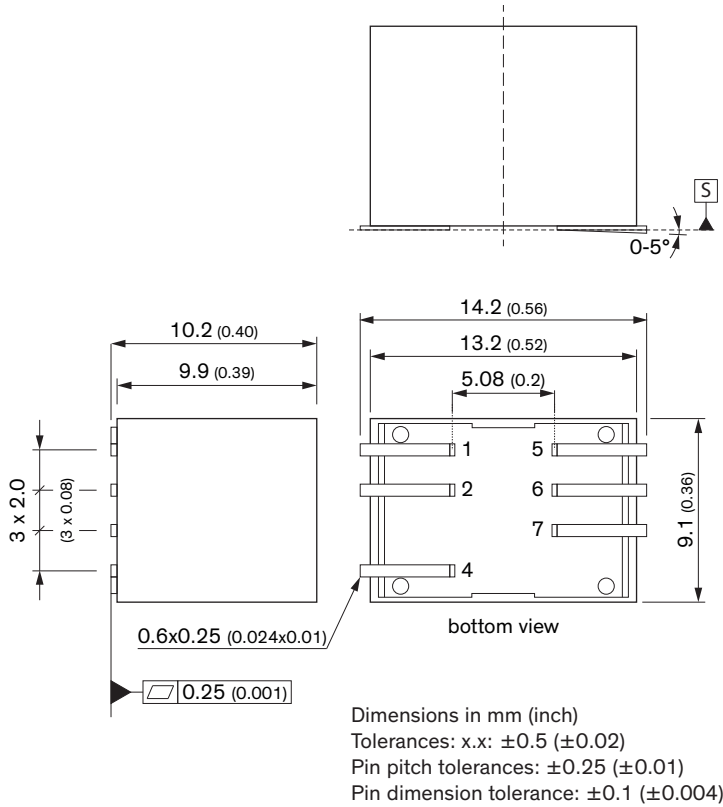
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

### Supporting Documents

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

[www.tracopower.com/overview/tdn1wism](http://www.tracopower.com/overview/tdn1wism)

### Outline Dimensions



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
4	Remote On/Off	Remote On/Off
5	NC	-Vout
6	-Vout	Common
7	+Vout	+Vout

NC: Not Connected

### Recommended Solder Pad Layout

