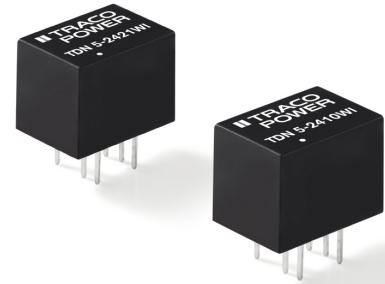


## DC/DC Converter

## TDN 5WI Series, 5 Watt

- Ultra compact DIP package  
0.52 × 0.36 × 0.40 inch
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range  
-40°C to +75°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty



The TDN 5WI Series redefines the power density of high performance DC/DC converters. The cubical package of only 1.23 cm<sup>3</sup> encloses a sophisticated circuit which provides 5 Watt output power. They operate up to 50°C environment temperature at full load or up to 75°C with a 50% load derating. With 1600 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 5-0910WI	4.5 – 12 VDC (5 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-0911WI		5.0 VDC	1000 mA	80 %
TDN 5-0912WI		12 VDC	420 mA	83 %
TDN 5-0913WI		15 VDC	333 mA	83 %
TDN 5-0915WI		24 VDC	210 mA	83 %
TDN 5-0921WI		± 5.0 VDC	±500 mA	80 %
TDN 5-0922WI		±12 VDC	±210 mA	83 %
TDN 5-0923WI		±15 VDC	±168 mA	83 %
TDN 5-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-2411WI		5.0 VDC	1000 mA	80 %
TDN 5-2412WI		12 VDC	420 mA	83 %
TDN 5-2413WI		15 VDC	333 mA	83 %
TDN 5-2415WI		24 VDC	210 mA	83 %
TDN 5-2421WI		± 5.0 VDC	±500 mA	80 %
TDN 5-2422WI		±12 VDC	±210 mA	83 %
TDN 5-2423WI		±15 VDC	±168 mA	84 %
TDN 5-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-4811WI		5.0 VDC	1000 mA	81 %
TDN 5-4812WI		12 VDC	420 mA	83 %
TDN 5-4813WI		15 VDC	333 mA	83 %
TDN 5-4815WI		24 VDC	210 mA	83 %
TDN 5-4821WI		± 5.0 VDC	±500 mA	80 %
TDN 5-4822WI		±12 VDC	±210 mA	83 %
TDN 5-4823WI		±15 VDC	±168 mA	84 %

## Input Specifications

Input current no load	5 Vin models: 80 mA typ 24 Vin models: 30 mA typ. 48 Vin models: 15 mA typ.
Surge voltage (1 sec. max.)	5 Vin models: 15 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Reflected ripple current	5 Vin models: 40 mA <sub>p-p</sub> typ. 24 Vin models: 20 mA <sub>p-p</sub> typ. 48 Vin models: 15 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 EN 61000-4-5, ±1 kV perf. criteria A
–external input capacitor	all models: Nippon chemi-con KY 220µF/100V
Conducted immunity	EN 61000-4-6, 10 V <sub>rms</sub> , perf. criteria A
Power frequency magnetic field	EN 61000-4-8, 100 A/m, perf. criteria A

## Output Specifications

Voltage set accuracy	±1 % max.
Voltage balance (dual output models)	1 % max.
Regulation	– Input variation – Load variation 0 – 100 %
	single output: 0.2 % max. dual output: 1 % max. cross regulation - dual output: 1 % max. (balanced load) 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	±0.02 %/K typ.
Ripple and noise (20 MHz Bandwidth)	75 mV <sub>p-p</sub> typ.
Start up time	– Power ON – Remote ON
(constant resistive load)	10 ms max. 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: 4400 µF max. 5.0 VDC models: 2200 µF max. 12 VDC models: 1220 µF max. 15 VDC models: 1000 µF max. 24 VDC models: 470 µF max.
	–Dual output
	±5.0 VDC models: 1000 µF max. (each output) ±12 VDC models: 680 µF max. (each output) +15 VDC models: 440 µF max. (each output)

## General Specifications

Temperature ranges	– Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature
	–40°C to +75°C +95°C max. –55°C to +125°C
Derating	1.8%/K above 50°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

Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)	2'280'000 h
Switching frequency	100 kHz min. Pulse frequency modulation.
Thermal shock & vibration	MIL-STD-810F
Remote On/Off	-On: -Off: -Off idle current:
Environmental compliance	- Reach - RoHS
	open circuit or high impedance 2 – 4 mA current applied via 1kOhm resistor 2.5 mA max.
	see supporting documents RoHS directive 2011/65/EU

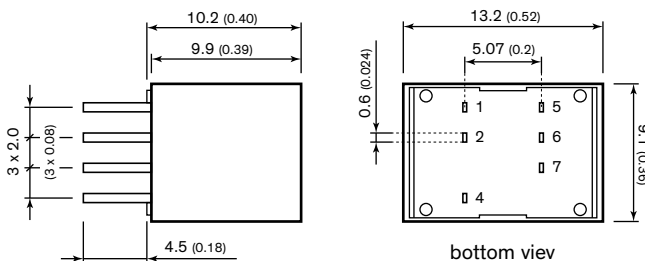
### Physical Specifications

Casing material	non-conducting FR4 (UL 94V-0 rated)
Potting material	silicone (UL 94V-0 rated)
Pin material	tinned copper
Package weight	2.7g (0.10oz)
Soldering temperature	max. 260°C / 6 sec

**Supporting Documents:** [www.tracopower.com/overview/tdn5wi](http://www.tracopower.com/overview/tdn5wi)

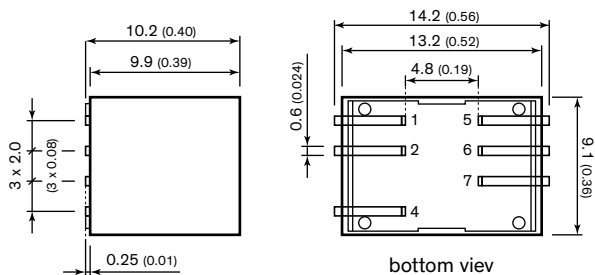
### Outline Dimensions

DIP package:



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

SMD package (on demand):



Dimensions in [mm], ( ) = Inch

Tolerances: x.xx ±0.5 (±0.02)

x.xxx ±0.25 (±0.01)

Pin pitch tolerances ±0.25 (±0.01)

pin dimension tolerance ±0.1 (±0.004)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)