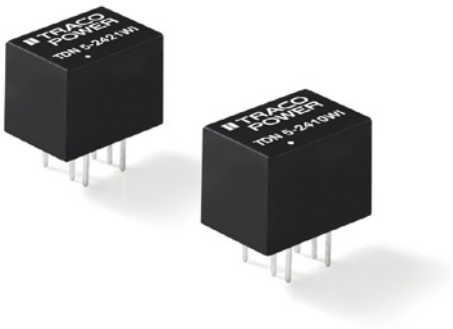
TRACO POWER

DC/DC Converter

TDN 5WI Series, 5 Watt

- **Ultra compact DIP package 0.52 × 0.36 × 0.40 inch**
- **I/O-isolation 1‘500 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 cm3 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 de-rating. With 1500 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 mAp-p typ.
		24 Vin models:	20 mAp-p typ.
		48 Vin models:	15 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
	–external input capacitor	all models:	Nippon chemi-con KY 220µF/100V
Conducted immunity			EN 61000-4-6, 10 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy			±1 % max.
Voltage balance (dual output models)			1 % max.
Regulation	– Input variation		0.2 % max.
	– Load variation 0 – 100 %	single output:	1 % max.
		dual output:	1 % max. (balanced load)
		cross regulation - dual output:	5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient			±0.02 %/K typ.
Ripple and noise (20 MHz Bandwidth)			75 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 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)	–40°C to +75°C
	– Case temperature	+95°C max.
	– Storage temperature	–55°C to +125°C
Derating		1.8%/K above 50°C
Humidity (non condensing)		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
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		2'280'000 h

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

General Specifications

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.
Safety standards		UL 60950-1 IEC/EN 60950-1
	– Certification documents	see supporting documents
Environmental compliance	– Reach – RoHS	see supporting documents RoHS directive 2011/65/EU

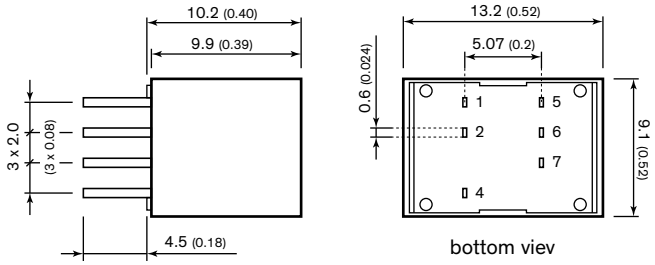
Physical Specifications

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

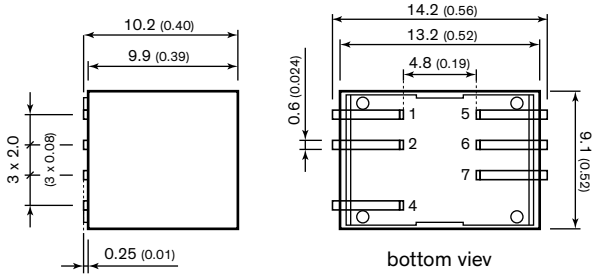
Outline Dimensions

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)