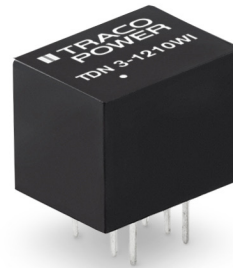


DC/DC Converter

TDN 3WI Series, 3 Watt

- Ultra compact DIP package
13,2 × 9,1 × 10,2 mm
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range
-40°C to +70°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1
(UL 60950-1)



Also see:

TDN 3WISM, SMD version

The TDN 3WI series with 4:1 input voltage range is a selection of 3 Watt regulated dc/dc-converters. They come in a very compact DIP package (13.2 × 9.1 × 10.2 mm). The functional I/O-isolation system is designed to meet IEC/EN 62368-1 with a test voltage (60 s) of 1600 VDC.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TDN 3-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	76 %
TDN 3-1211WI		5.0 VDC	600 mA	80 %
TDN 3-1219WI		9.0 VDC	333 mA	81 %
TDN 3-1212WI		12 VDC	250 mA	83 %
TDN 3-1213WI		15 VDC	200 mA	84 %
TDN 3-1215WI		24 VDC	125 mA	82 %
TDN 3-1221WI		±5.0 VDC	±300 mA	80 %
TDN 3-1222WI		±12 VDC	±125 mA	82 %
TDN 3-1223WI		±15 VDC	±100 mA	82 %
TDN 3-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	77 %
TDN 3-2411WI		5.0 VDC	600 mA	80 %
TDN 3-2419WI		9.0 VDC	333 mA	81 %
TDN 3-2412WI		12 VDC	250 mA	83 %
TDN 3-2413WI		15 VDC	200 mA	83 %
TDN 3-2415WI		24 VDC	125 mA	82 %
TDN 3-2421WI		±5.0 VDC	±300 mA	80 %
TDN 3-2422WI		±12 VDC	±125 mA	82 %
TDN 3-2423WI		±15 VDC	±100 mA	82 %
TDN 3-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	77 %
TDN 3-4811WI		5.0 VDC	600 mA	80 %
TDN 3-4819WI		9.0 VDC	333 mA	81 %
TDN 3-4812WI		12 VDC	250 mA	83 %
TDN 3-4813WI		15 VDC	200 mA	83 %
TDN 3-4815WI		24 VDC	125 mA	82 %
TDN 3-4821WI		±5.0 VDC	±300 mA	80 %
TDN 3-4822WI		±12 VDC	±125 mA	82 %
TDN 3-4823WI		±15 VDC	±100 mA	82 %

Input Specifications

Input current at no load	12 Vin models: 40 mA typ. 24 Vin models: 25 mA typ. 48 Vin models: 14 mA typ.
Surge voltage (1 s max.)	12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Reflected ripple current	20 mA _{p-p} typ.
Input filter	internal capacitor
Conducted noise	EN 55032 class A or class 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 V _{rms} , perf. criteria A
Power frequency magnetic field	EN 61000-4-8, 100 A/M, perf. criteria A
External input fuse required	12 Vin models: 1.6 A (slow blow) 24 Vin models: 0.8 A (slow blow) 48 Vin models: 0.5 A (slow blow)

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)	50 mV _{p-p} typ.
Start up time	– Power ON – Remote ON
(constant resistive load)	10 ms typ. / 20 ms max. 10 ms typ. / 20 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: 4700 µF max. 5.0 VDC models: 2530 µF max. 9.0 VDC models: 1470 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: 1470 µF max. (each output) ±12 VDC models: 680 µF max. (each output) ±15 VDC models: 470 µF max. (each output)

General Specifications

Temperature ranges	– Operating (natural convection: 20 LFM, 0.1m/s) – Case temperature – Storage temperature
	–40°C to +70°C (without derating) +105°C max. –55°C to +125°C
Derating	2.9%/K above 70°C
Humidity (non condensing)	5 – 95 % rel H max.

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

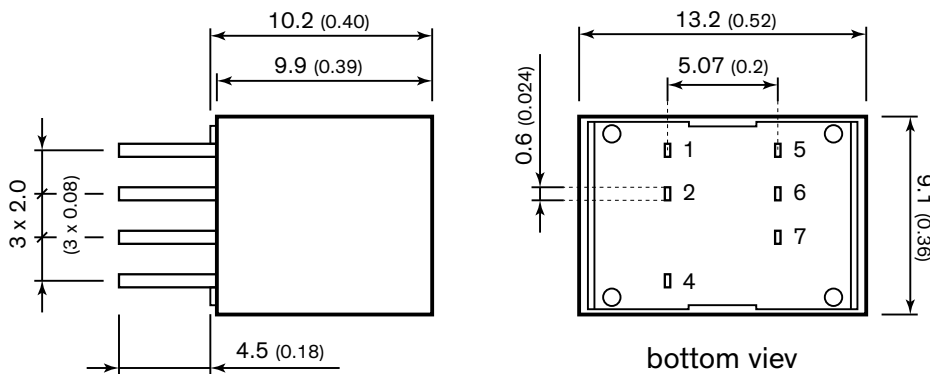
General Specifications

Isolation voltage	- I/O isolation voltage (60 sec.)	1'600 VDC
Isolation capacitance (input/output)		50 pF typ.
Isolation resistance (input/output)		>1 GOhm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		5'627'000 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.
Safety standards	- Designed to meet (no certification)	IEC/EN/UL 62368-1, UL 60950-1
Environmental compliance	- Reach - RoHS	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 / 10 sec.

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)