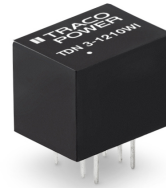


- Ultra compact DIP package
13.2 x 9.1 x 10.2 mm
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range
-40°C to +70°C without derating
- Short circuit protection
- Remote On/Off
- Designed to meet UL 62368-1
(UL 60950-1)
- 3-year product warranty



The TDN 3WI Series comprises 3 Watt fully regulated, high performance DC/DC converters. They come in a compact cubical package of only 1.23 cm³. Full load operation is reliable up to 70°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 _{max}	Vnom	I _{max}	
TDN 3-1210WI	4.5 - 18 VDC (12 VDC nom.)	3.3 VDC	700 mA			76 %
TDN 3-1211WI		5 VDC	600 mA			80 %
TDN 3-1219WI		9 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 VDC	300 mA	-5 VDC	300 mA	80 %
TDN 3-1222WI		+12 VDC	125 mA	-12 VDC	125 mA	82 %
TDN 3-1223WI		+15 VDC	100 mA	-15 VDC	100 mA	82 %
TDN 3-2410WI	9 - 36 VDC (24 VDC nom.)	3.3 VDC	700 mA			77 %
TDN 3-2411WI		5 VDC	600 mA			80 %
TDN 3-2419WI		9 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 VDC	300 mA	-5 VDC	300 mA	80 %
TDN 3-2422WI		+12 VDC	125 mA	-12 VDC	125 mA	82 %
TDN 3-2423WI		+15 VDC	100 mA	-15 VDC	100 mA	82 %
TDN 3-4810WI	18 - 75 VDC (48 VDC nom.)	3.3 VDC	700 mA			77 %
TDN 3-4811WI		5 VDC	600 mA			80 %
TDN 3-4819WI		9 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 VDC	300 mA	-5 VDC	300 mA	80 %
TDN 3-4822WI		+12 VDC	125 mA	-12 VDC	125 mA	82 %
TDN 3-4823WI		+15 VDC	100 mA	-15 VDC	100 mA	82 %

Input Specifications

Input Current	- At no load	12 Vin models: 40 mA typ. 24 Vin models: 24 mA typ. 48 Vin models: 13 mA typ.
Surge Voltage		12 Vin models: 25 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.)
Reflected Ripple Current		20 mA_{p-p} typ.
Recommended Input Fuse		12 Vin models: 1'600 mA (slow blow) 24 Vin models: 800 mA (slow blow) 48 Vin models: 500 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Voltage Set Accuracy		±1% max.
Regulation	- Input Variation (V _{min} - V _{max})	single output models: 0.2% max. dual output models: 0.2% max.
	- Load Variation (0 - 100%)	single output models: 1% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise	- 20 MHz Bandwidth	50 mV_{p-p} typ.
Capacitive Load	- single output	3.3 V _{out} models: 4'700 µF max. 5 V _{out} models: 2'530 µF max. 9 V _{out} models: 1'470 µF max. 12 V _{out} models: 1'220 µF max. 15 V _{out} models: 1'000 µF max. 24 V _{out} models: 470 µF max.
	- dual output	5 / -5 V _{out} models: 1'470 / 1'470 µF max. 12 / -12 V _{out} models: 680 / 680 µF max. 15 / -15 V _{out} models: 470 / 470 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		10 ms typ. / 20 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Transient Response	- Response Time	500 µs typ. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	Designed for EN 62368-1 (no certification)
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EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (with external filter)
		EN 55032 class B (with external filter)
	- Radiated Emissions	EN 55032 class A (with external filter)
		EN 55032 class B (with external filter)
		External filter proposal: www.tracopower.com/overview/tdn3wi

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 μ F, 100 V
	- PF Magnetic Field	EN 61000-4-6, 10 Vrms, perf. criteria A
		Continuous: EN 61000-4-8, 100 A/m, perf. criteria A
		1 s: EN 61000-4-8, 1000 A/m, perf. criteria A

General Specifications

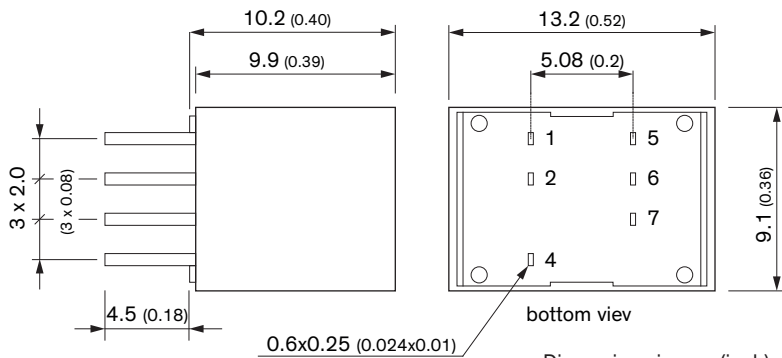
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +70°C (without derating)
	- Case Temperature	+105°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	2.86 %/K above 70°C
Cooling System		Natural convection (20 LFM)
Remote Control	- Current Controlled Remote	On: open circuit
		Off: 2 to 4 mA current (no internal resistor)
	External circuit proposal:	www.tracopower.com/info/current-remote.pdf
	- 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 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	5'630'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Allowed (hermetical product)
	See Cleaning Guideline:	www.tracopower.com/info/cleaning.pdf
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 μ m)
Pin Surface Plating		Tin (3 - 5 μ m), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		DIP8
Soldering Profile		260°C / 10 s max.
Weight		2.7 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
		REACH SVHC list compliant
		REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf
		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.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tdn3wi
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All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Outline Dimensions



Dimensions in mm (inch)
 Tolerances: x.x: ±0.5 (±0.02)
 Pin pitch tolerances: ±0.25 (±0.01)
 Pin diameter: ±0.1 (±0.004)

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