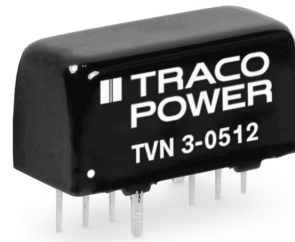


- Ultra low ripple and noise 10 mVp-p typ.
- Compact SIP-8 package
- Fully regulated outputs
- Input Voltage range
4.5-13.2, 9-18, 18-36, 36-75 VDC
- I/O-isolation 1'600 VDC
- Operating temperature range
-40°C to +75°C without derating
- Short circuit protection
- No minimum load required
- 3-year product warranty



The TVN 3 Series comprises ultra low ripple and noise 3 Watt DC/DC converters. They come in a compact SIP-8 package with fully regulated outputs. Apart from the standard 2:1 input voltage range, the low input voltage models feature an extended input voltage range from 4.5-13.2 VDC (3:1). Full load operation is reliable up to 75°C environment temperature without derating and up to 90°C with 50% derating. With 1'600 VDC I/O-isolation voltage, and short current protection they cover a wide range of applications when space is limited.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TVN 3-0910	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75 %
TVN 3-0911		5.0 VDC	600 mA	79 %
TVN 3-0919		9.0 VDC	333 mA	80 %
TVN 3-0912		12 VDC	250 mA	83 %
TVN 3-0913		15 VDC	200 mA	83 %
TVN 3-0915		24 VDC	125 mA	82 %
TVN 3-0921		± 5.0 VDC	±300 mA	78 %
TVN 3-0922		±12 VDC	±125 mA	82 %
TVN 3-0923		±15 VDC	±100 mA	81 %
TVN 3-1210		9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA
TVN 3-1211	5.0 VDC		600 mA	81 %
TVN 3-1219	9.0 VDC		333 mA	80 %
TVN 3-1212	12 VDC		250 mA	85 %
TVN 3-1213	15 VDC		200 mA	84 %
TVN 3-1215	24 VDC		125 mA	84 %
TVN 3-1221	± 5.0 VDC		±300 mA	82 %
TVN 3-1222	±12 VDC		±125 mA	84 %
TVN 3-1223	±15 VDC		±100 mA	83 %
TVN 3-2410	18 – 36 VDC (24 VDC nominal)		3.3 VDC	700 mA
TVN 3-2411		5.0 VDC	600 mA	82 %
TVN 3-2419		9.0 VDC	333 mA	82 %
TVN 3-2412		12 VDC	250 mA	85 %
TVN 3-2413		15 VDC	200 mA	85 %
TVN 3-2415		24 VDC	125 mA	84 %
TVN 3-2421		± 5.0 VDC	±300 mA	80 %
TVN 3-2422		±12 VDC	±125 mA	84 %
TVN 3-2423		±15 VDC	±100 mA	85 %
TVN 3-4810		36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA
TVN 3-4811	5.0 VDC		600 mA	80 %
TVN 3-4819	9.0 VDC		333 mA	80 %
TVN 3-4812	12 VDC		250 mA	84 %
TVN 3-4813	15 VDC		200 mA	84 %
TVN 3-4815	24 VDC		125 mA	84 %
TVN 3-4821	± 5.0 VDC		±300 mA	79 %
TVN 3-4822	±12 VDC		±125 mA	84 %
TVN 3-4823	±15 VDC		±100 mA	83 %

Input Specifications

Input current no load		9 Vin models: 55 mA typ. 12 Vin models: 30 mA typ. 24 Vin models: 16 mA typ. 48 Vin models: 12 mA typ.
Start-up voltage		9 Vin models: < 4.5 VDC 12 Vin models: < 9 VDC 24 Vin models: < 18 VDC 48 Vin models: < 36 VDC
Undervoltage shutdown		9 Vin models: 3.5 VDC typ. 12 Vin models: 7 V typ. 24 Vin models: 15 V typ. 48 Vin models: 33 V typ.
Surge voltage (1 sec. max.)		9 Vin models: 15 V max. 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Conducted noise	– conducted input emission	EN 55032 class A or B with external components
EMC immunity	– ESD (electrostatic discharge) – Radiated immunity – Fast transient / surge (with external input capacitor) – Conducted immunity – Magnetic field immunity	EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A 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 Nippon chemi-con KY 220 μ F/ 100 V EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8 100 A/m, continuous, perf. criteria A 1000 A/m, 1 sec., perf. criteria A
Input filter		capacitor type

Output Specifications

Voltage set accuracy		± 1 % max.
Regulation	– Input variation – Load variation 0 – 100 % – cross regulation - dual output:	0.2 % max. 1 % max. 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient		± 0.02 %/K typ.
Ripple and noise (20 MHz Bandwidth)	– without external components – with a 10 μ F capacitor on each output	15 mVp-p max., 10 mVp-p typ. 10 mVp-p max., 5 mVp-p typ.
Start-up time		30 ms typ.
Transient response (25% load step change)		500 μ s typ.
Short circuit protection		continuous, automatic recovery
Capacitive load	–Single output –Dual output	3.3 VDC models: 4'400 μ F max. 5.0 VDC models: 2'200 μ F max. 9.0 VDC models: 1'300 μ F max. 12 VDC models: 1'000 μ F max. 15 VDC models: 820 μ F max. 24 VDC models: 470 μ F max. ± 5.0 VDC models: 1'200 μ F max. (each output) ± 12 VDC models: 520 μ F max. (each output) +15 VDC models: 440 μ F max. (each output)

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

General Specifications

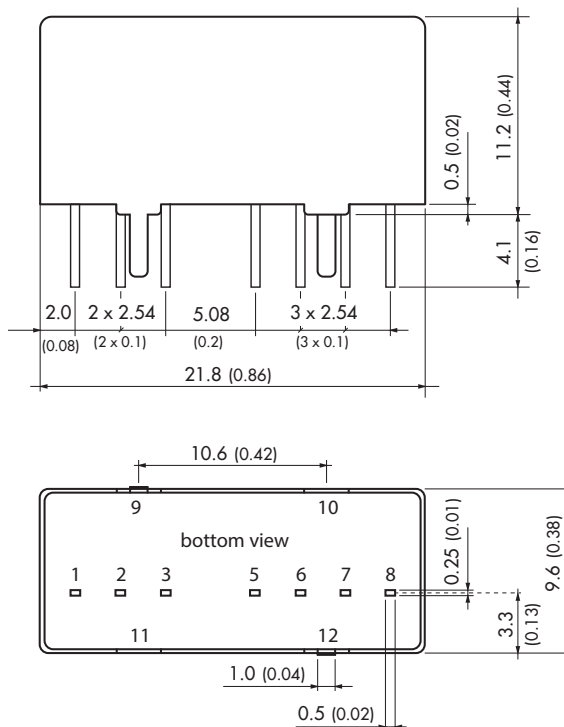
Temperature ranges	<ul style="list-style-type: none"> – Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature 	–40°C to +90°C (with derating) +105°C max. –55°C to +125°C
Derating		3.3%/K above 75°C
Humidity (non condensing)		5 – 95 % rel H max.
Isolation voltage	<ul style="list-style-type: none"> – I/O isolation voltage (60 sec.) – Input/Case isolation voltage (60 sec.) 	1'600 VDC 1'000 VDC
Isolation capacitance		1'500 pF max.
Isolation resistance (@ 500 VDC)		>1 Gohm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		5'600'000 h
Switching frequency		100 kHz min. Pulse frequency modulation.
Thermal shock & vibration		MIL-STD-810F
Remote On/Off	<ul style="list-style-type: none"> – On – Off – Off idle current 	open circuit or high impedance 2 - 4 mA current applied via 1kOhm resistor 2.5 mA max.
Safety standards	– Information technology	IEC/EN 60950-1, UL 60950-1
Environmental compliance	<ul style="list-style-type: none"> – Reach – RoHS 	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

Physical Specifications

Casing material	copper
Potting material	silicone (UL 94V-0 rated)
Package weight	5.9g (0.21oz)

Supporting Documents: www.tracopower.com/overview/tvn3

Outline Dimensions



Pin-Out		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9/12	Case	Case
10/11	Stand off	Stand off

Dimensions in [mm], () = Inch

Tolerances: x.x ±0.5 (±0.02)
 x.xx ±0.25 (±0.01)
 Pin pitch tolerances ±0.25 (±0.01)
 Pin dimension tolerance ±0.1 (±0.004)