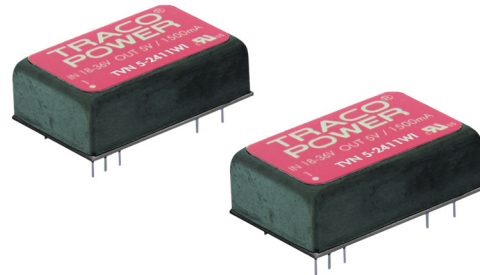


Features

- ◆ Ultra low ripple and noise
10 mVp-p typ.
- ◆ Ultra wide 4:1 input voltage range
9–36, 18–75 VDC
- ◆ High efficiency up to 88%
- ◆ Operating temperature range
–40°C to +85°C without derating
- ◆ I/O isolation 1600 VDC
- ◆ DIP-24 package
- ◆ Adjustable output voltage
- ◆ No minimum load required
- ◆ Input filter to meet EN55022, class A
- ◆ Remote On/Off
- ◆ Under voltage lockout
- ◆ Lead free design, RoHS compliant
- ◆ 3-year product warranty



The TVN 5WI series is a ultra low ripple and noise 5 Watt dc/dc converter featuring wide 4:1 input voltage ranges in a DIP-24 package. Standard features include remote On/Off, over voltage protection, under voltage lockout and short circuit protection. High efficiency across load range and low input current characteristics at no load make these converters the ideal solution for many operations which require low ripple and noise characteristics.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TVN 5-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1'515 mA	80 %
TVN 5-2411WI		5.0 VDC	1'000 mA	83 %
TVN 5-2412WI		12 VDC	416 mA	86 %
TVN 5-2413WI		15 VDC	333 mA	86 %
TVN 5-2415WI		24 VDC	208 mA	86 %
TVN 5-2421WI		±5 VDC	±500 mA	84 %
TVN 5-2422WI		±12 VDC	±208 mA	85 %
TVN 5-2423WI		±15 VDC	±166 mA	86 %
TVN 5-2425WI		±24 VDC	±104 mA	87 %
TVN 5-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	1'515 mA	80 %
TVN 5-4811WI		5.0 VDC	1'000 mA	83 %
TVN 5-4812WI		12 VDC	416 mA	85 %
TVN 5-4813WI		15 VDC	333 mA	86 %
TVN 5-4815WI		24 VDC	208 mA	88 %
TVN 5-4821WI		±5 VDC	±500 mA	83 %
TVN 5-4822WI		±12 VDC	±208 mA	85 %
TVN 5-4823WI		±15 VDC	±166 mA	86 %
TVN 5-4825WI		±24 VDC	±104 mA	86 %

Input Specifications

Input current at no load		7 mA typ.
Start-up voltage	24 Vin models: 48 Vin models:	< 9.0 VDC < 18 VDC
Under voltage shut down (lock-out circuit)	24 Vin models: 48 Vin models:	8.5 VDC typ. 16 VDC typ.
Surge voltage (1 sec.)	24 Vin models: 48 Vin models:	50 V max. 100 V max.
Conducted noise		EN 55022 class A with internal filter EN 55022 class B (with external components)
ESD (electrostatic discharge)		EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A
Radiated immunity		EN 61000-4-3, 20 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, ± 2 kV perf. criteria A
– external input capacitor	24 Vin models: 48 Vin models:	Nippon chemi-con KY 220 μ F, 100 V, ESR 48 mOhm and TVS 70V, 3000W peak (SMDJ70A) in parallel Nippon chemi-con KY 220 μ F, 100 V, ESR 48 mOhm and TVS 120V, 3000W peak (SMDJ120A) in parallel
Conducted immunity		EN 61000-4-6, 10 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy		± 1 %
Voltage adjustment range (single output models only)	single output models: dual output models:	-10%, +20% ± 10 %
Regulation	– Input variation Vin min. to Vin max. – Load variation 0 – 100 % – Load cross variation 25 % / 100 %	0.2 % max. single output models: 0.5 % max. dual output models: 1 % max. 3 % max.
Minimum load		not required
Temperature coefficient		± 0.02 %/K
Ripple and noise (20 MHz bandwidth)		10 mVp-p typ.
Start up time	– Power On (constant resistive load) – Remote On	50 ms typ. 50 ms typ.
Transient response (25% load step change)		250 μ s typ.
Short circuit protection		continuous, automatic recovery
Over load protection		150 % of Iout max. typ. hiccup
Over-voltage protection	24 VDC models: 48 VDC models:	32.4 V 64.8 V
Capacitive load (max. values)	3.3 VDC models: 5.0 VDC models: 12 VDC models: 15 VDC models: 24 VDC models: ± 5 VDC models: ± 12 VDC models: ± 15 VDC models: ± 24 VDC models:	2'200 μ F 1'000 μ F 220 μ F 150 μ F 100 μ F 680 μ F (each output) 150 μ F (each output) 150 μ F (each output) 100 μ F (each output)

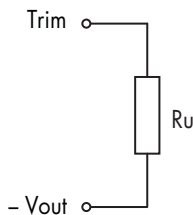
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

General Specifications

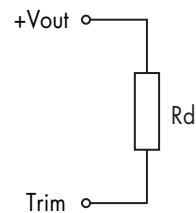
Temperature ranges	<ul style="list-style-type: none"> – Operating – Casing temperature – Storage 	without derating: -40°C to $+85^{\circ}\text{C}$ with derating: $+85^{\circ}$ to $+100^{\circ}\text{C}$ $+105^{\circ}\text{C}$ max. -55°C to $+125^{\circ}\text{C}$
Power derating	– Natural convection	5 %/K above $+85^{\circ}\text{C}$
Thermal impedance	– Natural convection	20 K/W
Humidity (non condensing)		5 – 95 % rel. H
Isolation voltage (60 sec.)	– Input / Output	1600 VDC
Isolation resistance	– Input / Output	$>1\text{ GOhm}$
Isolation capacitance	– Input / Output	1'200 pF max.
Switching frequency		300 kHz typ. (pulse width modulation PWM)
Thermal shock, mechanical shock & vibration	– Test conditions	MIL-STD-810F www.tracopower.com/products/mil810.pdf
Safety standards		UL/cUL 60950-1, IEC/EN 60950-1
Safety approvals	– UL/cUL (entry pending)	www.ul.com -> certifications -> File e188913
Remote On/Off	<ul style="list-style-type: none"> – On: – Off: – Off idle current: 	3.0 ... 12 VDC or open circuit 0 ... 1.2 VDC or short circuit pin 3 and pin 2 3.0 mA
Reliability, calculated MTBF (MIL-HDBK-217F, at $+70^{\circ}\text{C}$, ground benign)		4.4 mio. h
Environmental compliance	<ul style="list-style-type: none"> – Reach – RoHS 	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

Output Voltage Adjustment (for single output models only)

Trim up



Trim down



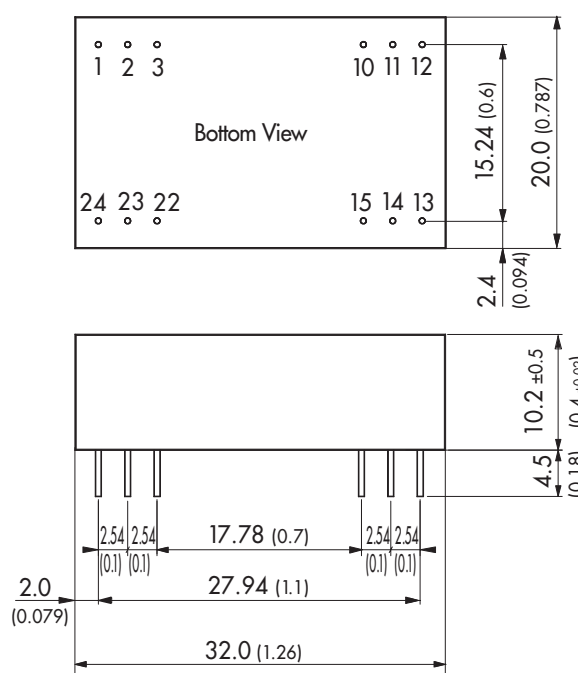
Nominal output voltage at open Trim input
 R_u , R_d for adjustment to be advised

Application note: www.tracopower.com/products/tvn5wi-application.pdf

Physical Specifications

Casing material	copper
Baseplate material	non conductive FR4
Potting material	epoxy (UL94V-0 rated)
Weight	14.8 g (0.52oz)
Soldering temperature	max. +265°C / 10 sec.

Outline Dimensions



Pin-Out

Pin	Single	Dual
1	+Vin (Vcc)	
2	+Vin (Vcc)	
3	Case	
10	No pin	Common
11	No pin	+Vout 1
12	Case	
13	TRIM	
14	-Vout	-Vout 2
15	+Vout	Common
22	Remote On / Off	
23	-Vin	
24	-Vin	

Dimensions in [mm], () = Inch

Pin diameter: 1.0 ± 0.1 (0.04 ± 0.004)

Pin pitch tolerances: ±0.25 (±0.01)

Case tolerances: ±0.5 (±0.02)