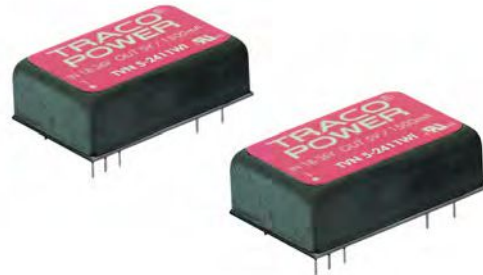


### Features

- ◆ Ultra low ripple and noise 10 mVp-p typ.
- ◆ 6-side shielded DIP-24 metal package
- ◆ Input filter to meet EN55022, class B
- ◆ Ultra wide 4:1 input voltage range  
9–36, 18–75 VDC
- ◆ Operating temperature range  
–40°C to +85°C without derating
- ◆ Under voltage lockout
- ◆ I/O isolation 1500 VDC
- ◆ Adjustable output voltage
- ◆ No minimum load required
- ◆ Remote On/Off
- ◆ 3-year product warranty



The TVN 5WI series is a ultra low ripple and noise 5 Watt dc/dc converter in six side shielded metal package. The conducted noise complies with EN 55022 class B and makes this converters the ideal solution for audio, measurement and detection circuits.

Standard features include remote On/Off, over voltage protection, under voltage shut down and short circuit protection.

### 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
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:	< 9.0 VDC
	48 Vin models:	< 18 VDC
Under voltage shut down (lock-out circuit)	24 Vin models:	8.5 VDC typ.
	48 Vin models:	16 VDC typ.
Surge voltage (1 sec.)	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Conducted noise		EN 55022 class B internal filter for 48 Vin models with two 4.7µF/100V MLCC input capacitor in parallel
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: Nippon chemi-con KY 220 µF, 100 V, ESR 48 mOhm and TVS 70V, 3000W peak (SMDJ70A) in parallel
		48 Vin models: Nippon chemi-con KY 220 µF, 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:	-10%, +20%
	dual output models:	±10 %
Regulation	– Input variation Vin min. to Vin max.	0.2 % max.
	– Load variation 0 – 100 %	single output models: 0.5 % max.
		dual output models: 1 % max.
	– Load cross variation 25 % / 100 %	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	50 ms typ.
(constant resistive load)	– Remote On	50 ms typ.
Transient response (25% load step change)		250 µs typ.
Short circuit protection		continuous, automatic recovery
Over load protection		at 170 % of Iout nom. hiccup mode
Over-voltage protection		at 135 % of Vout nom.
Capacitive load (max. values)	3.3 VDC models:	2'200 µF
	5.0 VDC models:	1'000 µF
	12 VDC models:	220 µF
	15 VDC models:	150 µF
	24 VDC models:	100 µF
	±5 VDC models:	680 µF (each output)
	±12 VDC models:	150 µF (each output)
	±15 VDC models:	150 µF (each output)
	±24 VDC models:	100 µF (each output)

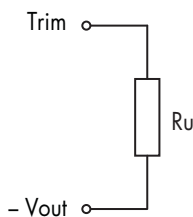
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

### General Specifications

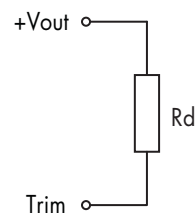
Temperature ranges	– Operating – Casing temperature – Storage	–40°C to +85°C (without derating) +105°C max. –55°C to +125°C
Thermal impedance	– Natural convection	20 K/W
Humidity (non condensing)		5 – 95 % rel. H
Isolation voltage (60 sec.)	– Input / Output	1600 VDC
Isolation resistance	– Input / Output	>1 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 <a href="http://www.tracopower.com/products/mil810.pdf">www.tracopower.com/products/mil810.pdf</a>
Remote On/Off	– 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°C, ground benign)		4.4 mio. h
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> RoHS directive 2011/65/EU

### Output Voltage Adjustment

#### Trim up



#### Trim down



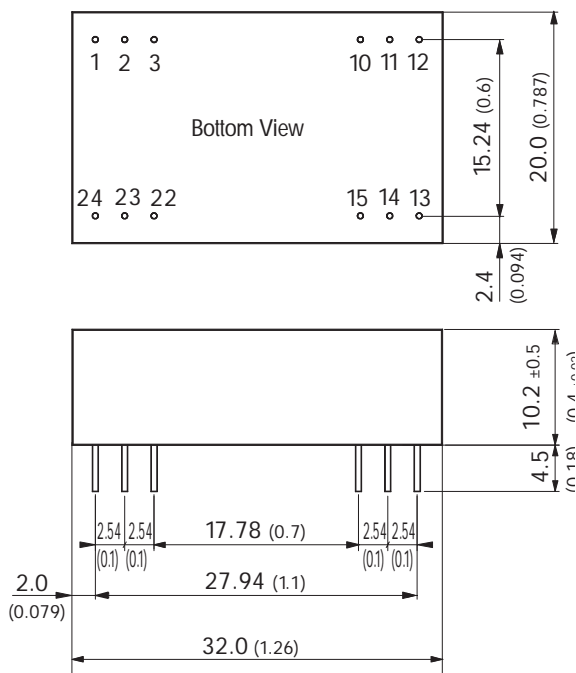
Nominal output voltage at open Trim input  
Ru, Rd for adjustment to be advised

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

**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], 0 = Inch  
 Pin diameter: 1.0 ± 0.1 (0.04 ± 0.004)  
 Pin pitch tolerances: ± 0.25 (± 0.01)  
 Case tolerances: ± 0.5 (± 0.02)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)

Rev. February 2, 2015

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