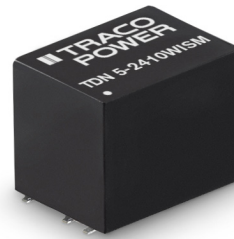


DC/DC Converter

TDN 5WISM Series, 5 Watt

- Ultra compact SMD package
13,2 × 9,1 × 10,2 mm
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range
-40°C to +75°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1
(UL 60950-1)



The TDN 5WISM Series redefines the power density of high performance DC/DC converters. The cubical package of only 1.23 cm³ encloses a sophisticated circuit which provides 5 Watt output power. They operate up to 50°C environment temperature at full load or up to 75°C with a 50% load derating. 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 1600 VDC.

Also see:

TDN 5WI, DIP version

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TDN 5-0910WISM	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-0911WISM		5.0 VDC	1000 mA	80 %
TDN 5-0919WISM		9.0 VDC	555 mA	81 %
TDN 5-0912WISM		12 VDC	420 mA	83 %
TDN 5-0913WISM		15 VDC	333 mA	83 %
TDN 5-0915WISM		24 VDC	210 mA	83 %
TDN 5-0921WISM		± 5.0 VDC	±500 mA	80 %
TDN 5-0922WISM		±12 VDC	±210 mA	83 %
TDN 5-0923WISM		±15 VDC	±168 mA	83 %
TDN 5-2410WISM	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-2411WISM		5.0 VDC	1000 mA	80 %
TDN 5-2419WISM		9.0 VDC	555 mA	81 %
TDN 5-2412WISM		12 VDC	420 mA	83 %
TDN 5-2413WISM		15 VDC	333 mA	83 %
TDN 5-2415WISM		24 VDC	210 mA	83 %
TDN 5-2421WISM		± 5.0 VDC	±500 mA	80 %
TDN 5-2422WISM		±12 VDC	±210 mA	83 %
TDN 5-2423WISM		±15 VDC	±168 mA	84 %
TDN 5-4810WISM	18 – 75 VDC (48 VDC nominal)	3.3 VDC	1000 mA	76 %
TDN 5-4811WISM		5.0 VDC	1000 mA	81 %
TDN 5-4819WISM		9.0 VDC	555 mA	81 %
TDN 5-4812WISM		12 VDC	420 mA	83 %
TDN 5-4813WISM		15 VDC	333 mA	83 %
TDN 5-4815WISM		24 VDC	210 mA	83 %
TDN 5-4821WISM		± 5.0 VDC	±500 mA	80 %
TDN 5-4822WISM		±12 VDC	±210 mA	83 %
TDN 5-4823WISM		±15 VDC	±168 mA	84 %

Input Specifications

Input current at no load	9 Vin models: 80 mA typ 24 Vin models: 30 mA typ. 48 Vin models: 15 mA typ.
Surge voltage (1 sec. max.)	9 Vin models: 15 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Reflected ripple current	9 Vin models: 40 mA _{p-p} typ. 24 Vin models: 20 mA _{p-p} typ. 48 Vin models: 15 mA _{p-p} typ.
Conducted noise	EN 55032 class A or 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, 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
Magnetic field immunity	EN 61000-4-8, 100 A/m continuous, perf. criteria A 1000 A/m 1 second, perf. criteria A

Output Specifications

Voltage set accuracy	±1 % max.
Regulation	– Input variation 0.2 % max. – Load variation 0 – 100 % 1 % max. – cross regulation - dual output: 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	±0.02 %/K typ.
Ripple and noise (20 MHz Bandwidth)	9 Vin models: 50 mV _{p-p} typ. other models: 75 mV _{p-p} typ.
Start up time	– Power ON 10 ms typ. / 20 ms max. (constant resistive load) – Remote ON 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: 4400 µF max. 5.0 VDC models: 2200 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: 1000 µF max. (each output) ±12 VDC models: 680 µF max. (each output) +15 VDC models: 440 µF max. (each output)

General Specifications

Temperature ranges	– Operating (convection cooling 20LFM, 0,1m/s) –40°C to +75°C – Case temperature +105°C max. – Storage temperature –55°C to +125°C
Derating	1.8%/K above 50°C
Humidity (non condensing)	5 – 95 % rel H max.
Isolation voltage	– I/O isolation voltage (60 sec.) 1'600 VDC
Isolation capacitance	50 pF max.

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

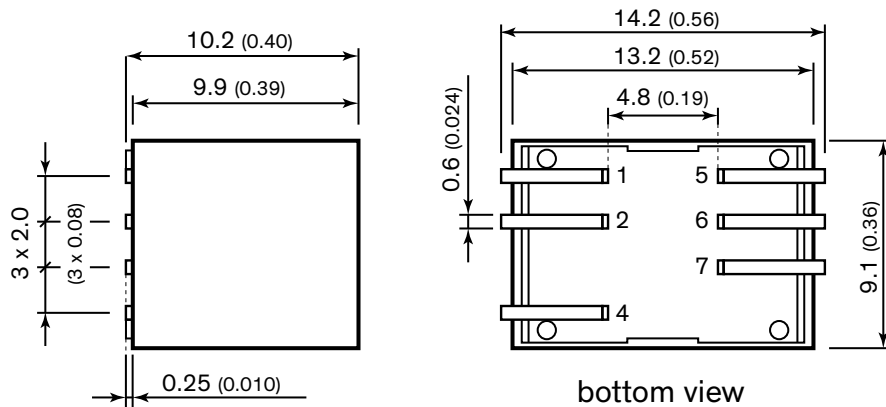
General Specifications

Isolation resistance (@ 500 VDC)		>1 Gohm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		2'280'000 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: 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> - Reach - RoHS 	RoHS directive 2011/65/EU
Moisture sensitivity level (MSL)		IPC J-STD-033C Level 2

Physical Specifications

Casing material	non-conductive plastic
Potting material	silicone (UL 94V-0 rated)
Base material	non-conducting FR4 (UL 94V-0 rated)
Package weight	2.7 g (0.10 oz)
Lead-free reflow solder process	according to IPC J-STD-020E

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)