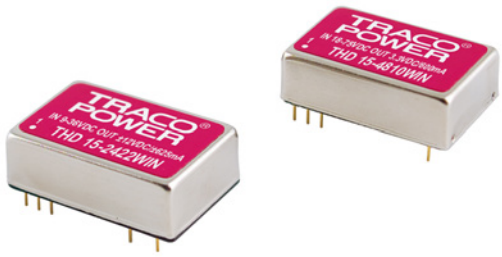
DC/DC Converters

THD 15WIN Series, 15 Watt

CB Scheme UL 60950-1 cULus UL 60950-1

Features

- Highest power density in DIP 24 package
- Shielded metal case with isolated baseplate
- Very high efficiency up to 90%
- Ultra wide 4:1 input ranges
- No minimum load required
- Input filter meets EN 55022 class A without external components
- I/O isolation voltage 1500 VDC
- Operating temp. range : –40°C to +85°C
- Remote On/Off control
- Industry standard pinout
- 3-year product warranty



The THD-15WIN series models provide 15 Watt output power out of a very compact shielded metal case that occupies only 1 inch² of board space. The converters work with a high efficiency over the full load range and draw a very low input current at no load conditions. All models have a wide 4:1 input voltage range and a precisely regulated output voltage.
Typical applications for these converters are mobile equipment, instrumentation, distributed power architectures in communication and industrial electronics and everywhere where space on PCB is critical.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THD 15-2410WIN	9 – 36 VDC	3.3 VDC	4'000 mA	88 %
THD 15-2411WIN		5.1 VDC	3'000 mA	90 %
THD 15-2412WIN		12 VDC	1'250 mA	90 %
THD 15-2413WIN		15 VDC	1'000 mA	90 %
THD 15-2421WIN		±5 VDC	±1'500 mA	86 %
THD 15-2422WIN		±12 VDC	±625 mA	89 %
THD 15-2423WIN		±15 VDC	±500 mA	90 %
THD 15-4810WIN	18 – 75 VDC	3.3 VDC	4'000 mA	89 %
THD 15-4811WIN		5.1 VDC	3'000 mA	89 %
THD 15-4812WIN		12 VDC	1'250 mA	90 %
THD 15-4813WIN		15 VDC	1'000 mA	90 %
THD 15-4821WIN		±5 VDC	±1'500 mA	86 %
THD 15-4822WIN		±12 VDC	±625 mA	89 %
THD 15-4823WIN		±15 VDC	±500 mA	90 %

Input Specifications

Input current at no load (nominal input voltage)	24 Vin models:	6 mA typ.
	48 Vin models:	4 mA typ.
Input current at full load (nominal input voltage)	24 Vin models:	740 mA typ.
	48 Vin models:	370 mA typ.
Start-up voltage / under voltage shut down	24 Vin models:	9 VDC / 8 VDC
	48 Vin models:	18 VDC / 16 VDC
Surge voltage (1 sec. max.)	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Conducted noise (input)		EN 55022 class A, FCC part 15, level A (without external components) EN 55022 class B, with external filter see Application note
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		EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV perf. criteria A with external input capacitor e.g. Nippon chemi-con KY 220 µF, 100 V, ESR 48 mOhm
Conducted immunity		EN 61000-4-6, 10 Vrms, perf. criteria A
Reflected ripple current		20 mAp-p typ.

Output Specifications

Voltage set accuracy			±1 % max
Regulation	– Input variation	single output models:	0.2 % max. (Vin min to Vin max.)
		dual output models:	0.5 % max. (Vin min to Vin max.)
	– Load variation 0 – 100%	single output models:	0.5 % max.
		dual output models:	1.0 % max. balanced load
	– Load variation 10 – 90%	single output models:	0.3 % max.
		dual output models:	0.8 % max. balanced load
	– Load cross regulation 25/100% (asymmetrical)		5.0 % max. (dual output models)
Minimum load			no minimum load
Temperature coefficient			±0.02 %/K
Ripple and noise (20 MHz bandwidth)			60 mVp-p typ. (with 1 µF/25 V)
Output current limitation			at 150 % of Iout max. hiccup
Short circuit protection			continous, automatic recovery
Over voltage protection (single output models only)		3.3 VDC models:	3.9 VDC
		5.1 VDC models:	6.2 VDC
		12 VDC models:	15 VDC
		15 VDC models:	18 VDC
Start up time (nominal Vin and constant resistive load)			60 ms typ. (for power on and remote on)
Transient response setting time (25% load step change)			250 µs typ.
Capacitive load		3.3 VDC models:	4700 µF max.
		5.1 VDC models:	3300 µF max.
		12 VDC models:	600 µF max.
		15 VDC models:	400 µF max.
		±5 VDC models:	±1500 µF max.
		±12 VDC models:	±288 µF max.
		±15 VDC models:	±200 µF max.

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

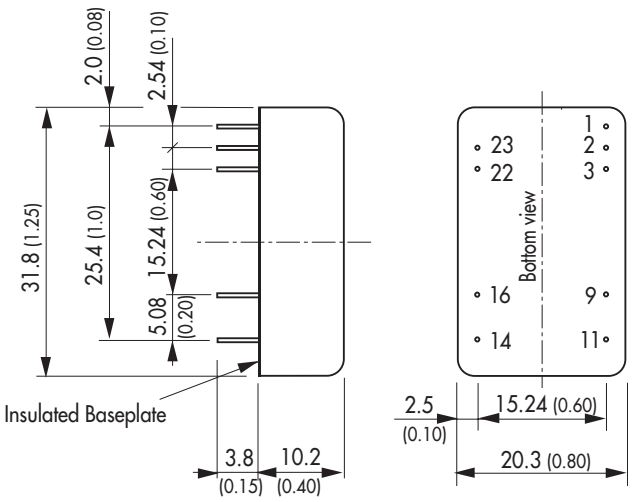
General Specifications

Temperature ranges	– Operating – Case temperature – Storage	–40°C to +85°C (with derating) +105°C max. –55°C to +125°C
Power derating	±5 VDC models: other models:	2.5 %/K above 60°C 3.3 %/K above 70°C
Thermal inpedance	– Natural convection	20°K/W
Humidity (non condensing)		5 % to 95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1'600'000 h
Isolation voltage (60sec.)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	2'000 pF typ.
Isolation resistance	– Input/Output (500 VDC)	>1'000 MOhm
Remote On/Off	– On: – Off: – Off idle current:	3.0 ... 12 VDC or open circuit 0 ... 1.2 VDC or short circuit pin 1 and pin 2 2.5 mA
Switching frequency		330 kHz typ. (pulse width modulation PWM)
Thermal shock, mechanical shock & vibration – Test conditions		EN 61373, MIL-STD-810F www.tracopower.com/products/mil810.pdf
Safety standards – Certification documents		UL/cUL 60950-1, IEC/EN 60950-1 www.tracopower.com/overview/thd15win
Environmental compliance	– Reach – RoHS	www.tracopower.com/overview/thd15win RoHS directive 2011/65/EU

Physical Specifications

Casing material	nickel coated copper
Baseplate	non conductive FR4
Potting material	silicon (UL 94V-0 rated)
Weight	14.4 g (0.51oz)
Soldering temperature	max. 265°C / 10sec.

Outline Dimensions



Pin-Out

Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	NC	Common
11	NC.	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Dimensions in [mm], () = Inch
Pin diameter ø 0.5 (0.02)
Pin pitch tolerances: ±0.35 (±0.014)
Tolerances: ±0.5 (±0.02)