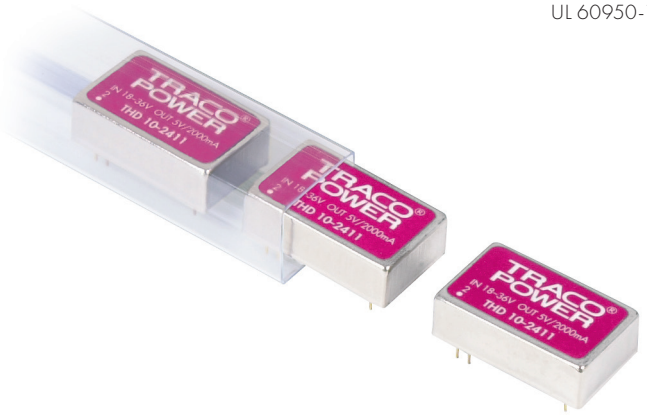
DC/DC Converters

THD 10 Series, 10 Watt

CB Scheme c SP us
UL 60950-1

Features

- Very high power density in DIP–24 package
- Wide 2:1 input range
- Very high efficiency up to 87%
- I/O isolation 1500V
- Input filter to meet EN 55022, class A without ext. components
- Low ripple and noise
- Continuous short circuit protection
- Operating temp. range –40°C to +71°C
- 3–year product warranty



not recommended for new designs

The THD-10 series is a range of isolated high performance 10W DC/DC converters in a low profile DIL-24 package with standard industry pin-out. Other features of this product are built-in overvoltage protection and internal EMI-filter to meet EN 55022, class A. Full SMD-design with exclusive use of ceramic capacitors guarantees a high reliability and long product lifetime. Typical applications for these converters are industrial electronics, instrumentation, data communication systems and battery operated equipment with limited space available on the PCB.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THD 10-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	3'000 mA	82 %
THD 10-1211		5.1 VDC	2'000 mA	83 %
THD 10-1212		12 VDC	830 mA	87 %
THD 10-1222		± 12 VDC	± 415 mA	87 %
THD 10-1223		± 15 VDC	± 330 mA	86 %
THD 10-2409	18 – 36 VDC (24 VDC nominal)	2.5 VDC	3'000 mA	83 %
THD 10-2410		3.3 VDC	3'000 mA	85 %
THD 10-2411		5.1 VDC	2'000 mA	87 %
THD 10-2412		12 VDC	830 mA	87 %
THD 10-2422		± 12 VDC	± 415 mA	88 %
THD 10-2423		± 15 VDC	± 330 mA	87 %
THD 10-4809	36 – 75 VDC (48 VDC nominal)	2.5 VDC	3'000 mA	83 %
THD 10-4810		3.3 VDC	3'000 mA	85 %
THD 10-4811		5.1 VDC	2'000 mA	87 %
THD 10-4812		12 VDC	830 mA	87 %
THD 10-4822		± 12 VDC	± 415 mA	88 %
THD 10-4823		± 15 VDC	± 330 mA	87 %

Input Specifications

Input current (no load)	12 Vin models	**40 mA typ.**
	24 Vin models	**20 mA typ.**
	48 Vin models	**10 mA typ.**
Input current (full load)	12 Vin models	**1000 mA typ.**
	24 Vin; 2.5.Vout models	**380 mA typ.**
	24 Vin; other output models	**480 mA typ.**
	48 Vin; 2.5.Vout models	**190 mA typ.**
	48 Vin; other output models	**240 mA typ.**
Start-up voltage / under voltage shut down	12 Vin models	**9 VDC / 8.5 VDC**
	24 Vin models	**18 VDC / 17 VDC**
	48 Vin models	**36 VDC / 34 VDC**
Surge voltage (1 sec. max.)	12 Vin models	**25 V max.**
	24 Vin models	**50 V max.**
	48 Vin models	**100 V max.**
Conducted noise (input)		**EN 55022 level A, FCC part 15, level A**

Output Specifications

Voltage set accuracy		**±1.2 %**
Regulation	– Input variation Vin min. to Vin max.	**1.0 % max.**
	– Load variation 10 – 100 %	**1.2 % max.** (±1.5 % max. for 2.5 Vout models)
Ripple and noise (20 MHz bandwidth)		**85 mVpk-pk max.**
Temperature coefficient		**±0.02 %/K**
Output current limitation		**>110 % of Iout max., constant current**
Short circuit protection		**indefinite** (automatic recovery)
Capacitive load	2.5, 3.3, 5.1 Vout models:	**2'000 µF max.**
	12 / ±12 Vout models:	**820 µF max. / ±220 µF max.** (each output)
	15 / ±15 Vout models:	**470 µF max. / ±150 µF max.** (each output)

General Specifications

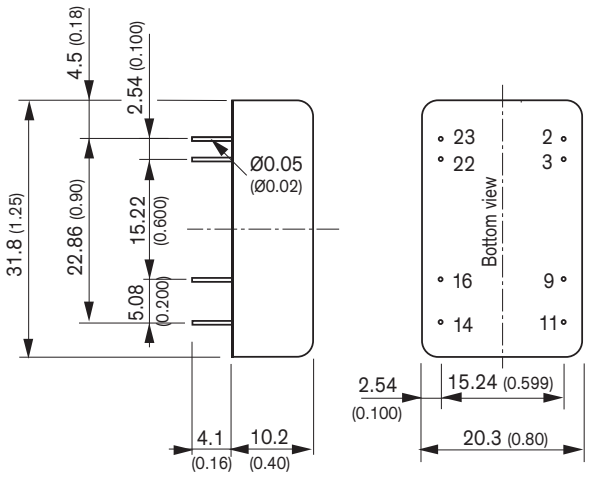
Temperature ranges	– Operating	**–40°C to +71°C**
	– Casing	**+95°C max.**
	– Storage	**–55°C to +125°C**
Derating (convection cooling)		**3.0 %/K above +60°C**
Humidity (non condensing)		**95 % rel H max.**
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		**>1 Mio. h**
Isolation voltage (60 sec.) Input/Output		**1'500 VDC**
Isolation capacitance Input/Output		**1'200 pF typ**
Isolation resistance Input/Output (500 VDC)		**>1'000 M Ohm**
Switching frequency (fixed)		**275 - 450 kHz** (PWM) **400 kHz typ.** (PWM)
Safety standards		**UL/cUL 60950-1, EN 60950-1, IEC 60950-1**
Safety approvals	– CSA certificate according UL 60950-1	www.tracopower.com/products/thd10-csa.pdf

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

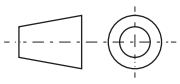
Physical Specifications

Casing material	steel, nickel plated
Baseplate material	non conductive FR4
Potting material	silicon rubber TES (UL94V-0 rated)
Weight	17.3 g (0.61 oz)
Soldering temperature	max. 265°C / 10 sec.

Outline Dimensions



All dimensions in mm (inch)
Tolerances: x.x ±0.25 (x.xx ±0.01)
x.xx ±0.13 (x.xxx ±0.005)
Pin diameter tolerances: x.x ±0.5 (x.xx ±0.022)



Pin-Out

Pin	Single	Dual
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin.	Common
11	NC	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

NC = Not connected