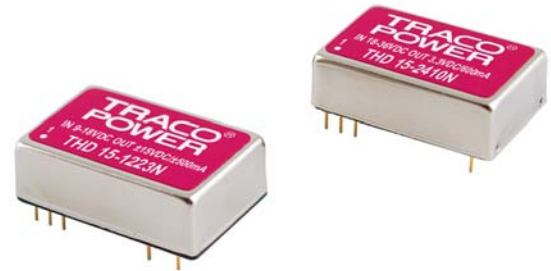


Features

- ◆ Highest power density in DIP 24 package
- ◆ Shielded metal case with isolated baseplate
- ◆ Very high efficiency up to 91%
- ◆ Wide 2:1 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-15N 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 2:1 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 15-1210N	9 – 18 VDC (12 VDC nominal)	3.3 VDC	4'000 mA	87 %
THD 15-1211N		5.1 VDC	3'000 mA	90 %
THD 15-1212N		12 VDC	1'250 mA	90 %
THD 15-1213N		15 VDC	1'000 mA	90 %
THD 15-1221N		±5 VDC	±1'500 mA	86 %
THD 15-1222N		±12 VDC	±625 mA	90 %
THD 15-1223N		±15 VDC	±500 mA	90 %
THD 15-2410N	18 – 36 VDC (24 VDC nominal)	3.3 VDC	4'000 mA	88 %
THD 15-2411N		5.1 VDC	3'000 mA	90 %
THD 15-2412N		12 VDC	1'250 mA	91 %
THD 15-2413N		15 VDC	1'000 mA	91 %
THD 15-2421N		±5 VDC	±1'500 mA	87 %
THD 15-2422N		±12 VDC	±625 mA	90 %
THD 15-2423N		±15 VDC	±500 mA	90 %
THD 15-4810N	36 – 75 VDC (48 VDC nominal)	3.3 VDC	4'000 mA	88 %
THD 15-4811N		5.1 VDC	3'000 mA	90 %
THD 15-4812N		12 VDC	1'250 mA	90 %
THD 15-4813N		15 VDC	1'000 mA	91 %
THD 15-4821N		±5 VDC	±1'500 mA	87 %
THD 15-4822N		±12 VDC	±625 mA	90 %
THD 15-4823N		±15 VDC	±500 mA	90 %

Input Specifications

Input current at no load (nominal input voltage)	12 Vin models: 8 mA typ. 24 Vin models: 5 mA typ. 48 Vin models: 4 mA typ.
Input current at full load (nominal input voltage)	12 Vin models: 1450 mA typ. 24 Vin models: 720 mA typ. 48 Vin models: 360 mA typ.
Start-up voltage / under voltage shut down	12 Vin models: 9.0 VDC / 8.0 VDC 24 Vin models: 18 VDC / 16 VDC 48 Vin models: 36 VDC / 33 VDC
Surge voltage (1 sec. max.)	12 Vin models: 36 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 (without 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. criteriy 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 μ F, 100 V, ESR 48 mOhm
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A
Reflected ripple current	20 mA _{p-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% 5.0 % max. (dual output models)
Minimum load	0 % of rated max. load
Temperature coefficient	± 0.02 %/K
Ripple and noise (20 MHz bandwidth)	60 mV _{p-p} typ.
Output current limitation	at 150 % of lout max. foldback
Short circuit protection	indefinite, 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)	30 ms typ. (for power on and remote on)
Transient response setting time (25% load step change)	250 μ s typ.
Capacitive load	3.3 VDC models: 4700 μ F max. 5.1 VDC models: 3300 μ F max. 12 VDC models: 600 μ F max. 15 VDC models: 400 μ F max. ± 5 VDC models: ± 1500 μ F max. ± 12 VDC models: ± 288 μ F max. ± 15 VDC models: ± 200 μ F max.

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

General Specifications

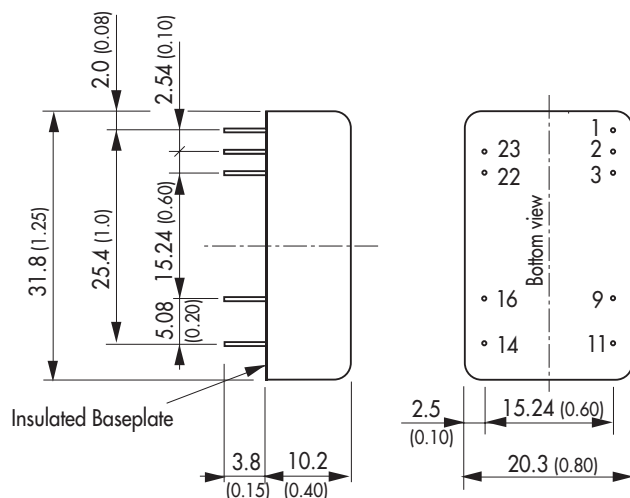
Temperature ranges	– Operating – Case temperature – Storage	–40°C to +85°C (with derating) +105°C max. –55°C to +105°C
Power derating		4 %/K above +70°C
Thermal inpedance	– Natural convection	20°C/W
Humidity (non condensing)		5 % to 95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>460'000 h
Isolation voltage (60sec)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	2000 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)
Vibration and thermal shock		MIL-STD-810E
Safety standards		UL /cUL 60950-1, EN 60950-1, IEC 60950-1
Safety approvals	– UL/cUL	www.ul.com -> certifications -> File e188913
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/thd15n-reach.pdf RoHS directive 2002/95/EC

Application note: www.tracopower.com/products/thd15n-application.pdf

Physical Specifications

Casing material	nickel coated copper
Baseplate	non conductive FR4
Potting material	silicon (UL 94V-0 rated)
Weight	14.4 g (0.51 oz)
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 1.0 (0.04)
 Pin pitch tolerances: ±0.35 (±0.014)
 Tolerances: ±0.5 (±0.02)

Specifications can be changed any time without notice.