

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 µF, 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 mVp-p typ.
Output current limitation		at 150 % of Iout 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 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.

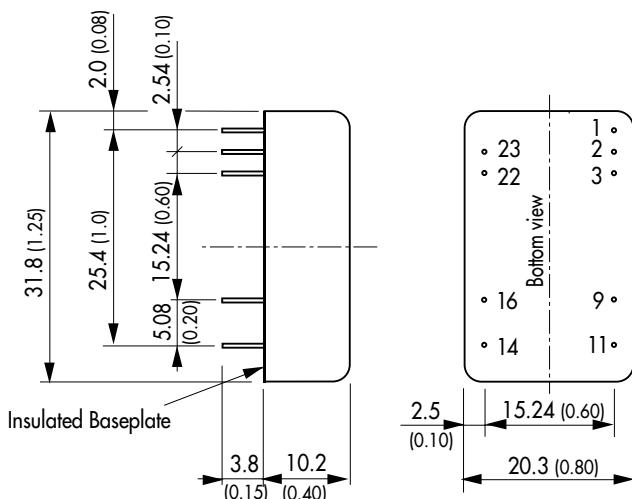
General Specifications

Temperature ranges	– Operating	–40°C to +85°C (with derating)
	– Case temperature	+105°C max.
	– Storage	-55°C to +105°C
Power derating		4 %/K above +70°C
Thermal impedance	– 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)	>1.8 Mio 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)
Thermal shock, mechanical shock & vibration	– Test conditions	EN 61373, MIL-STD-810F
Safety standards	– Certification documents	UL/cUL 60950-1, EN 60950-1, IEC 60950-1
Environmental compliance	– Reach – RoHS	RoHS directive 2011/65/EU

Physical Specifications

Casing material	nickel coated copper
Baseplate	non conductive FR4
Potting material	silicone (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)