TRACO POWER

DC/DC Converter

THN 15N Series, 15 Watt

- **15 Watt converter in a compact 1” x 1” metal package**
- **Wide 2:1 input voltage 9-18, 18-36, 36-75 VDC**
- **Internal EN 55032 class A filter**
- **Operating temperature range -40 to +70 °C without derating**
- **Low no-load power consumption 96 – 336 mW**
- **High efficiency up to 91%**
- **I/O-isolation voltage 1600 VDC**
- **Protection against overload, overvoltage and short circuit**
- **Remote On/Off and Trim function**
- **3-year product warranty**



The THN 15N series is the latest generation of high performance 15 Watt DC/DC converters and comes in an encapsulated, shielded 1” x 1” x 0.4” metal package. The new and improved design allows to fully integrate an EN 55032 class A filter and greatly reduces the no-load power consumption (96-336 mW).

Advanced circuit design and a high efficiency of up to 91% enable the THN 15N to operate in a temperature range of –40°C to +70°C without derating. All models have a wide 2:1 input voltage range and precisely regulated, isolated output voltages. Further features include remote On/Off and trim able outputs.

Together with the latest IT safety certifications (UL 62368-1) 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	Output voltage (single outputs: adjustable)	Output current max.	Efficiency typ.
THN 15-1210N		3.3 VDC	4500 mA	88 %
THN 15-1211N		5 VDC	3000 mA	90 %
THN 15-1212N		12 VDC	1300 mA	89 %
THN 15-1213N	**9 - 18 VDC**	15 VDC	1000 mA	90 %
THN 15-1215N	(nominal 12 VDC)	24 VDC	625 mA	91 %
THN 15-1221N		±5 VDC	±1500 mA	86 %
THN 15-1222N		±12 VDC	±625 mA	89 %
THN 15-1223N		±15 VDC	±500 mA	90 %
THN 15-1225N		±24 VDC	±315 mA	90 %
THN 15-2410N		3.3 VDC	4500 mA	88 %
THN 15-2411N		5 VDC	3000 mA	90 %
THN 15-2412N		12 VDC	1300 mA	89 %
THN 15-2413N		15 VDC	1000 mA	90 %
THN 15-2415N	**18 - 36 VDC**	24 VDC	625 mA	91 %
THN 15-2421N	(nominal 24 VDC)	±5 VDC	±1500 mA	86 %
THN 15-2422N		±12 VDC	±625 mA	90 %
THN 15-2423N		±15 VDC	±500 mA	90 %
THN 15-2425N		±24 VDC	±315 mA	90 %
THN 15-4810N		3.3 VDC	4500 mA	87 %
THN 15-4811N		5 VDC	3000 mA	89 %
THN 15-4812N		12 VDC	1300 mA	89 %
THN 15-4813N		15 VDC	1000 mA	89 %
THN 15-4815N	**36 - 75 VDC**	24 VDC	625 mA	90 %
THN 15-4821N	(nominal 48 VDC)	±5 VDC	±1500 mA	85 %
THN 15-4822N		±12 VDC	±625 mA	89 %
THN 15-4823N		±15 VDC	±500 mA	89 %
THN 15-4825N		±24 VDC	±315 mA	89 %

Input Specifications

Input current at no load		12 Vin models:	10 mA typ.
		24 Vin models:	8 mA typ.
		48 Vin models:	7 mA typ.
Surge voltage (1 s max.)		12 Vin models:	25 VDC max.
		24 Vin models:	50 VDC max.
		48 Vin models:	100 VDC max.
Start up voltage		12 Vin models:	9 VDC (or lower)
		24 Vin models:	18 VDC (or lower)
		48 Vin models:	36 VDC (or lower)
Under voltage shut down		12 Vin models:	7.5 VDC min.
		24 Vin models:	15.5 VDC min.
		48 Vin models:	32.5 VDC min.
Input filter			internal Pi type
Recommended input fuse		12 Vin models:	3.15 A (slow blow type)
		24 Vin models:	1.6 A (slow blow type)
		48 Vin models:	0.8 A (slow blow type)
Remote On/Off	– On		Open or 3 – 15 VDC
	– Off		Short or 0 – 1.2 VDC
	– Input current of Remote Ctrl. pin		–0.5 to +1.0 mA
	– Remote off input current		1.5 mA typ.

Output Specifications

Voltage adjustability	– Single output	15 & 24 Vout models:	–10 to +20 %
		other single output models:	–10 to +10 %
Voltage set accuracy			±1 % max.
Regulation	– Input variation (Vin min. to Vin max.)	single output:	0.2 % max.
		dual output:	0.5 % max.
	– Load variation (0 – 100 %)	single output:	0.2 % max.
		dual output:	1 % max. (balanced load)
	– Cross regulation	dual output:	5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient			±0.02 %/K max.
Ripple and noise (20 MHz Bandwidth)		3.3 & 5 Vout models:	75 mVp-p typ. (10uF/6.3V X7R MLCC, each output)
		12 & 15 Vout models:	100 mVp-p typ. (1uF/25V X7R MLCC, each output)
		24 Vout models:	125 mVp-p typ. (2.2uF/50V X7R MLCC, each output)
Start up time (constant resistive load)			40 ms max.
Transient response time (25% load step change)			250 µs typ.
Over voltage protection		3.3 Vout models:	3.7 – 5.4 VDC
		5 Vout models:	5.6 – 7.0 VDC
		12 Vout models:	13.5 – 19.6 VDC
		15 Vout models:	18.3 – 22.0 VDC
		24 Vout models:	29.1 – 32.5 VDC
Current limitation			150 % typ. of Iout max.
Short circuit protection			Continuous, automatic recovery
Capacitive load	– Single output	3.3 Vout models:	5200 µF max.
		5 Vout models:	3600 µF max.
		12 Vout models:	600 µF max.
		15 Vout models:	500 µF max.
		24 Vout models:	200 µF max.
	– Dual output	±5 Vout models:	1500 µF max. (each output)
		±12 Vout models:	360 µF max. (each output)
		±15 Vout models:	250 µF max. (each output)
		±24 Vout models:	100 µF max. (each output)

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

General Specifications

Temperature ranges	– Operating (natural convection: 20 LFM, 0.1 m/s) – Case temperature – Storage temperature	–40°C to +105°C +105°C max. –55°C to +125°C
Derating	Please refer to Application note:	Depending on model www.tracopower.com/overview/thn15n
Thermal Impedance		17 K/W
Humidity (non condensing)		5 – 95 % rel H
Isolation voltage	– Input to output (60 s) – Input/output to case	1‘600 VDC 1‘000 VDC
Isolation resistance		1 GOhm min.
Isolation capacitance		2000 pF max.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		1'670'000 h
Switching frequency	3.3 & 5 Vout models: other output models:	220 – 270 kHz (pulse width modulation) 270 – 330 kHz (pulse width modulation)
Safety standards /approvals	– Certification documents	IEC/EN/UL 62368-1 www.tracopower.com/overview/thn15n
EMC emissions	– Application note for filter class B proposal	EN 55032, EN 55011 class A without external components class B with external components www.tracopower.com/overview/thn15n
EMC immunity	– ESD (electrostatic discharge) – Radiated immunity – Fast transient (with external components) – Surge (with external components) Application note for Fast transient / surge filter – Conducted immunity – Magnetic field immunity	EN 55024 EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV perf. criteria A www.tracopower.com/overview/thn15n EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 100 A/m continuous, 1000 A/m 1 s, perf. criteria A
Shock, vibration and thermal shock		acc. MIL-STD-810F
Environmental compliance	– Reach – RoHS	www.tracopower.com/info/reach-declaration.pdf RoHS directive 2011/65/EU

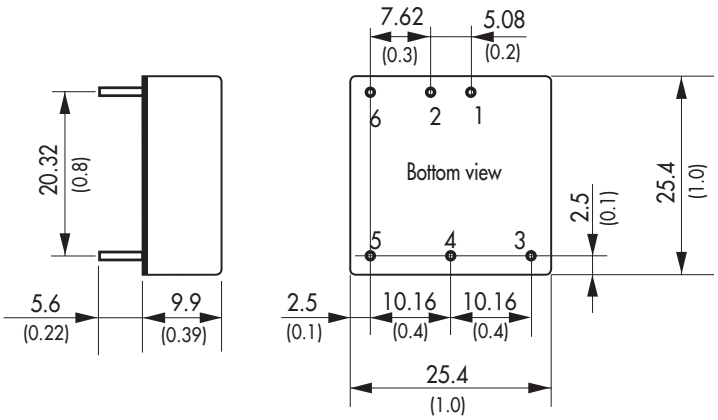
Physical Specifications

Casing material	Copper
Base material	FR4 PCB
Potting material	Silicone (UL 94V-0 rated)
Package weight	16.5 g (0.58 oz)

Supporting Documents: www.tracopower.com/overview/thn15n

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

Outline Dimensions



Pin-Out		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	Remote On/Off

Dimensions in mm, () = Inch
Pin diameter Ø 1.0 (0.04)
Tolerances: x.x ±0.5 (±0.02)
x.xx ±0.25 (±0.01)
Pin pitch tolerance ±0.25 (±0.01)
Pin dimension tolerance ±0.1 (±0.004)

© Copyright 2019 Traco Electronic AG