

- 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



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 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
THD 15-2410WIN	9 - 36 VDC (24 VDC nom.)	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	-5 VDC	1'500 mA	86 %
THD 15-2422WIN		+12 VDC	625 mA	-12 VDC	625 mA	89 %
THD 15-2423WIN		+15 VDC	500 mA	-15 VDC	500 mA	90 %
THD 15-4810WIN	18 - 75 VDC (48 VDC nom.)	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	-5 VDC	1'500 mA	86 %
THD 15-4822WIN		+12 VDC	625 mA	-12 VDC	625 mA	89 %
THD 15-4823WIN		+15 VDC	500 mA	-15 VDC	500 mA	90 %

Input Specifications

Input Current	- At no load	24 Vin models: 6 mA typ. 48 Vin models: 4 mA typ.
	- At full load	24 Vin models: 740 mA max. 48 Vin models: 370 mA max.
Surge Voltage		24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.)
Under Voltage Lockout		24 Vin models: 7 VDC min. / 8 VDC typ. / 8.8 VDC max. 48 Vin models: 15 VDC min. / 16 VDC typ. / 17.5 VDC max.
Reflected Ripple Current		20 mA_{p-p} typ.
Recommended Input Fuse		24 Vin models: 3'150 mA (slow blow) 48 Vin models: 1'600 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Pi-Type

Output Specifications

Voltage Set Accuracy		±1% max.
Regulation	- Input Variation (V _{min} - V _{max})	single output models: 0.2% max. dual output models: 0.5% max.
	- Load Variation (0 - 100%)	single output models: 0.5% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise	- 20 MHz Bandwidth	60 mV_{p-p} typ. (w/ 1 µF, 25 V, X7R, MLCC)
Capacitive Load	- single output	3.3 V _{out} models: 4'700 µF max.
		5.1 V _{out} models: 3'300 µF max.
		12 V _{out} models: 600 µF max.
		15 V _{out} models: 400 µF max.
		5 / -5 V _{out} models: 1'500 / 1'500 µF max.
- dual output	12 / -12 V _{out} models: 288 / 288 µF max.	
	15 / -15 V _{out} models: 200 / 200 µF max.	
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		60 ms max. (Power On) 60 ms max. (Remote On)
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		150% typ. of I_{out} max.
Overvoltage Protection		118 - 125% of V_{out} nom. (depending on model) 3.9 VDC typ. (3.3 V _{out} models) 6.2 VDC typ. (5.1 V _{out} models) 15 VDC typ. (12 V _{out} models) 18 VDC typ. (15 V _{out} models)
Transient Response	- Response Deviation	9% max. (25% Load Step)
	- Response Time	250 µs typ. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/thd15win

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

Pollution Degree	PD 2
Over Voltage Category	OVC I

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (internal filter) EN 55032 class B (with external filter) FCC Part 15 class A (internal filter)
	- Radiated Emissions	EN 55032 class A (internal filter) EN 55032 class B (with external filter) FCC Part 15 class A (internal filter)
		External filter proposal: www.tracopower.com/overview/thd15win
EMS Immunity		EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV, perf. criteria A
	- Conducted RF Disturbances	Ext. input component: Nippon chemi-con KY 220 µF, 100 V EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: EN 61000-4-8, 100 A/m, perf. criteria A 1 s: EN 61000-4-8, 1000 A/m, perf. criteria A

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	Depending on model
		See application note: www.tracopower.com/overview/thd15win
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote	On: 3.0 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin
	- Off Idle Input Current	2.5 mA typ.
	- Remote Pin Input Current	-0.5 to 0.5 mA
Altitude During Operation		5'000 m max.
Switching Frequency		297 - 363 kHz (PWM) 330 kHz typ. (PWM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
	- Input to Case, 60 s	1'600 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	2'000 pF typ.
Reliability	- Calculated MTBF	1'600'000 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Environment	- Vibration	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F
Housing Material		Copper, Nickel plated
Base Material		Non-conductive FR4 (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper
Pin Foundation Plating		Nickel (2 - 3 µm)
Pin Surface Plating		Tin (3 - 5 µm), matte
Housing Type		Metal Case

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

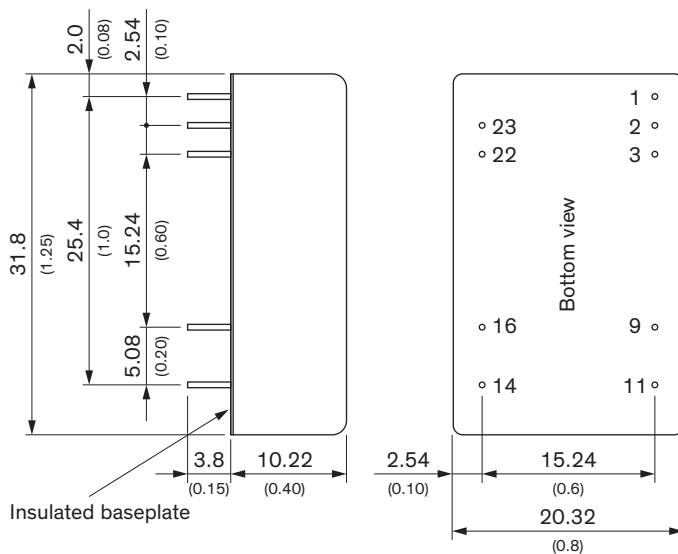
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Footprint Type	DIP24
Soldering Profile	Lead-Free Wave Soldering 265°C / 10 s max.
Weight	16.2 g
Thermal Impedance	- Case to Ambient 20 K/W typ.
Environmental Compliance	- REACH Declaration www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule)) - SCIP Reference Number 06cb34b5-39a6-40be-b7bd-92df1c5e06e1

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/thd15win

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.5 (x.xx ±0.02)
x.xx ±0.25 (x.xxx ±0.01)
Pin Ø 0.5 ±0.1 (0.02 ±0.004)

Pinout

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)

NC: Not connected