Input Specifications

Input Current	- At no load	24 Vin models:	**55 mA typ.** (3.3 Vout model)
			55 mA typ. (5.1 Vout model)
			15 mA typ. (12 Vout model)
			15 mA typ. (15 Vout model)
			15 mA typ. (5 / -5 Vout model)
			15 mA typ. (12 / -12 Vout model)
			15 mA typ. (15 / -15 Vout model)
		48 Vin models:	**20 mA typ.** (3.3 Vout model)
			20 mA typ. (5.1 Vout model)
			7 mA typ. (12 Vout model)
			7 mA typ. (15 Vout model)
			7 mA typ. (5 / -5 Vout model)
			7 mA typ. (12 / -12 Vout model)
			7 mA typ. (15 / -15 Vout model)
	- At full load	24 Vin models:	**610 mA typ.**
		48 Vin models:	**310 mA typ.**
Surge Voltage		24 Vin models:	**50 VDC max.** (100 ms max.)
		48 Vin models:	**100 VDC max.** (100 ms 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.**
Recommended Input Fuse		24 Vin models:	**2'500 mA** (slow blow)
		48 Vin models:	**1'250 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			±1.2% max.
Regulation	- Input Variation (Vmin - Vmax)	single output models:	0.2% max.
		dual output models:	0.2% 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		85 mVp-p typ.
Capacitive Load	- single output	3.3 Vout models:	2'000 µF max.
		5.1 Vout models:	2'000 µF max.
		12 Vout models:	430 µF max.
		15 Vout models:	300 µF max.
	- dual output	5 / -5 Vout models:	1'250 / 1'250 µF max.
		12 / -12 Vout models:	200 / 200 µF max.
		15 / -15 Vout models:	120 / 120 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Start-up Time			450 ms typ. (Power On)
			5 ms typ. (Remote On)
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			150% typ. of Iout max.
Overvoltage Protection			118 - 125% of Vout nom.
			(depending on model)
			3.9 VDC typ. (3.3 Vout models)
			6.2 VDC typ. (5.1 Vout models)
			15 VDC typ. (12 Vout models)
			18 VDC typ. (15 Vout models)

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

Transient Response	- Response Deviation	5% max. (75% to 100% Load Step)
	- Response Time	250 µs typ. (75% to 100% 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/thd12wi
Pollution Degree		PD 2
Over Voltage Category		Not mains connected

EMC Specifications

EMI Emissions	- Conducted Emissions		EN 55032 class A (with external filter) EN 55032 class B (with external filter)
	- Radiated Emissions		EN 55032 class A (with external filter) EN 55032 class B (with external filter)
		External filter proposal:	www.tracopower.com/overview/thd12wi
EMS Immunity			EN 55024 (IT Equipment)
	- 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, ±1 kV, perf. criteria A
		Ext. input component:	Nippon chemi-con KY 220 µF, 100 V
	- Conducted RF Disturbances		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	2.2 %/K above 60°C (3.3 & 5.1 Vout models) 2.5 %/K above 65°C (other models)
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		4'000 m max.
Switching Frequency		360 - 440 kHz (PWM) 400 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
	- Output 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	1'500 pF max.
Reliability	- Calculated MTBF	2'090'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F

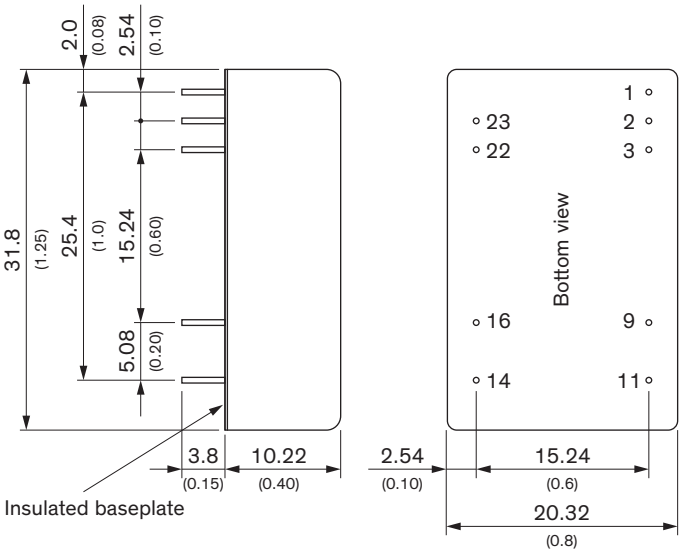
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Housing Material	Copper, Nickel plated
Base Material	Non-conductive FR4 (UL 94 V-0 rated)
Potting Material	Epoxy (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
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Footprint Type	DIP24
Soldering Profile	245°C / 10 s max.
Weight	18 g
Thermal Impedance	20 K/W
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). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/thd12wi

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.5 (±0.02)
x.xx ±0.25 (±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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TRACO Power:

THD 12-2421WI THD 12-2422WI THD 12-4811WI THD 12-2411WI THD 12-2412WI THD 12-2413WI THD 12-2423WI THD 12-2410WI THD 12-4813WI THD 12-4810WI THD 12-4822WI THD 12-4823WI THD 12-4821WI THD 12-4812WI