Input Specifications

Input current at full load (nominal input)		5 Vin models:	600 mA typ.
		12 Vin models:	220 mA typ.
		24 Vin models:	110 mA typ.
		48 Vin models:	55 mA typ.
Start-up voltage / under voltage shut down		5 Vin models:	4.5 VDC / 4.0 VDC typ. (or lower)
		12 Vin models:	9.0 VDC / 8.5 VDC typ. (or lower)
		24 Vin models:	18 VDC / 17 VDC typ.
		48 Vin models:	36 VDC / 34 VDC typ.
Surge voltage (100 msec. max.)		5 Vin models:	11 V max.
		12 Vin models:	25 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
Input fuse			recommended, required for compliance with CB
	– recommended min. fuse rating	5 V models:	500 mA
		12 V models:	200 mA

Output Specifications

Voltage set accuracy			±2 %
Regulation	– Input variation Vin min. to Vin max.		0.5 % max.
	– Load variation 25 – 100 %		0.75 % max.
		dual output models:	2.0 % (balanced load)
Ripple and noise (20 MHz Bandwidth)			50 mVpk-pk max.
Transient response (25 % load step change)			
	– Recovery time		300 µs typ.
	– Deviation		±5 %
Temperature coefficient			±0.02 %/K
Short circuit protection			indefinite, automatic recovery
Minimum load			25 % of rated max current (operation at lower load condition is safe but a higher output ripple will be experienced)
Capacitive load		3.3 VDC output models:	2200 µF max.
		5 VDC output models:	1000 µF max.
		12 VDC output models:	170 µF max.
		15 VDC output models:	110 µF max.
		±5 VDC output models:	470 µF max.
		±12 VDC output models:	100 µF max.
		±15 VDC output models:	47 µF max.

General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperatures	+90°C
	– Storage	–50°C to +125°C
Derating		3.5 %/K above +71°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1.0 Mio h
Isolation voltage (60sec.)	– Input/Output	1500 VDC
Isolation capacitance	– Input/Output	250 pF
Isolation resistance	– Input/Output (500 VDC)	>1000 M Ohm
Switching frequency		300 kHz (PFM)

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

General Specifications

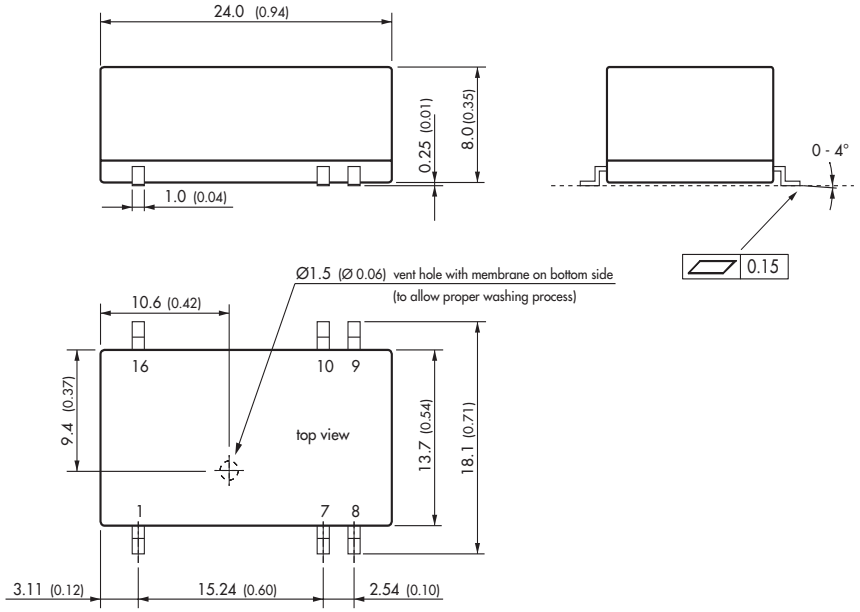
Safety approvals		UL 60950-1, IEC/EN 60950-1
	– Certification documents	www.tracopower.com/overview/tes2n
Environmental compliance	– Reach	www.tracopower.com/products/reach-declaration.pdf
	– RoHS	RoHS directive 2011/65/EU

Physical Specifications

Casing material	DAP (UL94V-0 rated)
Pin material	Phosphor bronze
Weight	5.1 g (0.17oz)
Moisture sensivity level (MSL)	level 2 as per J-STD-020D.1 (to find at: www.jedec.org - free registration required)
Soldering temperature	max. 260°C / 10 sec.

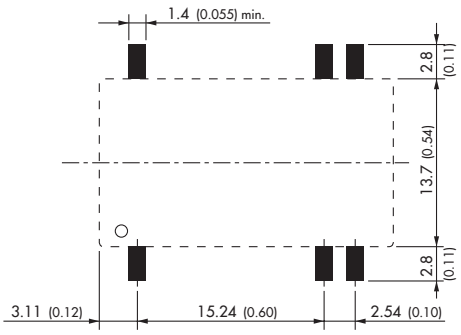
Supporting documents: www.tracopower.com/overview/tes2n

Outline Dimensions



Pin-Out		
Pin	**Single**	**Dual**
1	–Vin (GND)	–Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin	+Vin

Solder Pad Dimension



Dimensions in [mm], () = Inch
Tolerances ±0.25 (±0.01)
Pin pitch tolerances ±0.05 (±0.002)

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TRACO Power:

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TES 2N-0521 TES 2N-1212 TES 2N-0511 TES 2N-1210 TES 2N-1221 TES 2N-2422 TES 2N-1213 TES 2N-1222
TES 2N-4822 TES 2N-2423 TES 2N-4821 TES 2N-0513 TES 2N-4813 TES 2N-4811 TES 2N-0523 TES 2N-4810
TES 2N-1223 TES 2N-0512 TES 2N-4823 TES 2N-4812