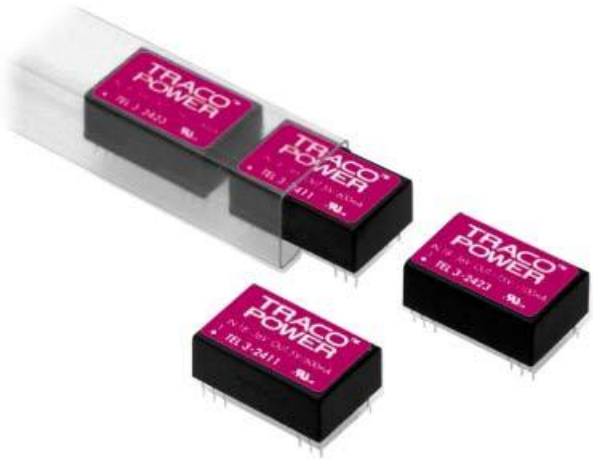
DC/DC Converter

TEL 3 Series 3 Watt

Features

- Wide 2:1 and 3:1 Input Range
- High Efficiency up to 81%
- DIL-24 Plastic Package
- Indefinite Short-Circuit Protection
- I/O Isolation 1500 VDC
- NEW Available with Industry Standard Pinout (NP)
- Operating Temp. Range -25°C to +75°C
- 3 Year Product Warranty



The TEL 3 series is a range of isolated 3 Watt converters in DIL-24 package offering wide 2:1and 3:1 input voltage ranges. Further features are high efficiency which allows operation temperature up to 75°C without derating and low output noise.
This product series provides an economical solution for many cost critical applications in industrial and consumer electronics.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
* TEL 3-0511 (NP)	4.5 – 9.0 VDC	5 VDC	600 mA	70 %
* TEL 3-0512 (NP)		12 VDC	250 mA	74 %
TEL 3-0513		15 VDC	200 mA	74 %
* TEL 3-0522 (NP)		±12 VDC	± 125 mA	74 %
* TEL 3-0523 (NP)		±15 VDC	± 100 mA	74 %
* TEL 3-1211 (NP)	9 – 18 VDC	5 VDC	600 mA	76 %
* TEL 3-1212 (NP)		12 VDC	250 mA	80 %
TEL 3-1213		15 VDC	200 mA	80 %
* TEL 3-1222 (NP)		±12 VDC	± 125 mA	80 %
* TEL 3-1223 (NP)		±15 VDC	± 100 mA	80 %
TEL 3-2011	10 – 30 VDC	5 VDC	600 mA	76 %
TEL 3-2012		12 VDC	250 mA	80 %
TEL 3-2013		15 VDC	200 mA	80 %
TEL 3-2022		±12 VDC	± 125 mA	80 %
TEL 3-2023		±15 VDC	± 100 mA	80 %
* TEL 3-2411 (NP)	18 – 36 VDC	5 VDC	600 mA	77 %
* TEL 3-2412 (NP)		12 VDC	250 mA	81 %
TEL 3-2413		15 VDC	200 mA	81 %
* TEL 3-2422 (NP)		±12 VDC	± 125 mA	81 %
* TEL 3-2423 (NP)		±15 VDC	± 100 mA	81 %
TEL 3-4811	36 – 75 VDC	5 VDC	600 mA	77 %
TEL 3-4812		12 VDC	250 mA	81 %
TEL 3-4813		15 VDC	200 mA	81 %
TEL 3-4822		±12 VDC	± 125 mA	81 %
TEL 3-4823		±15 VDC	± 100 mA	81 %

* suffix NP (Example: TEL 3-2411NP): models available with Industry Standard Pinout

Input Specifications

Input current (no load)	5 Vin models	40	mA typ.
	12 Vin models	20	mA typ.
	20 Vin models	15	mA typ.
	24 Vin models	5	mA typ.
	48 Vin models	3	mA typ.
Input current (full load)	5 Vin models	820	mA typ.
	12 Vin models	320	mA typ.
	20 Vin models	190	mA typ.
	24 Vin models	155	mA typ.
	48 Vin models	80	mA typ.
Surge voltage (1 sec. max.)	5 Vin models	11	VDC
	12 Vin models	25	VDC
	20 Vin models	50	VDC
	24 Vin models	50	VDC
	48 Vin models	100	VDC
Reverse voltage protection		1.0 A max.	

Output Specifications

Voltage set accuracy		± 1 %
Regulation	– Input variation Vin min. to Vin max.	± 0.5 % max.
	– Load variation 10 – 100 %	
	– single output models	± 0.5 % max.
	– dual output models balanced load	± 1.0 % max.
	– dual output models unbalanced load	± 2.0 % max
Ripple and noise (20 MHz Bandwidth)		<60 mVpk-pk typ.
Temperature coefficient		± 0.02 % / K
Output current limitation		> 110% Iout max., constant current
Short circuit protection		indefinite (automatic recovery)
Capacitive load	single output models	2000 µF max.
	dual output models	1000 µF max.

General Specifications

Temperature ranges	– Operating	– 25 °C ... + 75 °C
	– Case	+ 95 °C max.
	– Storage	– 40 °C ... + 125 °C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		>1 Mio. h @ + 25 °C
Isolation voltage	Input/Output/Case	1500 VDC
Isolation capacity	Input/Output	500 pF typ
Isolation resistance	Input/Output (500 VDC)	> 1'000 M Ohm
Switching frequency		300 kHz typ. (Pulse frequency modulation PFM)
Safety standards		UL 1950, EN 60950, IEC 60950 Compliance up to 60 VDC input voltage (SELV limit)
Safety approvals		UL/cUL File E188913

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

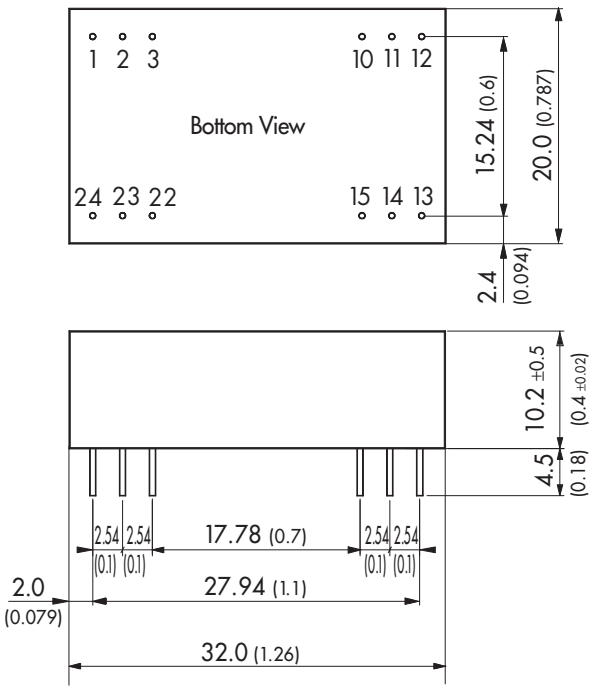
Physical Specifications

Case material	non conductive black plastic
Potting material	epoxy (UL94V-0 rated)
Weight	12 g (0.42 oz)
Soldering temperature	max. 250 °C / 10 sec.

Outline Dimensions mm (inches)

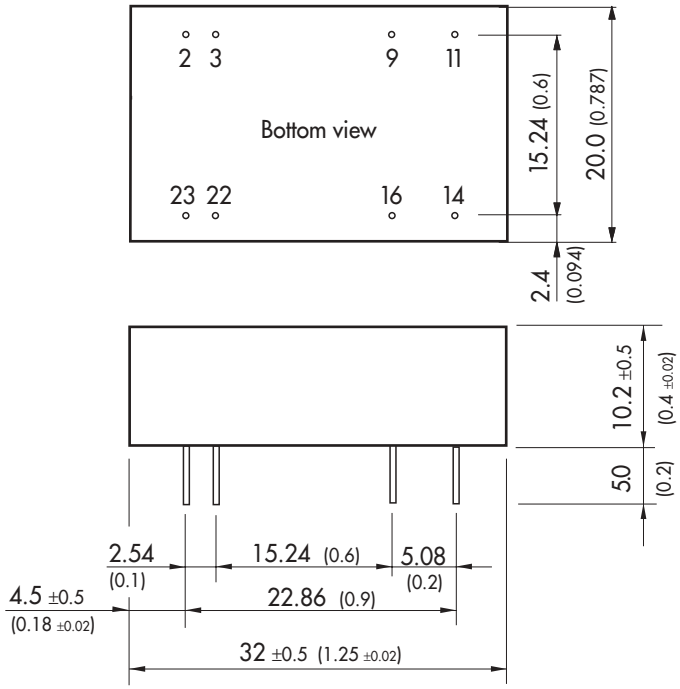
Standard Pinout:

(compatible with TED / TEM-3 Series)



Pin-Out		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	No con.	–Vout
3	No con.	Common
10	–Vout	Common
11	+Vout	+Vout
12	–Vin (GND)	–Vin (GND)
13	–Vin (GND)	–Vin (GND)
14	+Vout	+Vout
15	–Vout	Common
22	No con.	Common
23	No con.	–Vout
24	+Vin (Vcc)	+Vin (Vcc)

Pinout NP Version:



Pin diameter ø 0.5 ±0.05 (0.02) ±0.002
Tolerances ±0.5 (0.02)

Pin-Out		
Pin	**Single**	**Dual**
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No con.	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Specifications can be changed without notice

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