

#### Features

- Wide 2 : 1 Input Range
- High Efficiency up to 81%
- Full SMD-Design
- Indefinite Short-Circuit Protection
- 24-pin DIP Plastic Package
- Pin-compatible with TEM-3 / TED
- 2 Year Product Warranty



The TEL 3 series is a range of isolated 3 W converter in DIL-24 package offering wide 2:1 input voltage range. 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 TEL 3-0512 TEL 3-0513 TEL 3-0522 TEL 3-0523	4.5 – 9.0 VDC	5 VDC	600 mA	70 %
		12 VDC	250 mA	74 %
		15 VDC	200 mA	74 %
		±12 VDC	± 125 mA	74 %
		±15 VDC	± 100 mA	74 %
TEL 3-1211 TEL 3-1212 TEL 3-1213 TEL 3-1222 TEL 3-1223	9 – 18 VDC	5 VDC	600 mA	76 %
		12 VDC	250 mA	80 %
		15 VDC	200 mA	80 %
		±12 VDC	± 125 mA	80 %
		±15 VDC	± 100 mA	80 %
TEL 3-2411 TEL 3-2412 TEL 3-2413 TEL 3-2422 TEL 3-2423	18 – 36 VDC	5 VDC	600 mA	77 %
		12 VDC	250 mA	81 %
		15 VDC	200 mA	81 %
		±12 VDC	± 125 mA	81 %
		±15 VDC	± 100 mA	81 %
TEL 3-4811 TEL 3-4812 TEL 3-4813 TEL 3-4822 TEL 3-4823	36 – 75 VDC	5 VDC	600 mA	77 %
		12 VDC	250 mA	81 %
		15 VDC	200 mA	81 %
		±12 VDC	± 125 mA	81 %
		±15 VDC	± 100 mA	81 %

### Input Specifications

Input current (no load)	5 Vin models	40 mA typ.
	12 Vin models	20 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.
	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
	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 5 – 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 % / °C
Output current limitation		> 110% I <sub>out</sub> max., constant current
Short circuit protection		Hiccup mode, indefinite (automatic recovery)
Capacitive load	single output models	2000 µF max.
	dual output models	1000 µF max.

### General Specifications

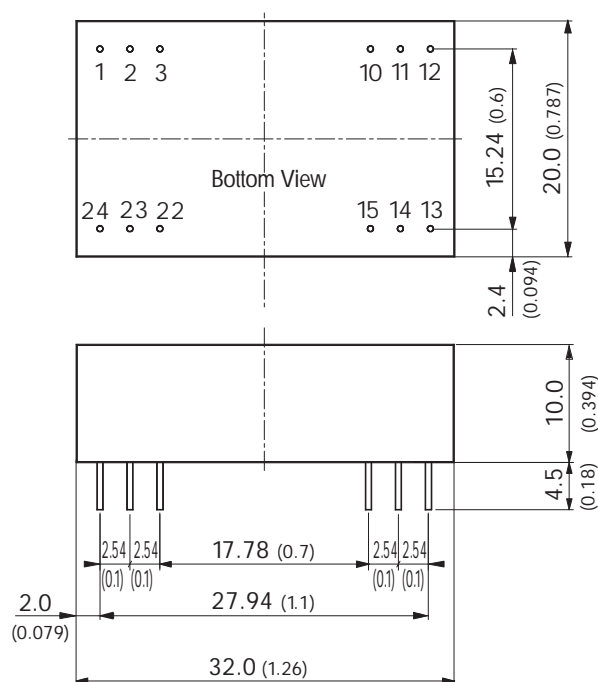
Temperature ranges	– Operating	– 25 °C ... + 75 °C
	– Case	+ 95 °C max.
	– Storage	– 40 °C ... + 125 °C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		>1 Mio. h @ + 25 °C
Isolation voltage	Input/Output/Case	1000 VDC
Isolation capacity	Input/Output	500 pF typ.
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 (flammability to UL 94V-0)
Weight	12 g (0.42 oz)
Soldering temperature	max. 250 °C / 10 sec.

**Outline Dimensions mm (inches)**



Pin diameter  $\varnothing 0.5 \pm 0.05$  (0.02)  $\pm 0.002$   
Tolerances  $\pm 0.5$  (0.02)

Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	No function	-Vout
3	No function	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 function	Common
23	No function	-Vout
24	+Vin (Vcc)	+Vin (Vcc)

Specifications can be changed without notice