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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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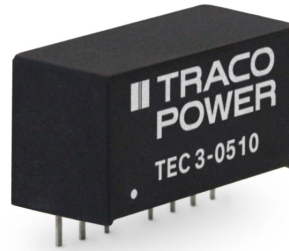
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- Compact SIP-8 package
- I/O-isolation 1'600 VDC
- Fully regulated outputs
- Operating temperature range  
-40°C to +90°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet  
UL 62368-1 (UL 60950-1)



TEC 3 is a new series with the design purpose to improve the prevalent 3 Watt SIP-8 DC/DC converters in terms of cost, efficiency and performance. The latest technology and components effectuate a high efficiency for a low thermal loss. This enables an operating temperature range from -40°C up to +90°C. The converters are fully regulated over 0 - 100% load (no minimum load is required). The low input range input is extended from 4.5 to 13.2 VDC while models are also available with the standard 2:1 input ranges of 9-18, 18-36 and 36-75 VDC (see TEC 3WI series for 4:1 input ranges). The functional I/O-isolation system is designed to meet IEC/EN 62368-1 with a test voltage (60 s) of 1600 VDC.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TEC 3-0910	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75 %
TEC 3-0911		5.0 VDC	600 mA	78 %
TEC 3-0919		9.0 VDC	333 mA	81 %
TEC 3-0912		12 VDC	250 mA	83 %
TEC 3-0913		15 VDC	200 mA	84 %
TEC 3-0915		24 VDC	125 mA	82 %
TEC 3-0921		±5.0 VDC	±300 mA	79 %
TEC 3-0922		±12 VDC	±125 mA	82 %
TEC 3-0923		±15 VDC	±100 mA	82 %
TEC 3-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	77 %
TEC 3-1211		5.0 VDC	600 mA	81 %
TEC 3-1219		9.0 VDC	333 mA	82 %
TEC 3-1212		12 VDC	250 mA	84 %
TEC 3-1213		15 VDC	200 mA	85 %
TEC 3-1215		24 VDC	125 mA	85 %
TEC 3-1221		±5.0 VDC	±300 mA	81 %
TEC 3-1222		±12 VDC	±125 mA	85 %
TEC 3-1223		±15 VDC	±100 mA	83 %
TEC 3-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	77 %
TEC 3-2411		5.0 VDC	600 mA	82 %
TEC 3-2419		9.0 VDC	333 mA	83 %
TEC 3-2412		12 VDC	250 mA	85 %
TEC 3-2413		15 VDC	200 mA	86 %
TEC 3-2415		24 VDC	125 mA	84 %
TEC 3-2421		±5.0 VDC	±300 mA	82 %
TEC 3-2422		±12 VDC	±125 mA	84 %
TEC 3-2423		±15 VDC	±100 mA	85 %
TEC 3-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	75 %
TEC 3-4811		5.0 VDC	600 mA	80 %
TEC 3-4819		9.0 VDC	333 mA	82 %
TEC 3-4812		12 VDC	250 mA	84 %
TEC 3-4813		15 VDC	200 mA	85 %
TEC 3-4815		24 VDC	125 mA	86 %
TEC 3-4821		±5.0 VDC	±300 mA	80 %
TEC 3-4822		±12 VDC	±125 mA	86 %
TEC 3-4823		±15 VDC	±100 mA	83 %

## Input Specifications

Input current at no load	9 Vin models: 55 mA typ. 12 Vin models: 30 mA typ. 24 Vin models: 12 mA typ. 48 Vin models: 8 mA typ.
Surge voltage (1 s max.)	9 Vin models: 15 V max. 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start up voltage	9 Vin models: 4.5 V (or lower) 12 Vin models: 9 V (or lower) 24 Vin models: 18 V (or lower) 48 Vin models: 36 V (or lower)
Under voltage shut down	9 Vin models: 2 - 4 V 12 Vin models: 6 - 8 V 24 Vin models: 13 - 17 V 48 Vin models: 29 - 35 V
Input filter	internal capacitor
Recommended input fuse	9 Vin models: 1.6 A (slow blow type) 12 Vin models: 0.8 A (slow blow type) 24 Vin models: 0.5 A (slow blow type) 48 Vin models: 0.315 A (slow blow type)
Conducted noise	EN 55032 class A or B with external components <a href="http://www.tracopower.com/overview/tec3">www.tracopower.com/overview/tec3</a> – Application note for filter class A/B proposal
EMC immunity	EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A all models: Nippon chemi-con KY 220µF/100V EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8 100 A/m, continuous, perf. criteria A 1000 A/m, 1 sec., perf. criteria A – ESD (electrostatic discharge) – Radiated immunity – Fast transient / surge (with external input capacitor) – Conducted immunity – Magnetic field immunity

## Output Specifications

Voltage set accuracy	±1 % max.
Regulation	– Input variation (Vin min. to Vin max.) 0.2 % max. – Load variation (0 – 100 %) single output: 1 % max. dual output: 1 % max. (balanced load) – Load variation (10 – 90 %) single output: 0.5 % max. dual output: 0.8 % max. (balanced load) – Cross regulation dual output: 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	±0.02 %/K max.
Ripple and noise (20 MHz Bandwidth)	75 mVp-p typ.
Current limitation	140 - 240 % of Iout max.
Short circuit protection	continuous, automatic recovery
Start up time (constant resistive load)	– Power ON 10 ms typ. / 20 ms max. – Remote ON 10 ms typ. / 20 ms max.
Transient response time (25% load step change)	500 µs typ.

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



**Output Specifications (continued)**

Capacitive load	– Single output	3.3 Vout models: 4400 µF max. 5.0 Vout models: 2200 µF max. 9.0 Vout models: 1300 µF max. 12 Vout models: 1000 µF max. 15 Vout models: 820 µF max. 24 Vout models: 470 µF max.
	– Dual output	±5.0 Vout models: 1200 µF max. (each output) ±12 Vout models: 520 µF max. (each output) ±15 Vout models: 440 µF max. (each output)

**General Specifications**

Temperature ranges	– Operating (natural convection: 20 LFM, 0.1 m/s) – Case temperature – Storage temperature	–40°C to +90°C +105°C max. –55°C to +125°C
Derating		3.4%/K above 75°C
Humidity (non condensing)		5 – 95 % rel H max.
Isolation voltage	– I/O isolation voltage (60 s)	1'600 VDC
Isolation resistance (input/output)		1 GOhm min.
Isolation capacitance (input/output)		50 pF max.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		5'124'000 h
Switching frequency		100 kHz min. (pulse frequency modulation)
Shock, vibration and thermal shock		MIL-STD-810F
Remote On/Off	– On: – Off: – Off idle current:	open circuit or high impedance 2 – 4 mA current applied via 1kOhm resistor 2.5 mA typ.
Safety standards	– Desinged to meet (no certification)	IEC/EN/UL 62368-1, UL 60950-1
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> RoHS directive 2011/65/EU

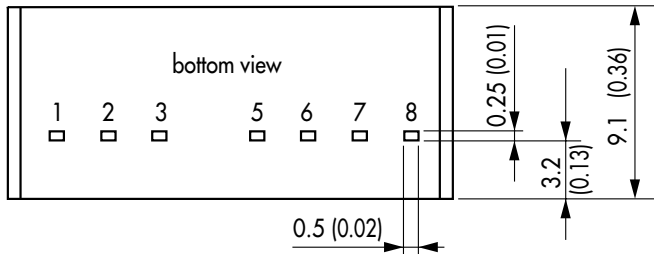
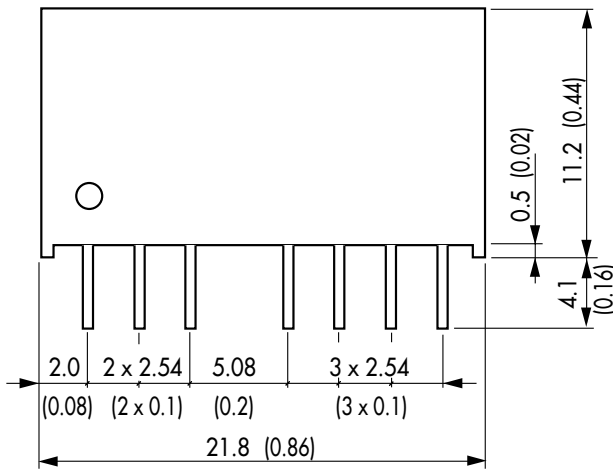
**Physical Specifications**

Casing material	non-conducting black plastic
Potting material	Silicone (UL 94V-0 rated)
Pin material	tinned copper
Package weight	4.5 g (0.16 oz)
Soldering profile	260°C / 10 s max. (wave soldering)

**Supporting Documents:** [www.tracopower.com/overview/tec3](http://www.tracopower.com/overview/tec3)

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

**Outline Dimensions**



Pin-Out		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

NC: not connected

Dimensions in [mm], () = Inch

Tolerances: x.xx ±0.5 (±0.02)

Pin pitch tolerances ±0.25 (±0.01)

Pin dimension tolerance ±0.1 (±0.004)