

- Compact 2W Converter in DIP package
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Wide 2 : 1 input voltage range
- Operating temperature range -40°C to +80°C
- Short circuit protection
- 3-year product warranty



The TDL 2 series with 2:1 input voltage range is a selection of 2 Watt regulated dc/dc-converters. They come in a very compact DIP package (0.55 × 0.55 × 0.31 inch).

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TDL 2-0510	<b>4.5 – 10 VDC</b> (5 VDC nominal)	3.3 VDC	400 mA	79 %
TDL 2-0511		5.0 VDC	400 mA	81 %
TDL 2-0512		12 VDC	167 mA	85 %
TDL 2-0513		15 VDC	134 mA	87 %
TDL 2-0521		±5.0 VDC	±200 mA	83 %
TDL 2-0522		±12 VDC	±83 mA	85 %
TDL 2-0523		±15 VDC	±67 mA	85 %
TDL 2-1210	<b>9 – 18 VDC</b> (12 VDC nominal)	3.3 VDC	400 mA	80 %
TDL 2-1211		5.0 VDC	400 mA	83 %
TDL 2-1212		12 VDC	167 mA	87 %
TDL 2-1213		15 VDC	134 mA	87 %
TDL 2-1221		±5.0 VDC	±200 mA	84 %
TDL 2-1222		±12 VDC	±83 mA	86 %
TDL 2-1223		±15 VDC	±67 mA	86 %
TDL 2-2410	<b>18 – 36 VDC</b> (24 VDC nominal)	3.3 VDC	400 mA	79 %
TDL 2-2411		5.0 VDC	400 mA	84 %
TDL 2-2412		12 VDC	167 mA	86 %
TDL 2-2413		15 VDC	134 mA	87 %
TDL 2-2421		±5.0 VDC	±200 mA	84 %
TDL 2-2422		±12 VDC	±83 mA	86 %
TDL 2-2423		±15 VDC	±67 mA	86 %
TDL 2-4810	<b>36 – 75 VDC</b> (48 VDC nominal)	3.3 VDC	400 mA	79 %
TDL 2-4811		5.0 VDC	400 mA	83 %
TDL 2-4812		12 VDC	167 mA	85 %
TDL 2-4813		15 VDC	134 mA	86 %
TDL 2-4821		±5.0 VDC	±200 mA	82 %
TDL 2-4822		±12 VDC	±83 mA	84 %
TDL 2-4823		±15 VDC	±67 mA	84 %

PROUDLY DISTRIBUTED BY:



Power Sources Unlimited, Inc.

Power Sources Unlimited, Inc.  
200 Stonewall Boulevard, Suite 4  
Wrentham, MA 02093-2210  
WWW.PSUI.COM

1-800-966-PSUI (7784)  
Outside U.S. 508-384-1419  
Fax: 508-384-1896  
info@psui.com

POWER WITHOUT LIMITS

### Input Specifications

Input current no load	5 Vin models: 40 mA typ. 12 Vin models: 27 mA typ. 24 Vin models: 15 mA typ. 48 Vin models: 8 mA typ.
Surge voltage (1 sec. max.)	5 Vin models: 12 V max. 12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Input filter	internal capacitor
Conducted noise	EN 55022 class A, B (with external components)
ESD (electrostatic discharge)	EN 61000-4-2, air $\pm 8$ kV, contact $\pm 6$ kV, perf. criteria A
Radiated immunity	EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / surge (with external input capacitor)	EN 61000-4-4, $\pm 2$ kV, perf. criteria A EN 61000-4-5, $\pm 1$ kV perf. criteria A
–external input capacitor	all models: 220 $\mu$ F/100V
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A

### Output Specifications

Voltage set accuracy	$\pm 1.5$ % max.
Regulation	– Input variation: 0.2 % max. – Load variation 0 – 100 %: 1 % max. dual output: 2 % max. (balanced load) cross regulation – dual output: 5 % max. (asymmetrical load 25 % / 100 %)
Minimum load	no minimum load required
Ripple and noise (20 MHz Bandwidth)	70 mVp-p typ.
Transient response	– Recovery time ( 25% load step change): 500 $\mu$ s typ. – Response deviation ( 25% load step change): 5 % max.
Short circuit protection	continuous, automatic recovery
Overload protection	at 180% of nominal lout typ.
Capacitive load	–Single output: 100 $\mu$ F max. –Dual output: 100 $\mu$ F max. (each output)

### General Specifications

Temperature ranges	– Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature	–40°C to +70°C (without derating) +90°C max. –50°C to +125°C
Derating		5.0%/K above 70°C
Humidity (non condensing)		95 % rel H max.
Isolation voltage	– I/O isolation voltage (60 sec.)	1'500 VDC
Isolation capacitance (input/output)		100 pF typ.
Isolation resistance (input/output)		>1 Gohm
Altitude during operation		5'000 m
Temperature coefficient		$\pm 0.02$ %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		>4'226'000 h
Switching frequency		100 kHz min.
Safety standards		UL 60950-1 IEC/EN 60950-1
	– Certification documents	<a href="http://www.tracopower.com/overview/tdl2">www.tracopower.com/overview/tdl2</a>
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

**PROUDLY DISTRIBUTED BY:**



**Power Sources Unlimited, Inc.**

Power Sources Unlimited, Inc.  
200 Stonewall Boulevard, Suite 4  
Wrentham, MA 02093-2210  
WWW.PSUI.COM

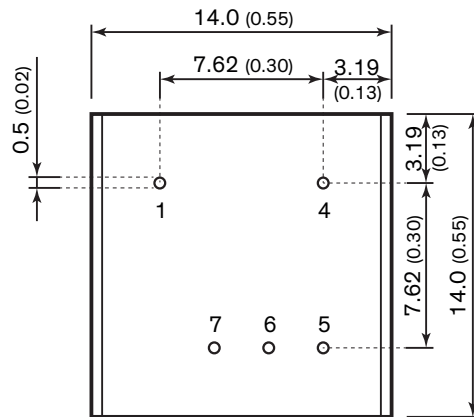
1-800-966-PSUI (7784)  
Outside U.S. 508-384-1419  
Fax: 508-384-1896  
info@psui.com

**POWER WITHOUT LIMITS**

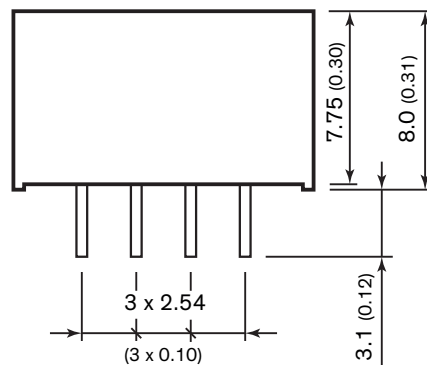
### Physical Specifications

Casing material	non-conducting FR4 (UL 94V-0 rated)
Potting material	Silicone (UL 94V-0 rated)
Pin material	tinned copper
Package weight	3.9 g (0.137 oz)
Soldering temperature	max. 260°C / 10 sec.

### Outline Dimensions



bottom view



Pin-Out		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
4	+Vin (Vcc)	+Vin (Vcc)
5	+Vout	+Vout
6	no pin	Common
7	-Vout	-Vout

Dimensions in [mm], ( ) = Inch

Tolerances: x.x ±0.5 (±0.02)

x.xx ±0.25(±0.01)

pin dimension tolerance ±0.05 (±0.002)

PROUDLY DISTRIBUTED BY:



Power  
Sources  
Unlimited, Inc.

Power Sources Unlimited, Inc.  
200 Stonewall Boulevard, Suite 4  
Wrentham, MA 02093-2210  
WWW.PSUI.COM

1-800-966-PSUI (7784)  
Outside U.S. 508-384-1419  
Fax: 508-384-1896  
info@psui.com

POWER  
WITHOUT  
LIMITS