TRACO POWER

DC/DC Converter

TEL 8 Series, 8 Watt

- **Ultra compact 8 W converter in DIP-16 metal housing**
- **Operating temperature range -40°C to +80°C**
- **Wide 2:1 input range**
- **Fully regulated outputs**
- **Protection against overload and short circuit**
- **Built-In EN 55022 class A filter**
- **3-year product warranty**

The TEL 8 series is a range of isolated 8 Watt converters in DIP-16 package offering wide 2:1 input voltage ranges. Further features are high efficiency which allows operation temperature up to +70°C at full load. This product series provides an economical solution for many space critical applications in industrial and consumer electronics.

Models

Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TEL 8-1210	**9 - 18 VDC** (nominal 12 VDC)	3.3 VDC	1600 mA	78 %
TEL 8-1211		5.0 VDC	1600 mA	81 %
TEL 8-1212		12 VDC	665 mA	84 %
TEL 8-1213		15 VDC	535 mA	84 %
TEL 8-1215		24 VDC	335 mA	85 %
TEL 8-1222		±12 VDC	±335 mA	85 %
TEL 8-1223		±15 VDC	±265 mA	84 %
TEL 8-2410	**18 - 24 VDC** (nominal 24 VDC)	3.3 VDC	1600 mA	78 %
TEL 8-2411		5.0 VDC	1600 mA	82 %
TEL 8-2412		12 VDC	665 mA	85 %
TEL 8-2413		15 VDC	535 mA	85 %
TEL 8-2415		24 VDC	335 mA	86 %
TEL 8-2422		±12 VDC	±335 mA	85 %
TEL 8-2423		±15 VDC	±265 mA	86 %
TEL 8-4810	**36 - 75 VDC** (nominal 48 VDC)	3.3 VDC	1600 mA	78 %
TEL 8-4811		5.0 VDC	1600 mA	81 %
TEL 8-4812		12 VDC	665 mA	85 %
TEL 8-4813		15 VDC	535 mA	85 %
TEL 8-4815		24 VDC	335 mA	86 %
TEL 8-4822		±12 VDC	±335 mA	86 %
TEL 8-4823		±15 VDC	±265 mA	86 %

Input Specifications

Input current no load		12 Vin models: 24 Vin models: 48 Vin models:	10 mA typ. 10 mA typ. 8 mA typ.
Surge voltage (1 sec. max.)		12 Vin models: 24 Vin models: 48 Vin models:	25 V max. 50 V max. 100 V max.
Start-up voltage		12 Vin models: 24 Vin models: 48 Vin models:	9 VDC (or lower) 18 VDC (or lower) 36 VDC (or lower)
Under voltage shut down		12 Vin models: 24 Vin models: 48 Vin models:	8 VDC typ. 16 VDC typ. 34 VDC typ.
Conducted noise			EN55022 class A (internal filter)
ESD (electrostatic discharge)			EN 61000-4-2, air ±8 kV, contact ±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, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A
	–external input capacitor	all models:	TBD
Conducted immunity			EN 61000-4-6, 10 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy			±2 % max.
Voltage balance (dual output models)			2 % max.
Regulation	– Input variation – Load variation 0 – 100 %		0.8 % max. 1 % max.
Minimum load			not required
Ripple and noise (20 MHz Bandwidth)			55 mVp-p max.
Transient response (25% load step change)			500 µs max.
Transient response deviation (25% load step change)			±5 % max.
Over load protection			at 150 % of Iout max.
Short circuit protection			hiccup mode, automatic recovery
Capacitive load	–Single output	3.3 & 5.0 VDC models: 12 & 15 VDC models: 24 VDC models:	680 µF max. 330 µF max. 150 µF max.
	–Dual output	±12 & ±15 VDC models:	150 µF max. (each output)

General Specifications

Temperature ranges	– Operating (convection cooling 20LFM, 0,1m/s) – Case temperature – Storage temperature	–40°C to +80°C +105°C max. –50°C to +125°C
Derating		5 %/K above 70°C
Humidity (non condensing)		95 % rel H max.
Isolation voltage	– Isolation test voltage (tested for 1 sec.) – I/O isolation voltage (60 sec.)	1‘800 Vpk 1’500 VDC
Isolation capacitance (input/output)		500 pF typ.
Isolation resistance (input/output)		>10 Gohm
Altitude during operation		4000 m
Temperature coefficient		±0.02 %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		tbd

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

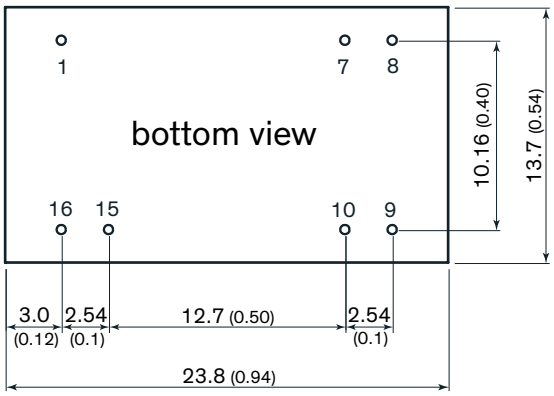
General Specifications

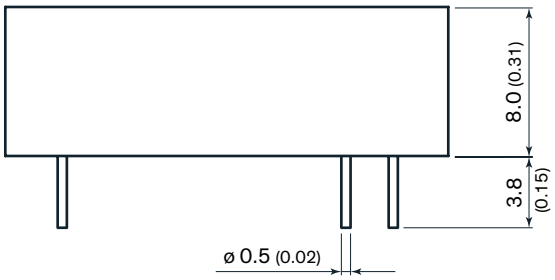
Switching frequency		370 kHz typ.
Safety standards		CAN/CSA-C22.2 No 60950-1-07, 2nd ed; A1:2011 ANSI/UL No. 60950-1, 2nd ed.; A1:2011 IEC 60950-1:2005 (2nd edition); Am 1:2009 EN 60950-1:2006/A11:2009/A1:2010/A12:2011
	– Certification documents (pending)	www.tracopower.com/overview/tel8
Environmental compliance	– Reach	www.tracopower.com/overview/tel8
	– RoHS	RoHS directive 2011/65/EU

Physical Specifications

Casing material	aluminium alloy, black anodized coating
Pin material	tinned copper
Package weight	tbd
Soldering temperature	max. 260°C / 10 sec

Outline Dimensions





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

Dimensions in [mm], () = Inch
Tolerances: x.xx ±0.5 (±0.02)
x.xxx ±0.25 (±0.01)
pin tolerance: ±0.05 (±0.002)