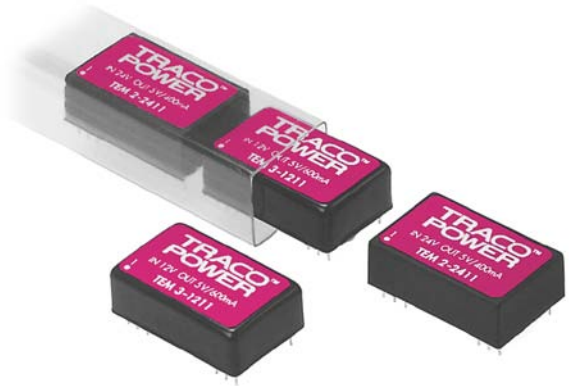
DC/DC Converters

TEM 2 Series, 2 Watt

UL 60950-1

Features

- DIL-24 plastic package
- Tightly regulated output
- Very low output noise
- Short circuit protection
- Operating temperature range –25°C to +70°C
- I/O isolation 1'000 VDC
- Internal filter
- Industry standard pinout
- 3-year product warranty



The TEM 2 series is a family of isolated dc/dc converters in a DIP-24 package. They offer tight line/load regulation and 1000 VDC I/O isolation. Standard features include an internal filter to reduce reflected input ripple currrent and to guarantee low output noise. This product series provides a cost effective solution by many industrial or consumer electronics appliactions.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TEM 2-0511	5 VDC ±10%	5 VDC	400 mA	50 %
TEM 2-0512		12 VDC	165 mA	54 %
TEM 2-0521		±12 VDC	±80 mA	53 %
TEM 2-0522		±15 VDC	±65 mA	51 %
TEM 2-1211	12 VDC ±10%	5 VDC	400 mA	50 %
TEM 2-1212		12 VDC	165 mA	56 %
TEM 2-1221		±5 VDC	±80 mA	59 %
TEM 2-1222		±12 VDC	±65 mA	59 %
TEM 2-2411	24 VDC ±10%	5 VDC	400 mA	51 %
TEM 2-2412		12 VDC	165 mA	61 %
TEM 2-2421		±12 VDC	±80 mA	61 %
TEM 2-2422		±15 VDC	±65 mA	61 %

Input Specifications

Input current no load / full load	5 Vin models:	80 mA / 770 mA typ.
	12 Vin models:	40 mA / 300 mA typ.
	24 Vin models:	20 mA / 145 mA typ.
Surge voltage (1 sec. max.)	5 Vin models:	7.5 V max.
	12 Vin models:	15 V max.
	24 Vin models:	30 V max.
Input filter		Pi-Filter

Output Specifications

Voltage set accuracy		±3 %
Regulation	– Input variation Vin min. to Vin max.	±0.3 % max.
	– Load variation 10 – 100 %	
	single output models:	±0.5 % max.
	dual output models balanced load:	±1.0 % max.
	dual output models unbalanced load:	±3.0 % max.
Ripple and noise (20 MHz Bandwidth)		50 mVpk-pk max
Temperature coefficient		±0.02 %/K
Current limitation		>120 % of Iout max., constant current
Short circuit protection		indefinite
Capacitive load	single output models:	470 µF max.
	dual output models:	220 µF max.

General Specifications

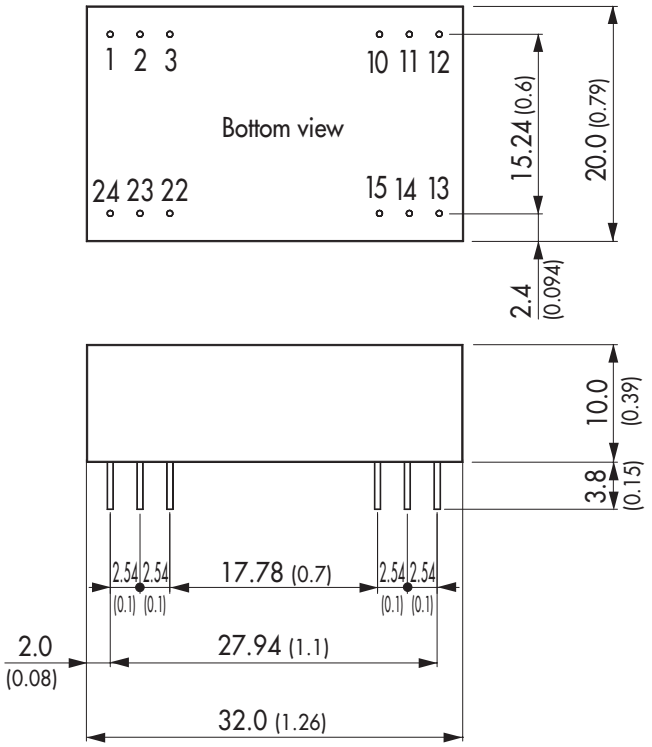
Temperature ranges	– Operating	–25°C to +70°C
	5 VDC output models:	–25°C to +60°C
	– Case	+95°C max.
	– Storage	–40°C to +125°C
Derating		3 %/K above +70°C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTTF (MIL-HDBK-217 F, @ +25°C, ground benign)		>800'000 Mio. h
Isolation voltage (60 sec.)	– Input/Output	1'000 VDC
Isolation capacity	– Input/Output	100 pF typ.
Isolation resistance	– Input/Output (500 VDC)	>1'000 M Ohm
Switching frequency		80 kHz typ. (Pulse frequency modulation PFM)
Safety standards		cUL/UL 60950-1, IEC/EN 60950-1
Safety approval		CSA File No. 226037 http://directories.csa-international.org

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

Physical Specifications

Casing material	non conductive plastic (UL94V-0 rated)
Weight	12 g (0.42 oz)
Soldering temperature	max. 260°C / 10 sec.

Outline Dimensions mm (inches)



Pin-Out		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	ntd.	–Vout
3	ntc.	Common
10	–Vout	Common
11	+Vout	+Vout
12	–Vin (GND)	–Vin (GND)
13	–Vin (GND)	–Vin (GND)
14	+Vout	+Vout
15	–Vout	Common
22	ntc.	Common
23	ntc.	–Vout
24	+Vin (Vcc)	+Vin (Vcc)

ntc. = not to connect

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

Specifications can be changed any time without notice.