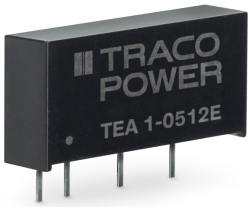
TRACO POWER

DC/DC Converter

TEA 1E Series, 1 Watt

- **Highly cost efficient design**
- **I/O isolation: 1’500 VDC**
- **Operating temperature range -40 to +85 °C without derating**
- **5 VDC (±10%) input voltage range**
- **Unregulated outputs**
- **Efficiency up to 78%**
- **Industry standard SIP-7 package**
- **3-year product warranty**



The TEA 1E is an unregulated 1 Watt DC/DC SIP-7 converter series which is specifically designed to offer a low-cost solution while keeping a high quality standard. This new series focuses on a simple but effective design approach, which minimizes component and labor cost and is complemented with a complete automatization of the manufacturing process. An operating temperature range from -40°C to 85°C without derating and an I/O-isolation of 1’500 VDC enables this series to cover many different applications. The industry standard package of this converter offers a broad application range in any space, cost critical application and is especially suited for high volume projects where simple but reliable products are needed.

Models

Order Code	Input Voltage Range	Output Voltage nom.	Output Current max.	Efficiency typ.
TEA 1-0505E	4.5 - 5.5 VDC (5 VDC nom.)	5 VDC	200 mA	78 %

Input Specifications

Input Current	- At no load	28 mA typ.
Surge Voltage		9 VDC max. (1 s max.)
Recommended Input Fuse		500 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Voltage Set Accuracy		±3% max. (at 60 % load)
Regulation	- Input Variation (1% Vin step) - Load Variation (10 - 90%)	1.5% max. 9% max.
Ripple and Noise	- 20 MHz Bandwidth	50 mVp-p typ. 100 mVp-p max.
Capacitive Load		1'000 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.03 %/K max.
Start-up Time		30 ms max.
Short Circuit Protection		Limited 1 s max., Automatic recovery

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	Designed for EN 62368-1 (no certification)

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	–40°C to +95°C +105°C max. –55°C to +125°C
Power Derating	- High Temperature	5 %/K above 85°C See application note: www.tracopower.com/overview/tea1e
Cooling System		Natural convection (20 LFM)
Switching Frequency		100 kHz typ. (Royer)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'500 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	30 pF typ.
Reliability	- Calculated MTBF	2'000'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Not allowed
Housing Material		Plastic (UL 94 V-0 rated)
Potting Material		Epoxy (UL 94 V-0 rated)
Pin Material		Phosphor Bronze (C5191)
Pin Foundation Plating		Nickel (1 µm min.)
Pin Surface Plating		Tin (3 µm min.), bright
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP7
Soldering Profile		Wave Soldering 265 °C / 5 s max.
Weight		2 g

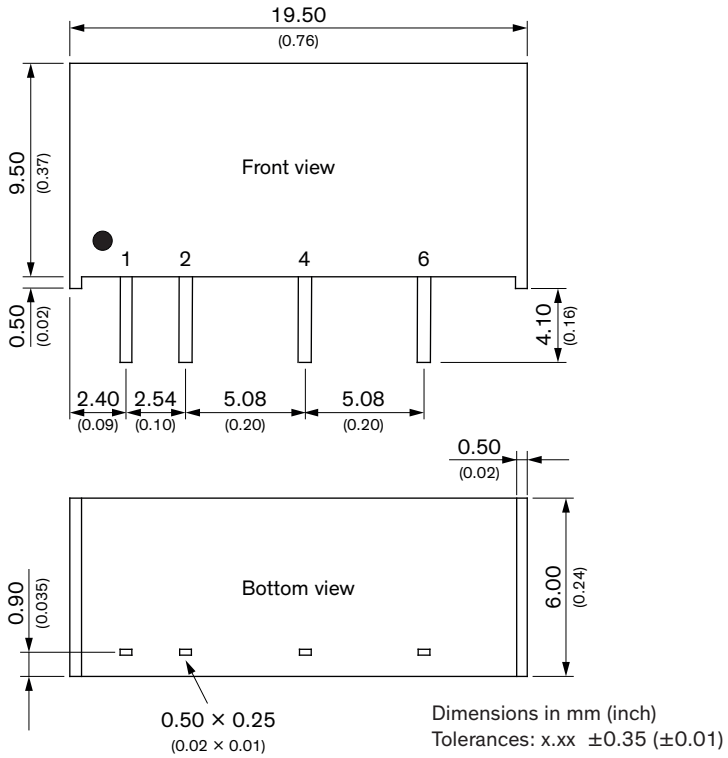
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
		REACH SVHC list compliant
		REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf
		Exemptions: 7a, 7c-I
		(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tea1e

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.xx ±0.35 (±0.01)

Pinout

Pin	Function
1	+Vin (Vcc)
2	–Vin (GND)
4	–Vout
6	+Vout