

- **Highly cost efficient design**
- **I/O isolation: 1'500 VDC**
- **Operating temperature range -40 to +85 °C without derating**
- **5 VDC ( $\pm 10\%$ ) input voltage range**
- **Unregulated outputs**
- **Efficiency up to 78%**
- **Industry standard SIP-4 package**
- **3-year product warranty**



The TEA 1 is an unregulated 1 Watt DC/DC SIP-4 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 1-0505 | 4.5 - 5.5 VDC<br>(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)<br>(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)<br>- Load Variation (10 - 90%) | 1.5% max.<br>9% max.                 |
| Ripple and Noise         | - 20 MHz Bandwidth   | 50 mVp-p typ.<br>100 mVp-p max.      |
| Capacitive Load          |  | 470 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<br>- Case Temperature<br>- Storage Temperature | -40°C to +95°C<br>+105°C max.<br>-55°C to +125°C |
| Power Derating         | - High Temperature   | 5 %/K above 85°C                                 |
| 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         |  | SIP4   |
| Soldering Profile      |  | Wave Soldering<br>265 °C / 5 s max.              |
| Weight                 |  | 1.6 g  |

See application note: [www.tracopower.com/overview/tea1](http://www.tracopower.com/overview/tea1)

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](http://www.tracopower.com/info/reach-declaration.pdf)

- RoHS Declaration

REACH SVHC list compliant

REACH Annex XVII compliant

[www.tracopower.com/info/rohs-declaration.pdf](http://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))

- SCIP Reference Number

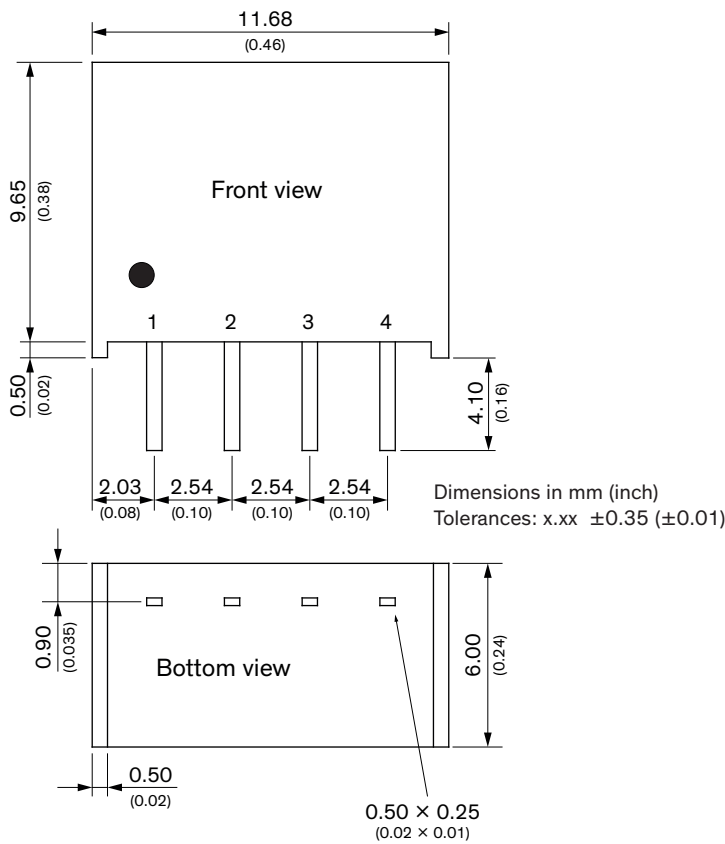
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### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tea1](http://www.tracopower.com/overview/tea1)

### Outline Dimensions



| Pinout |            |
|--------|------------|
| Pin    | Function   |
| 1      | -Vin (GND) |
| 2      | +Vin (Vcc) |
| 3      | -Vout      |
| 4      | +Vout      |