

Features

- SMD Package (SOIC-14/18)
- Construction in Lead Frame Technology
- Isolated Single and Dual Output
- I/O-Isolation 1'000 VDC
- High Efficiency
- Operating Temperature -40°C to +85°C
- Reflow Solder Temperature up to 230°C
- High Accuracy of Pin Co-Planarity
- Available in Tape and Reel Package
- 2 Year Product Warranty



The TSM series are isolated DC/DC converters with 1W output power implemented in a molded plastic package with a pin accuracy suitable for high volume SMD-production. The devices do not require a special reflow process but can be soldered like standard SMD-components. With their small footprint these converters are the economical solution for point of use power conversion, ground loop elimination, noise reduction and digital interface applications.

Models

| Ordercode | Input voltage | Output voltage | Output current max. | Efficiency typ. |
|-----------|---------------|----------------|---------------------|-----------------|
| TSM 0505S | 5 VDC ±10% | 5 VDC | 200 mA | 80 % |
| TSM 0509S | | 9 VDC | 110 mA | 78 % |
| TSM 0512S | | 12 VDC | 80 mA | 80 % |
| TSM 0515S | | 15 VDC | 65 mA | 81 % |
| TSM 0505D | | ± 5 VDC | ±100 mA | 75 % |
| TSM 0512D | | ±12 VDC | ± 40 mA | 79 % |
| TSM 0515D | | ±15 VDC | ± 30 mA | 79 % |
| TSM 1205S | 12 VDC ±10% | 5 VDC | 200 mA | 81 % |
| TSM 1209S | | 9 VDC | 110 mA | 78 % |
| TSM 1212S | | 12 VDC | 80 mA | 81 % |
| TSM 1215S | | 15 VDC | 65 mA | 82 % |
| TSM 1205D | | ± 5 VDC | ±100 mA | 75 % |
| TSM 1212D | | ±12 VDC | ± 40 mA | 80 % |
| TSM 1215D | | ±15 VDC | ± 30 mA | 80 % |

Input Specifications

| | | |
|----------------------------------|-------------------------------|--|
| Input current no load /full load | 5 Vin models 12 Vin models | 30 mA / 260 mA typ. 15 mA / 110 mA typ. |
| Surge voltage (1 sec. max.) | 5 Vin models 12 Vin models | 9 V max. 18 V max. |
| Reverse voltage protection | | 0.3 A max. |
| Reflected input ripple current | | can be reduced by ext. 1–2.2 µF polyester film capacitor |
| Input filter | | internal capacitors |

Output Specifications

| | | |
|--------------------------------------|--|---|
| Voltage set accuracy | | ± 3 % |
| Voltage balance (dual output models) | | ± 1 % max. |
| Regulation | – Input variation – Load variation 20 – 100 % | ± 1.2 % / 1 % change Vin ± 10 % max. |
| Ripple and noise (20 MHz Bandwidth) | | 120 mVpk-pk max. |
| Temperature coefficient | | ± 0.02 % / °C |
| Short circuit protection | | limited 1 sec. max. |
| Capacitive load | – Single output models – Dual output models | 22 µF max. 10 µF max. |

General Specifications

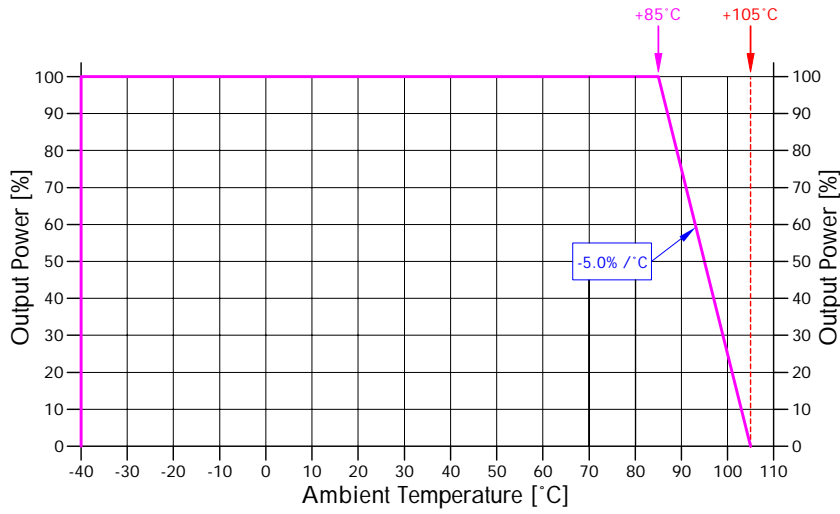
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|---|---|---|
| Temperature ranges | – Operating (see also enclosed derating curve) – Storage | – 40 °C ... +85 °C (no derating) – 55 °C ... +125 °C |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217 E) | | >2'000'000 h @ 25 °C |
| Isolation voltage | Input/Output | 1'000 VDC |
| Isolation capacity | Input/Output | 40 pF typ. |
| Isolation resistance | Input/Output | >1'000 Mohm |
| Switching frequency | | 100 kHz typ. (Frequency modulation) |
| Frequency change over line and load | | ± 30 % |

Physical Specifications

| | | |
|--------------------------|--|---|
| Case material | | Epoxy molding compound (flammability to UL 94-V0) |
| Package weight | – Single output models – Dual output models | 1.2 g (0.04 oz) 1.5 g (0.05 oz) |
| Reflow soldering profile | | Peak temp. 230°C (10 sec max.) 185°C for 90 sec max. Convection reflow solder process is recommended |

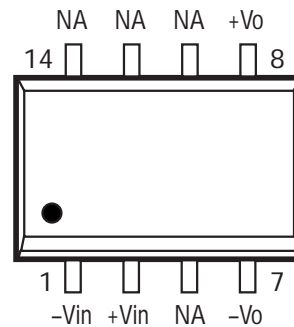
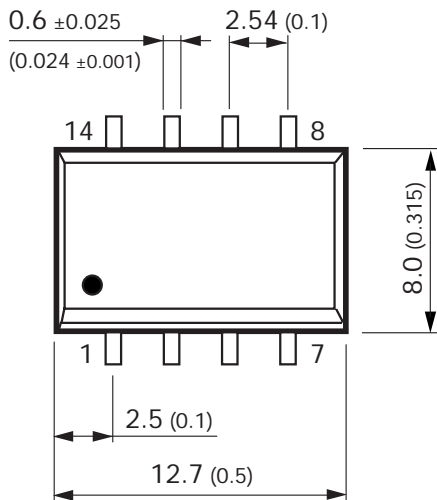
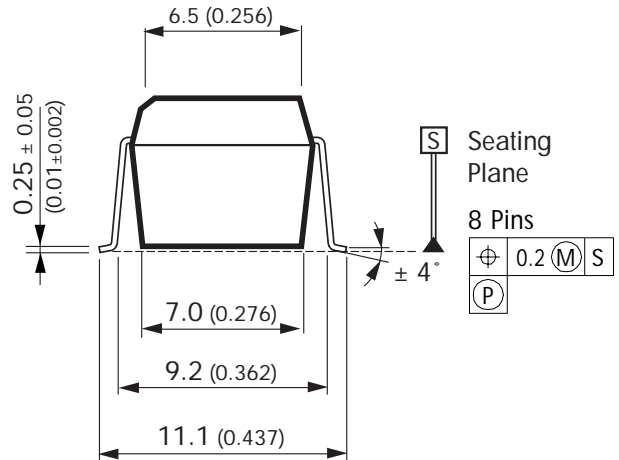
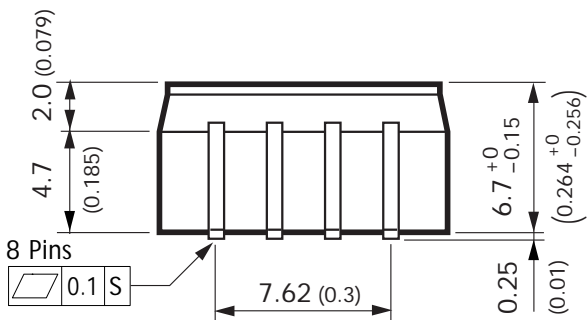
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Derating all TSM Models



Outline Dimensions mm (inches)

TSM Single Output Models



NA = not available for electrical connection

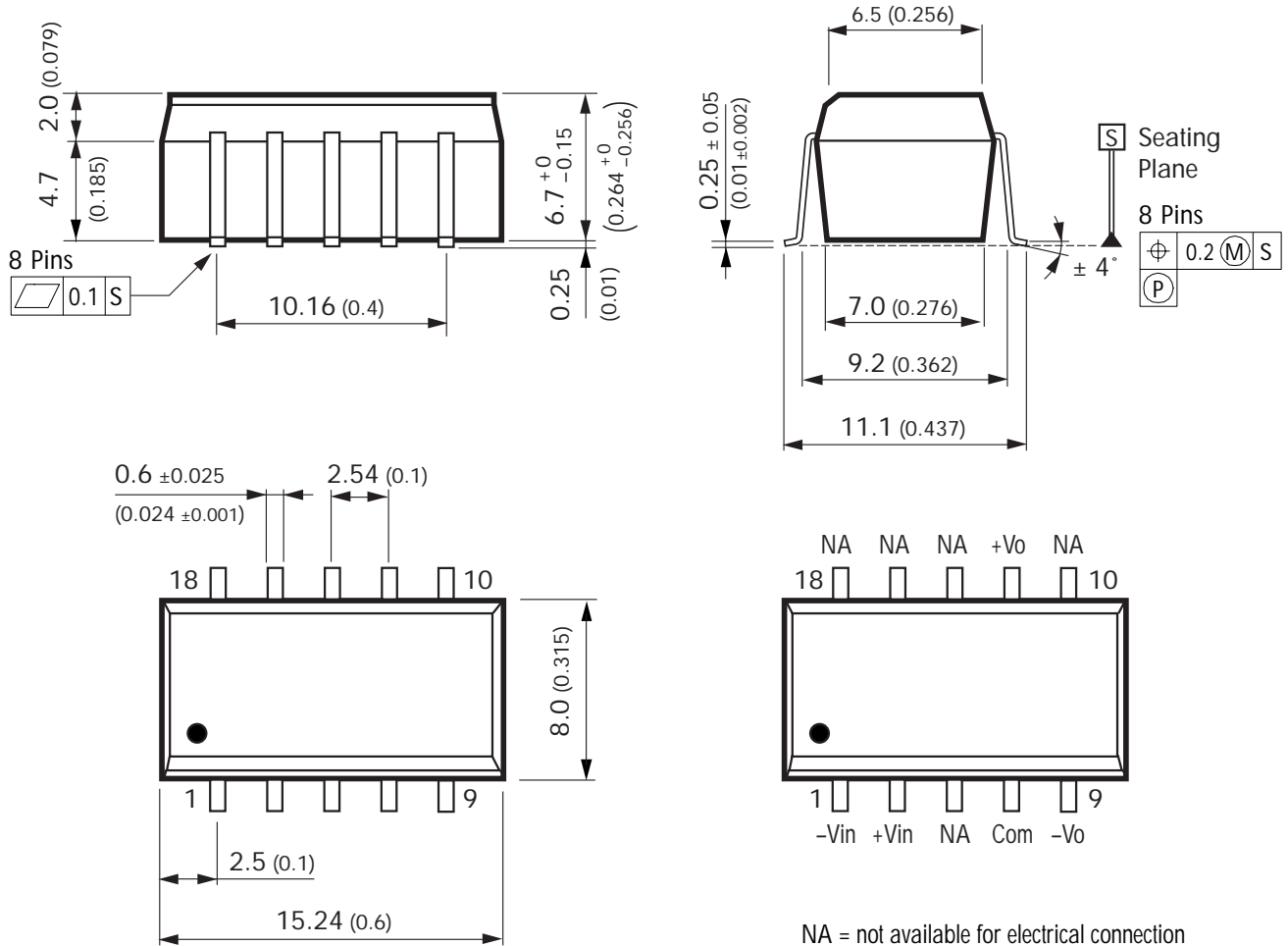
Tolerances: ± 0.25 mm (± 0.01)

Specifications can be changed without notice

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

Outline Dimensions mm (inches)

TSM Dual Output Models



NA = not available for electrical connection

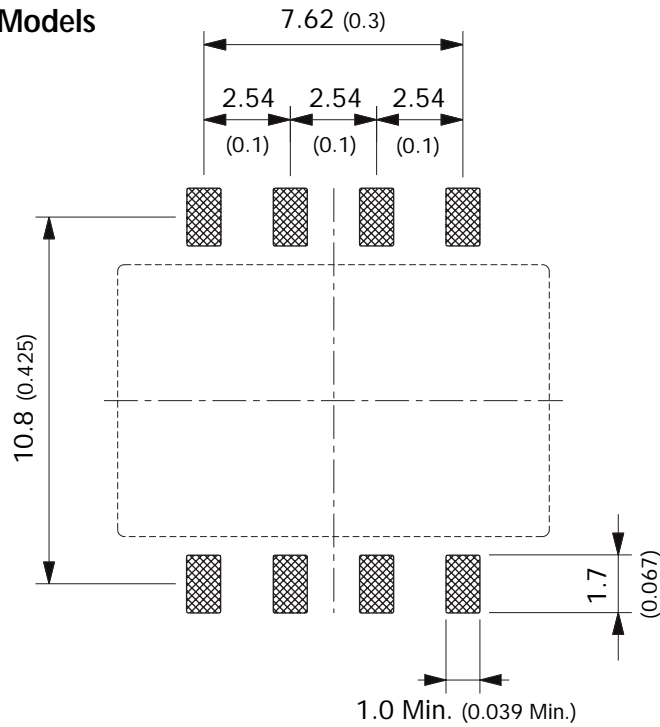
Tolerances: ± 0.25 mm (± 0.01)

Specifications can be changed without notice

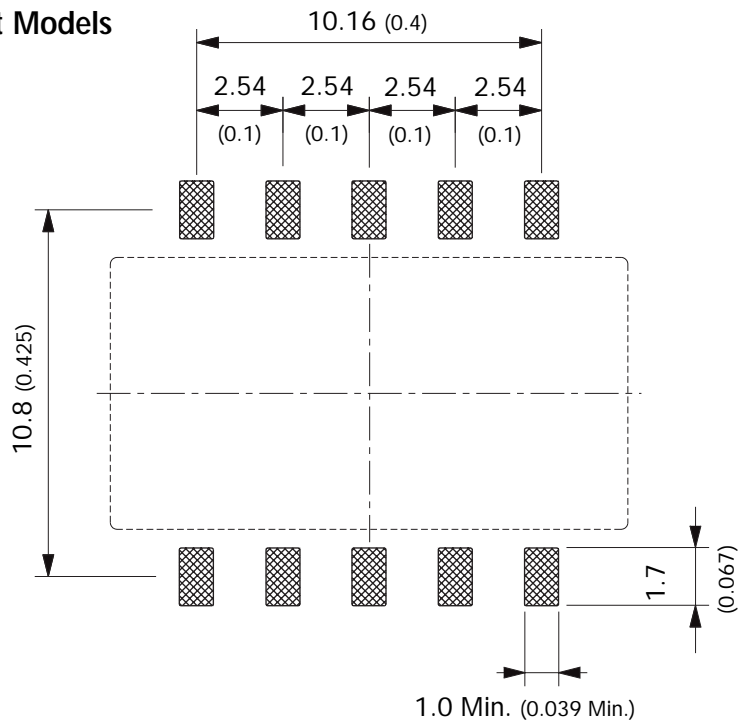
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Solder Pad Dimensions mm (inches)

TSM Single Output Models



TSM Dual Output Models



Specifications can be changed without notice