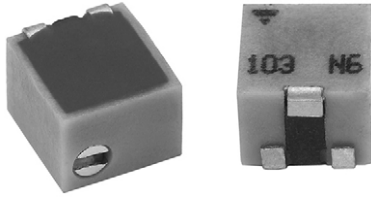


5 mm Square Surface Mount Miniature Trimmers Multi-Turn Cermet Sealed



FEATURES

- 0.25 W at 85 °C
- Professional and industrial grade
- Wide ohmic range (10 Ω to 1 MΩ)
- Low contact resistance variation (1 % or 3 Ω)
- Small size for optimum packaging density
- Top and side adjust styles
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**

LINKS TO ADDITIONAL RESOURCES



The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency 5 mm x 5 mm x 3.7 mm with high performance and stability.

The TSM4 design is suitable for both manual or automatic operation, and can withstand vapor phase and reflow soldering techniques.

| DIMENSIONS in millimeters (± 0.5 mm) | | | |
|--------------------------------------|-------------------------|--------------------------|--------------------------|
| TSM4 YL (TOP ADJUST) | TSM4 YJ (TOP ADJUST) | TSM4 ZL (SIDE ADJUST) | TSM4 ZJ (SIDE ADJUST) |
| | | | |
| RECOMMENDED SOLDERING AREAS | | | |
| | | | |

ELECTRICAL SPECIFICATIONS

| | |
|--|---------------------------------------|
| Resistive element | Cermet |
| Electrical travel | 11 turns \pm 2 |
| Resistance range | 10 Ω to 1 M Ω |
| Standard series | 1 - 2 - 5 |
| Tolerance standard | \pm 10 % |
| Power rating | Linear 0.25 W at 85 °C |
| Circuit diagram | |
| Temperature coefficient | See Standard Resistance Element table |
| Limiting element voltage (linear law) | 300 V |
| Contact resistance variation (typical) | 1 % or 3 Ω |
| End resistance (typical) | 1 Ω |
| Dielectric strength (RMS) | 600 V (1 minute) |
| Insulation resistance (500 V _{DC}) | 100 M Ω |

MECHANICAL SPECIFICATIONS

| | |
|-----------------------------|------------------------------|
| Mechanical travel | 12 turns \pm 2 |
| Operating torque (max. Ncm) | 1.8 |
| End stop torque (Ncm) | Clutch action (2 turns max.) |
| Unit weight (max. g) | 0.28 |
| Wiper (actual travel) | Positioned at approx. 50 % |

ENVIRONMENTAL SPECIFICATIONS

| | |
|-------------------|-----------------------|
| Temperature range | -65 °C to +150 °C |
| Sealing | Sealed container IP67 |
| MSL level | 1 |

SOLDERING RECOMMENDATIONS

Recommended reflow profile 2, see Application Note www.vishay.com/doc?52029



| PERFORMANCES | | |
|------------------------------|--|--|
| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS |
| Load life | 1000 h at rated power 90°/30° - ambient temp. +85 °C | Total resistance shift = ± 3 Ω or ± 3 % whichever is greater |
| Humidity moisture resistance | MIL-STD-202 method 106 10 cycles of 24 hours constituted with damp heat - cold - vibrations | Total resistance shift = ± 2 % Insulation resistance = 10 MΩ |
| Thermal shock | 5 cycles | Total resistance shift = ± 2 % Voltage resistance shift = ± 1 % |
| Rotational cycling | 200 cycles | Total resistance shift = ± 3 Ω or ± 3 % whichever is greater |
| Shock | MIL-STD-202 method 213 test condition C, 100 g - 6 ms, 3 successive shocks in each direction | Total resistance shift = ± 1 % Voltage resistance shift = ± 1 % |
| Vibration | MIL-STD-202 method 204, 20 g - 3 hours (1 hour per axis) | Total resistance shift = ± 1 % Voltage resistance shift = ± 1 % |

Note

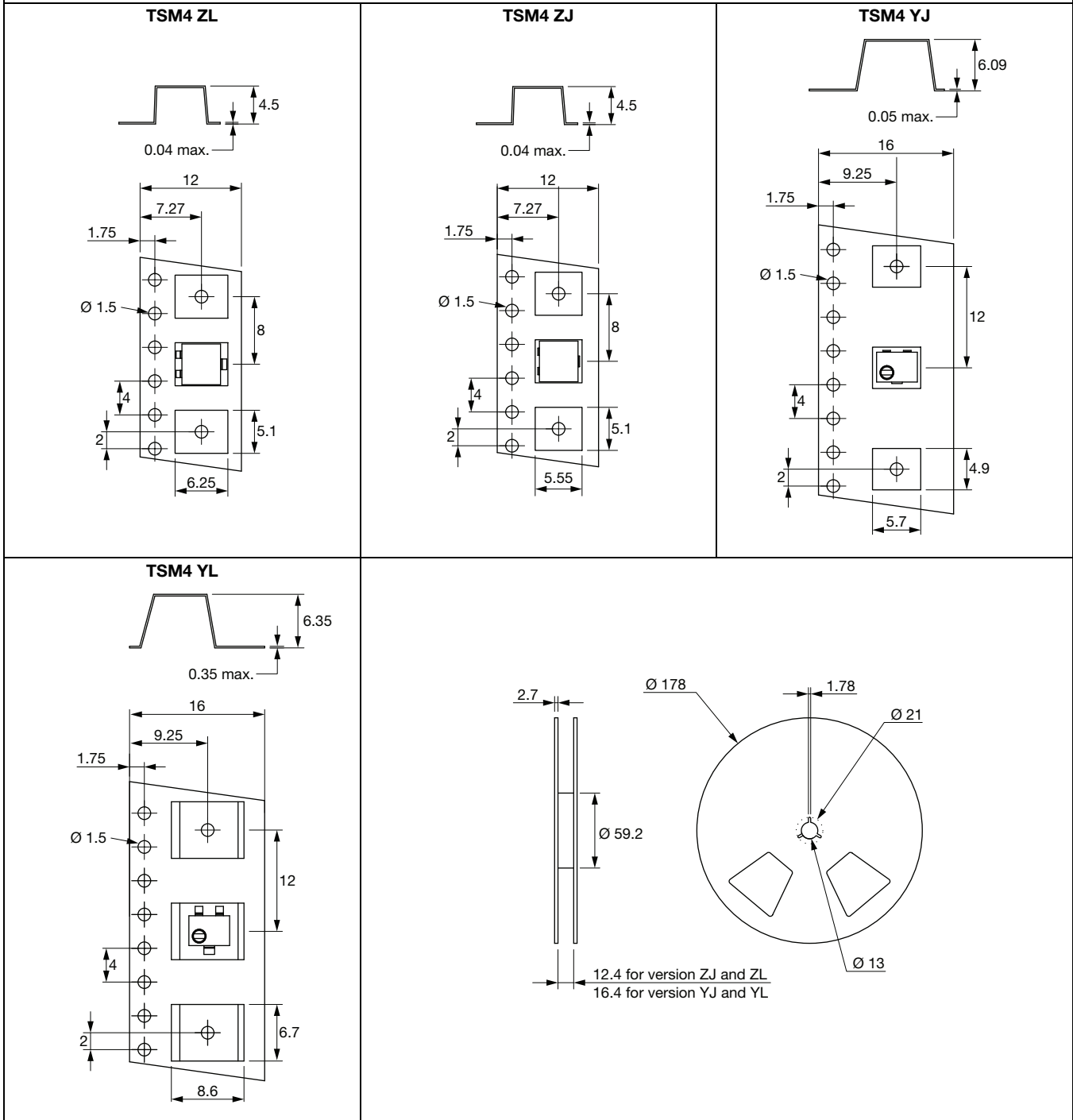
- Nothing stated herein shall be construed as a guarantee of quality or durability

| STANDARD RESISTANCE ELEMENT DATA | | | | |
|----------------------------------|---------------------|----------------------|------------------------------|--|
| STANDARD RESISTANCE VALUES | LINEAR LAW | | | TYPICAL TCR -55 °C +125 °C ppm/°C |
| | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CURRENT THROUGH ELEMENT | |
| Ω | W | V | mA | |
| 10 | 0.25 | 1.58 | 158 | ± 100 |
| 20 | 0.25 | 2.23 | 112 | |
| 50 | 0.25 | 3.53 | 77 | |
| 100 | 0.25 | 5.00 | 50 | |
| 200 | 0.25 | 7.07 | 35 | |
| 500 | 0.25 | 11.2 | 22 | |
| 1K | 0.25 | 15.8 | 15.8 | |
| 2K | 0.25 | 22.3 | 11.2 | |
| 5K | 0.25 | 35.3 | 7.1 | |
| 10K | 0.25 | 50.0 | 5.0 | |
| 20K | 0.25 | 70.7 | 3.5 | |
| 50K | 0.25 | 112 | 2.2 | |
| 100K | 0.25 | 158 | 1.6 | |
| 200K | 0.25 | 223 | 1.12 | |
| 500K | 0.08 | 300 | 0.83 | |
| 1M | 0.04 | 300 | 0.83 | |

| MARKING |
|--|
| <p>Vishay trademark, ohmic value, manufacturing date</p> <p>The ohmic value is indicated by a 3 figure code, the first two are significant figures, the third one is the multiplier.</p> <p>Example: 100 = 10 Ω 101 = 100 Ω 102 = 1000 Ω 503 = 50 000 Ω</p> |

PACKAGING in millimeters

On tape and reel, by 500 pieces for Z version, 250 pieces for YJ version: code TR250, or 200 pieces for YL version.
In bulk on request (plastic box of 50 pieces): code BO50.





| ORDERING INFORMATION (part number) | | | | | | | | | | | | | | |
|------------------------------------|----------------------|-----------------------------------|---|-----------|---|---|---|---|--|---|---|---|--|--|
| T | S | M | 4 | Y | L | 5 | 0 | 4 | K | R | 0 | 5 | | |
| MODEL | STYLE | OHMIC VALUE | | TOLERANCE | | PACKAGING | | | SPECIAL NUMBER | | | | | |
| TSM4 | YJ YL ZJ ZL | From 10 Ω to 1 MΩ 504 = 500 kΩ | | K = 10 % | | R10 = reel 500 pieces for ZJ and ZL R05 = reel 250 pieces for YJ and 200 pieces for YL On request B25 = box of 50 pieces | | | (If applicable) Given by Vishay for custom design | | | | | |

| DESCRIPTION (for information only) | | | | | | |
|------------------------------------|-------|-------|-----------|---------|-----------|----------------|
| TSM4 | YL | 500K | 10 % | | TR | e3 |
| MODEL | STYLE | VALUE | TOLERANCE | SPECIAL | PACKAGING | LEAD (Pb)-FREE |

| RELATED DOCUMENTS | |
|---|--|
| APPLICATION NOTES | |
| Potentiometers and Trimmers | www.vishay.com/doc?51001 |
| Guidelines for Vishay Sfernice Resistive and Inductive Components | www.vishay.com/doc?52029 |



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