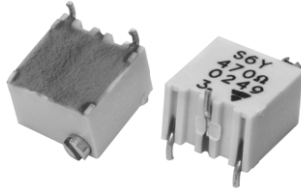


Multi-Turn Surface Mount 1/4" Square Cermet Trimmers, Fully Sealed



Three variations are available according to the positioning of the control screw and contact positions.

The TS6 multi-turn trimmer has been designed for use in PCB surface mounting applications.

The cermet track gives a high stability performance with an extended ohmic capacity of 10 Ω to 2 MΩ.

FEATURES

- 0.25 W at 70 °C
- Military and professional grade
- Multi-turn operation
- A low contact resistance variation (down to 2 % Rn)
- Low end contact resistance (1 Ω typical)
- Full sealing
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

| DIMENSIONS in millimeters (± 0.5 mm) | | |
|---|--|--|
| <p>TS6X</p> <p>Slot 0.5 x 0.5 0.25 5.8 ± 0.10 Ø 1.8 0.7 2.54 2.54 0.20 6.85 max. 6.85 max. 5 max. 1 ± 0.10 6.7 max.</p> | <p>RECOMMENDED SOLDERING AREAS</p> <p>2.54 1 c b a 3 2.54 7.5</p> | |
| <p>TS6Z</p> <p>Slot 0.5 x 0.5 6.85 max. Ø 1.8 1.3 ± 0.1 0.25 6.85 max. 7.6 max. Ø 0.45 2.54 2.54 5 max. 1 ± 0.1 8.85 max. 5.3 max.</p> | <p>3 b 9.3 c a 1 2.54 2.54</p> | |
| <p>TS6Y</p> <p>1.3 ± 0.1 1 ± 0.10 6.85 max. 6.85 max. 0.3 Slot 0.5 x 0.5 2.54 2.54 Ø 1.8 8 max. 5 max. 6.85 max. 6.7 max.</p> | <p>2.54 c b a 1 3 2.54 7.5</p> | |

| ELECTRICAL SPECIFICATIONS | | |
|---------------------------------------|--|------------|
| Resistive element | Cermet | |
| Electrical travel | 14 turns \pm 2 | |
| Resistance range | 10 Ω to 2 M Ω | |
| Standard series E3 | 1 - 2.2 - 4.7 and on request 1 - 2 - 5 | |
| Tolerance | Standard | \pm 10 % |
| | On request | \pm 5 % |
| Power rating | Linear 0.25 W at 70 °C | |
| Circuit diagram | | |
| Temperature coefficient | See Standard Resistance Element table | |
| Limiting element voltage (linear law) | 250 V | |
| Contact resistance variation | 2 % R _n or 2 Ω | |
| End resistance (typical) | 1 Ω | |
| Dielectric strength (RMS) | 1000 V | |
| Insulation resistance | 10 ⁶ M Ω | |

| MECHANICAL SPECIFICATIONS | |
|----------------------------------|----------------------------|
| Mechanical travel | 15 turns \pm 5 |
| Operating torque (max. Ncm) | 1.5 |
| End stop torque | Clutch action |
| Net weight (max. g) | 0.5 |
| Wiper (actual travel) | Positioned at approx. 50 % |

| ENVIRONMENTAL SPECIFICATIONS | |
|-------------------------------------|-------------------|
| Temperature range | -55 °C to +155 °C |
| Climatic category | 55/125/56 |
| Sealing | Fully sealed IP67 |
| MSL level | 1 |

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



| PERFORMANCES | | | | | | | |
|------------------------|---|-------------------------|---------------------------------|--|---------------------------|---------------------------------|---|
| TESTS | CONDITIONS | REQUIREMENTS | | OTHER | TYPICAL VALUES AND DRIFTS | | |
| | | $\Delta R_T/R_T$ (%) | $\Delta R_{1-2}/R_{1-2}$ (%) | | $\Delta R_T/R_T$ (%) | $\Delta R_{1-2}/R_{1-2}$ (%) | OTHER |
| Electrical endurance | 1000 h at rated power 90°/30° - ambient temp. 70 °C | ± 2 % | ± 4 % | Contact res. variation: < 3 % Rn | ± 1 % | ± 2 % | Contact res. variation: < 1 % Rn |
| Climatic sequence | Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles | ± 2 % | ± 3 % | | ± 0.5 % | ± 1 % | |
| Damp heat steady state | 40 °C 93 % RH 56 days | ± 2 % | ± 3 % | Dielectric strength: 250 V _{RMS} Insulation resistance: > 100 MΩ | ± 0.5 % | ± 1 % | Dielectric strength: 1000 V _{RMS} Insulation resistance: > 10 ⁴ MΩ |
| Charge of temperature | -55 °C to +125 °C 5 cycles | ± 1.5 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 % | ± 0.5 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 1 % |
| Mechanical endurance | 200 cycles at rated power | ± 2 % | | Contact res. variation: < 3 % Rn | ± (2 % + 3 Ω) | | Contact res. variation: < 1 % Rn |
| Shock | 50 g at 11 ms 3 successive shocks in 3 directions | ± 1 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 % | ± 0.1 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ 0.2 % |
| Vibration | 10 Hz to 55 Hz 0.75 mm or 10 g for 6 h | ± 1 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 % | ± 0.1 % | | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 0.2 % |

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. WIPER CURRENT | |
| Ω | W | V | mA | |
| 10 | 0.25 | 1.58 | 158 | ± 100 |
| 22 | 0.25 | 2.34 | 107 | |
| 47 | 0.25 | 3.43 | 73 | |
| 100 | 0.25 | 5.00 | 50 | |
| 220 | 0.25 | 7.42 | 34 | |
| 470 | 0.25 | 10.8 | 23 | |
| 1K | 0.25 | 15.8 | 15.8 | |
| 2.2K | 0.25 | 23.4 | 10.7 | |
| 4.7K | 0.25 | 34.3 | 7.3 | |
| 10K | 0.25 | 50 | 5 | |
| 22K | 0.25 | 74.2 | 3.37 | |
| 47K | 0.25 | 108.4 | 2.31 | |
| 100K | 0.25 | 158 | 1.58 | |
| 220K | 0.25 | 234 | 1.97 | |
| 470K | 0.13 | 250 | 0.53 | |
| 1M | 0.06 | 250 | 0.25 | |
| 2M | 0.03 | 250 | 0.125 | |



| |
|--|
| MARKING |
| Printed: Vishay trademark, model, style, ohmic value (in Ω , k Ω , M Ω), tolerance (in %) only if non standard, manufacturing date, marking of terminal 3. |

| |
|--|
| PACKAGING |
| <ul style="list-style-type: none"> In tube of 50 pieces code T20 (TU50) In reel of 500 pieces code R10 (TR500) |

| | | | | | | | | | | | | | | |
|---|-------------|---|--|---|---|-----------------------------------|---|---|---|---|--|--|--|--|
| ORDERING INFORMATION (part number) | | | | | | | | | | | | | | |
| T | S | 6 | Y | 4 | 7 | 4 | K | R | 1 | 0 | | | | |
| MODEL | STYLE | | OHMIC VALUE | | | TOLERANCE | | PACKAGING | | SPECIAL NUMBER | | | | |
| TS6 | X Y Z | | From 10 Ω to 2 M Ω 474 = 470 k Ω | | | K = 10 % On request J = 5 % | | T20 = tube 50 pieces On request R10 = reel 500 pieces | | (If applicable) Given by Vishay for custom design | | | | |

| | | | | | | |
|---|-------|-------|-----------|---------|-----------|-------------|
| DESCRIPTION (for information only) | | | | | | |
| TS6 | Y | 470K | 10 % | | TU | e3 |
| MODEL | STYLE | VALUE | TOLERANCE | SPECIAL | PACKAGING | LEAD FINISH |

| | |
|---|--|
| 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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