

3/8" Square Multi-Turn Cermet Trimmer



DESIGN SUPPORT TOOLS

click logo to get started

FEATURES

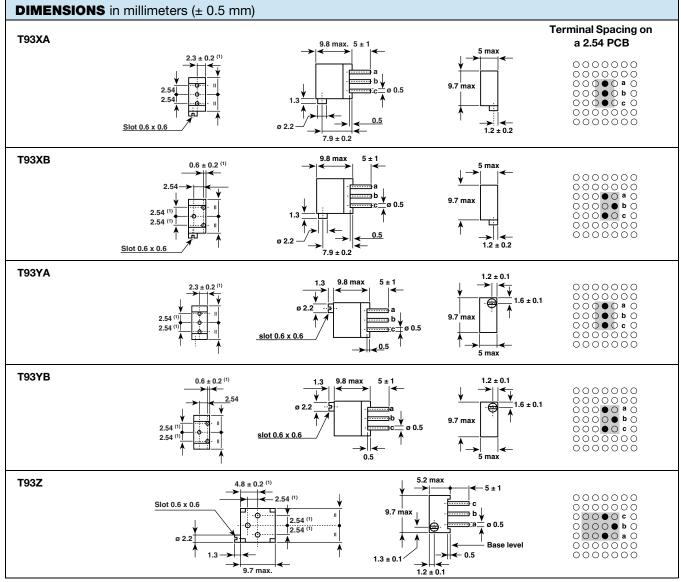
- Industrial grade
- 0.5 W at 70 °C



RoHS COMPLIANT

- Tests according to CECC 41000 or IEC 60393-1
- Contact resistance variation < 2 %
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

The T93 is a small size trimmer - 3/8" x 3/16" - answering PC board mounting requirements. Five versions are available which differ by the position of the control screw in relation to the PC board plane and by the spacing of the terminals. Excellent operational stability is provided by the use of a cermet element.



Note

(1) To be measured at base level

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| Resistive element | Cermet | | |
|--|---|--|--|
| Electrical travel | 21 turns ± 2 | | |
| Resistance range | 10 Ω to 2.2 MΩ | | |
| Standard series E3 | 1 - 2.2 - 4.7 and on request 1 - 2 - 5 | | |
| T-laware Standard | 10 % | | |
| Tolerance On request | 5 % | | |
| linear | 0.5 W at +70 °C | | |
| Power rating | 0.5 I I I I I I I I I I I I I I I I I I I | | |
| Circuit diagram | $ \begin{array}{c} a \\ \bigcirc \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\ $ | | |
| Temperature coefficient | See Standard Resistance Element table | | |
| Limiting element voltage (linear law) | 250 V | | |
| Contact resistance variation | 2 % Rn or 2 Ω | | |
| End resistance (typical) | 1 Ω | | |
| Dielectric strength (RMS) | 1000 V | | |
| Insulation resistance (500 V _{DC}) | $10^6\mathrm{M}\Omega$ | | |

| MECHANICAL SPECIFICATIONS | | |
|-----------------------------|----------------------------|--|
| Mechanical travel | 23 turns ± 5 | |
| Operating torque (max. Ncm) | 1.5 | |
| End stop torque | Clutch action | |
| Net weight | Approx. 0.82 g | |
| Wiper (actual travel) | Positioned at approx. 50 % | |
| Terminals | Pure Sn (code e3) | |

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



| STANDARD | | LINEAR LAW | | |
|----------------------|------------------------|-------------------------|-------------------------------|--------------------------|
| RESISTANCE VALUES | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CURRENT THROUGH WIPER | TCR -55 °C +125 °C |
| Ω | W | V | mA | ppm/°C |
| 10 | 0.5 | 2.2 | 224 | |
| 22 | 0.5 | 3.3 | 150 | |
| 47 | 0.5 | 4.8 | 103 | |
| 100 | 0.5 | 7 | 70 | |
| 220 | 0.5 | 10.5 | 47 | |
| 470 | 0.5 | 15.3 | 32 | |
| 1K | 0.5 | 22.4 | 22 | |
| 2.2K | 0.5 | 33.2 | 15 | |
| 4.7K | 0.5 | 48.5 | 10 | ± 100 |
| 10K | 0.5 | 70.7 | 7 | |
| 22K | 0.5 | 105 | 4.8 | |
| 47K | 0.5 | 153 | 3.2 | |
| 100K | 0.5 | 224 | 2.2 | |
| 220K | 0.28 | 250 | 1.1 | |
| 470K | 0.13 | 250 | 0.53 | |
| 1M | 0.06 | 250 | 0.25 | |
| 2.2M | 0.028 | 250 | 0.11 | |

| PERFORMANCES | | | | |
|--------------------------|---|---|---|--|
| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS | | |
| | CONDITIONS | ∆R _T /R _T (%) | $\Delta R_{1-2}/R_{1-2}$ (%) | |
| Load life | 1000 h at rated power 90'/30' - ambient temp. 70 °C | ± 1 % Contact res. variation: < 1 % Rn | ± 2 % | |
| Climatic sequence | Phase A dry heat 125 °C - 30 % Pr Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles | ± 0.5 % | ± 1 % | |
| Long term damp heat | 56 days 40 °C, 93 % RH | $\pm~0.5~\%$ Dielectric strength: 1000 V_{RMS} Insulation resistance: $>10^4~M\Omega$ | ± 1 % | |
| Rapid temperature change | 5 cycles -55 °C to +125 °C | ± 0.5 % | $\Delta V_{1-2}/V_{1-3} \le \pm 1 \%$ | |
| Shock | 50 g at 11 ms 3 successive shocks in 3 directions | ± 0.1 % | ± 0.2 % | |
| Vibration | 10 Hz to 55 Hz 0.75 mm or 10 g during 6 h | ± 0.1 % | $\Delta V_{1-2}/V_{1-3} \le \pm \ 0.2 \%$ | |
| Rotational life | 200 cycles | ± 4 % Contact res. variation: < 1 % Rn | - | |

Note

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

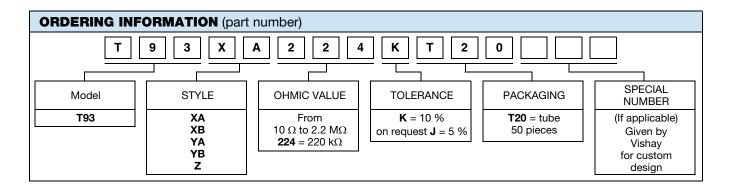
MARKING

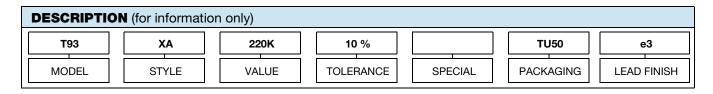
- Vishay trademark
- Model
- Style
- Ohmic value (in Ω , $k\Omega$, $M\Omega$)
- Tolerance (in %)
- Manufacturing date
- Marking of terminal 3

Vishay Sfernice

PACKAGING

• In tube of 50 pieces code T20 (TU50)





| 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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