

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



The TS63 multiturn trimmer has been designed for use in PCB surface mounting applications.

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

The cermet track gives a high stability performance with an extended ohmic capacity of 10  $\Omega$  to 2 M $\Omega$ .

### FEATURES

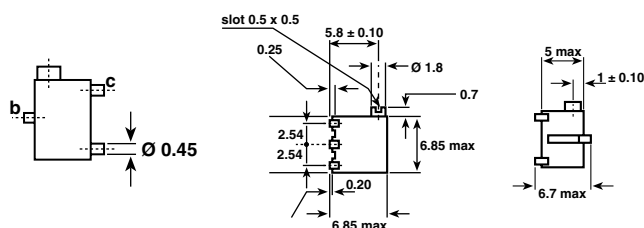
- 0.25 W at 85 °C
- Industrial grade
- Multi-turn operation
- A low contact resistance variation (down to 2 % R<sub>n</sub>)
- Low end contact resistance (1  $\Omega$  typical)
- Full sealing
- Tests according to CECC 41 000



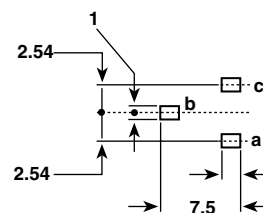
RoHS  
COMPLIANT

### DIMENSIONS in millimeters

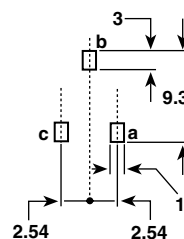
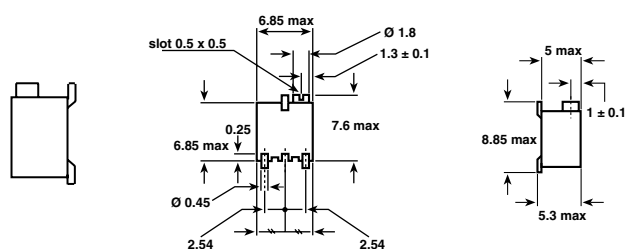
#### TS63X



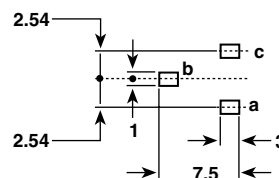
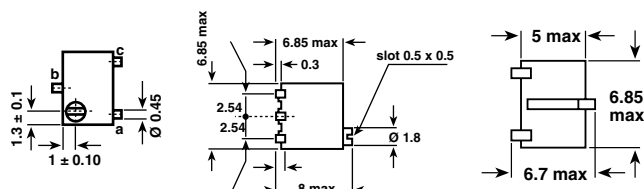
#### RECOMMENDED SOLDERING AREAS



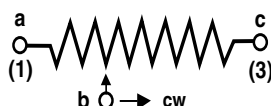
#### TS63Z



#### TS63Y



### CIRCUIT DIAGRAM



Tolerance unless otherwise specified ± 0.5



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

Vishay Sfernice

**ELECTRICAL SPECIFICATIONS**

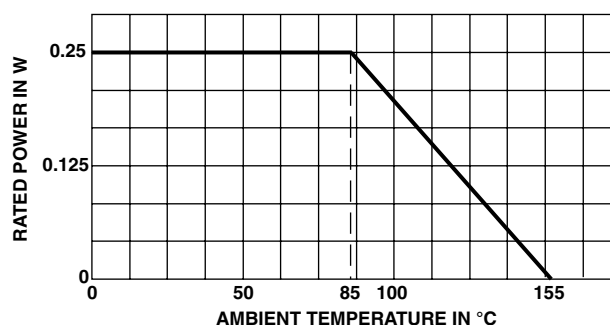
|                                       |                                      |                 |
|---------------------------------------|--------------------------------------|-----------------|
| Resistive Element                     | Cermet                               |                 |
| Electrical Travel                     | 13 turns $\pm$ 2                     |                 |
| Resistance Range                      | 10 $\Omega$ to 2 M $\Omega$          |                 |
| Standard Series                       | 1 - 2 - 5                            |                 |
| Tolerance                             | Standard                             | $\pm$ 10 %      |
|                                       | On request                           | $\pm$ 5 %       |
| Power Rating                          | Linear                               | 0.25 W at 85 °C |
|                                       | Logarithmic                          | not applicable  |
| Temperature Coefficient               | See Standard Resistance Element Data |                 |
| Limiting Element Voltage (Linear Law) | 250 V                                |                 |
| Contact Resistance Variation          | 2 % Rn or 2 $\Omega$                 |                 |
| End Resistance (Typical)              | 1 $\Omega$                           |                 |
| Dielectric Strength (RMS)             | 1000 V                               |                 |
| Insulation Resistance                 | 10 <sup>6</sup> M $\Omega$           |                 |

**MECHANICAL SPECIFICATIONS**

|                             |                            |
|-----------------------------|----------------------------|
| Mechanical Travel           | 15 turns $\pm$ 5           |
| Operating Torque (max. Ncm) | 1.5                        |
| End Stop Torque             | clutch action              |
| Unit 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           | sealed container<br>solder immersion IP67 |

**POWER RATING CHART****PERFORMANCE**

| CECC 41100                                  |                                                                                                    |                                                                                        |                                            | TYPICAL VALUES AND DRIFTS                                                                             |                                                |
|---------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------|
| TESTS                                       | CONDITIONS                                                                                         | $\frac{\Delta RT}{RT}$ (%) REQUIREMENTS                                                | $\frac{\Delta R_{1-2}}{R_{1-2}}$ (%)       | $\frac{\Delta RT}{RT}$ (%)                                                                            | $\frac{\Delta R_{1-2}}{R_{1-2}}$ (%)           |
| Climatic Sequence                           | Phase A dry heat 125 °C<br>Phase B damp heat<br>Phase C cold - 55 °C<br>Phase D damp heat 5 cycles | $\pm$ 2 %                                                                              | $\pm$ 3 %                                  | $\pm$ 0.5 %                                                                                           | $\pm$ 1 %                                      |
| Long Term Damp Heat                         | 56 days<br>40 °C 93 % RH                                                                           | $\pm$ 2 %<br>Dielectric strength: 250 V RMS<br>Insulation resistance: > 100 M $\Omega$ | $\pm$ 3 %                                  | $\pm$ 0.5 %<br>Dielectric strength: 1000 V RMS<br>Insulation resistance: > 10 <sup>4</sup> M $\Omega$ | $\pm$ 1 %                                      |
| Rotational Life<br>(Electrical, Mechanical) | 200 cycles at rated power                                                                          | $\pm$ 2 %<br>Contact res. variat.: < 3 % Rn                                            |                                            | $\pm$ (2 % + 3 $\Omega$ )<br>Contact res. variat.: < 1 % Rn                                           |                                                |
| Load Life                                   | 1000 h at rated power<br>90°/30° - ambient temp. 85 °C                                             | $\pm$ 2 %<br>Contact res. variat.: < 3 % Rn                                            | $\pm$ 4 %                                  | $\pm$ 1 %<br>Contact res. variat.: < 1 % Rn                                                           | $\pm$ 2 %                                      |
| Thermal Shock                               | 5 cycles<br>- 55 °C to + 125 °C                                                                    | $\pm$ 1.5 %                                                                            | $\frac{\Delta V_{1-2}}{V_{1-3}}$ $\pm$ 1 % | $\pm$ 0.5 %                                                                                           | $\frac{\Delta V_{1-2}}{V_{1-3}}$ < $\pm$ 1 %   |
| Shock                                       | 50 g at 11 ms<br>3 successive shocks<br>in 3 directions                                            | $\pm$ 1 %                                                                              | $\pm$ 2 %                                  | $\pm$ 0.1 %                                                                                           | $\pm$ 0.2 %                                    |
| Vibration                                   | 10 - 55 Hz<br>0.75 mm or 10 g<br>for 6 hours                                                       | $\pm$ 1 %                                                                              | $\frac{\Delta V_{1-2}}{V_{1-3}}$ $\pm$ 2 % | $\pm$ 0.1 %                                                                                           | $\frac{\Delta V_{1-2}}{V_{1-3}}$ < $\pm$ 0.2 % |

**STANDARD RESISTANCE ELEMENT DATA**

| STANDARD<br>RESISTANCE<br>VALUES | LINEAR LAW                |                            |                               | TYPICAL<br>TCR<br>- 55 °C<br>+ 125 °C |
|----------------------------------|---------------------------|----------------------------|-------------------------------|---------------------------------------|
|                                  | MAX.<br>POWER<br>AT 85 °C | MAX.<br>WORKING<br>VOLTAGE | MAX. CUR.<br>THROUGH<br>WIPER |                                       |
| Ω                                | W                         | V                          | mA                            | ppm/°C                                |
| 10                               | 0.25<br>↓                 | 1.58                       | 158                           | ± 100                                 |
| 20                               |                           | 2.23                       | 112                           |                                       |
| 50                               |                           | 3.53                       | 77                            |                                       |
| 100                              |                           | 5.00                       | 50                            |                                       |
| 200                              |                           | 7.07                       | 35                            |                                       |
| 500                              |                           | 11.2                       | 22                            |                                       |
| 1K                               |                           | 15.8                       | 15.8                          |                                       |
| 2K                               |                           | 22.3                       | 11.2                          |                                       |
| 5K                               |                           | 35.3                       | 7.1                           |                                       |
| 10K                              |                           | 50.0                       | 5.0                           |                                       |
| 20K                              | 0.25<br>↓                 | 70.7                       | 3.5                           | ± 100                                 |
| 25K                              |                           | 79.0                       | 3.2                           |                                       |
| 50K                              |                           | 112                        | 2.2                           |                                       |
| 100K                             |                           | 158                        | 1.6                           |                                       |
| 200K                             |                           | 224                        | 1.1                           |                                       |
| 250K                             |                           | 250                        | 1.1                           |                                       |
| 500K                             |                           | 250                        | 0.50                          |                                       |
| 1M                               |                           | 250                        | 0.25                          |                                       |
| 2M                               |                           | 250                        | 0.125                         |                                       |

**MARKING**

Printed: VISHAY trademark, model, style, ohmic value (in Ω, kΩ, MΩ), tolerance (in %) only if non standard, manufacturing date, marking of terminal 3.

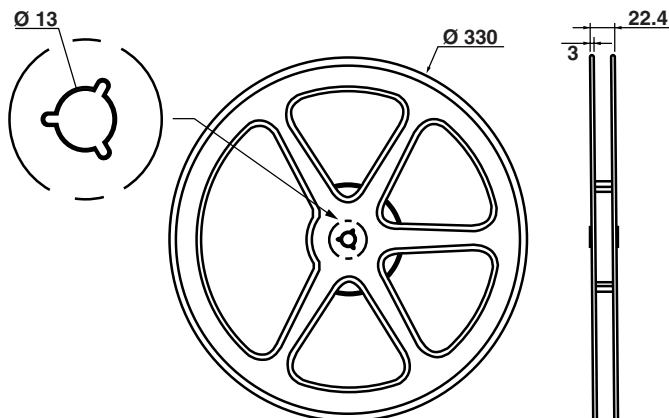
**SOLDERING RECOMMENDATION**

Soldering cycle: 10 s at 220 °C max or with an 40 W iron:  
3 s at 350 °C

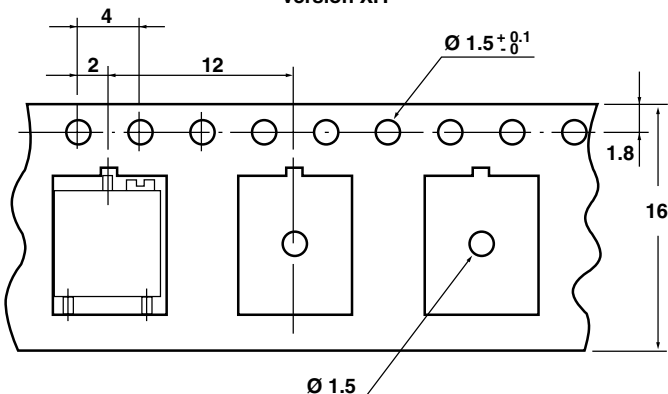
Soldering is recommended by reflow or vapour phase.

**PACKAGING**

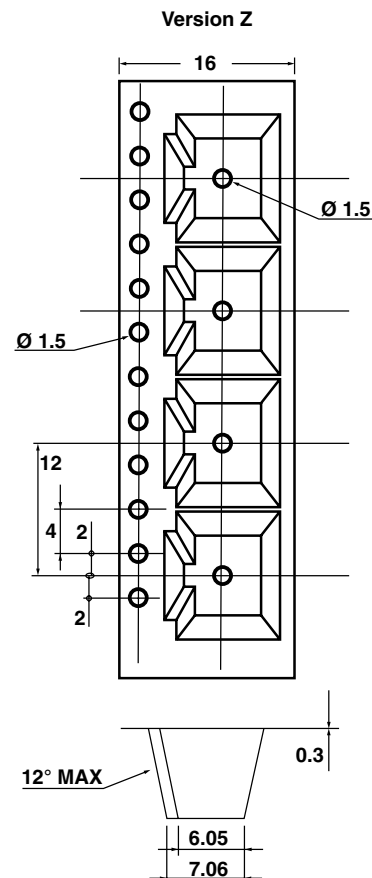
- X, Y and Z types: on tape and reel (Dia. 330 mm) of 500 pieces, code TR500.
- On request in magazine pack by 50 pieces (Tube) code TU.



Version X.Y



Version X.Y





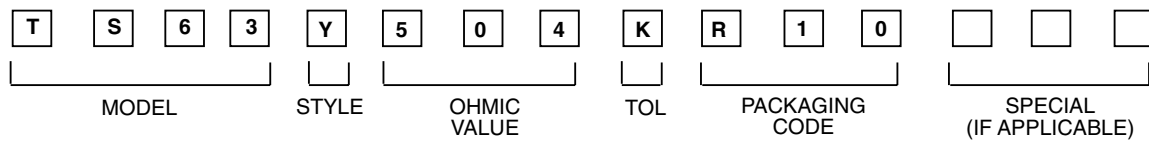
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Miniature 1/4" Square Cermet Trimmers, Fully Sealed

Vishay Sfernice

**ORDERING INFORMATION**

| TS63<br>MODEL | Y<br>STYLE | 500 k $\Omega$<br>OHMIC VALUE | $\pm 10\%$<br>TOLERANCE | TR500<br>PACKAGING                             | e3<br>LEAD FINISH |
|---------------|------------|-------------------------------|-------------------------|------------------------------------------------|-------------------|
|               |            |                               |                         | TR500: Tape and reel<br>On request: TU50: Tube | e3: pure Sn       |

**SAP PART NUMBERING GUIDELINES**



See the end of this data book for conversion tables



### Disclaimer

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