

## 3/8" Square Multi-Turn Cermet Trimmer



### DESIGN SUPPORT TOOLS

**3D**  
Models Available

[click logo to get started](#)

### FEATURES

- Industrial grade
- 0.5 W at 70 °C
- Tests according to CECC 41000 or IEC 60393-1
- Contact resistance variation < 2 %
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT

The T93 is a small size trimmer - 3/8" x 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.

### DIMENSIONS in millimeters ( $\pm 0.5$ mm)

		Terminal Spacing on a 2.54 PCB	
T93XA			
T93XB			
T93YA			
T93YB			
T93Z			

### Note

(<sup>1</sup>) To be measured at base level

<b>ELECTRICAL SPECIFICATIONS</b>	
Resistive element	Cermet
Electrical travel	21 turns $\pm$ 2
Resistance range	10 $\Omega$ to 2.2 M $\Omega$
Standard series E3	1 - 2.2 - 4.7 and on request 1 - 2 - 5
Tolerance	Standard 10 % On request 5 %
Power rating	linear  0.5 W at +70 °C
Circuit diagram	
Temperature coefficient	See Standard Resistance Element table
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 (500 V <sub>DC</sub> )	10 <sup>6</sup> M $\Omega$

<b>MECHANICAL SPECIFICATIONS</b>	
Mechanical travel	23 turns $\pm$ 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)

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

<b>STANDARD RESISTANCE ELEMENT DATA</b>				
<b>STANDARD RESISTANCE VALUES</b>	<b>LINEAR LAW</b>			<b>TYPICAL TCR -55 °C +125 °C</b>
	<b>MAX. POWER AT 70 °C</b>	<b>MAX. WORKING VOLTAGE</b>	<b>MAX. CURRENT THROUGH WIPER</b>	
<b>Ω</b>	<b>W</b>	<b>V</b>	<b>mA</b>	<b>ppm/°C</b>
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	

<b>PERFORMANCES</b>			
<b>TESTS</b>	<b>CONDITIONS</b>	<b>TYPICAL VALUES AND DRIFTS</b>	
		<b>ΔR<sub>T</sub>/R<sub>T</sub> (%)</b>	<b>ΔR<sub>1-2</sub>/R<sub>1-2</sub> (%)</b>
<b>Load life</b>	1000 h at rated power 90'/30' - ambient temp. 70 °C	± 1 % Contact res. variation: < 1 % Rn	± 2 %
<b>Climatic sequence</b>	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 %
<b>Long term damp heat</b>	56 days 40 °C, 93 % RH	± 0.5 % Dielectric strength: 1000 V <sub>RMS</sub> Insulation resistance: > 10 <sup>4</sup> MΩ	± 1 %
<b>Rapid temperature change</b>	5 cycles -55 °C to +125 °C	± 0.5 %	ΔV <sub>1-2</sub> /V <sub>1-3</sub> ≤ ± 1 %
<b>Shock</b>	50 g at 11 ms 3 successive shocks in 3 directions	± 0.1 %	± 0.2 %
<b>Vibration</b>	10 Hz to 55 Hz 0.75 mm or 10 g during 6 h	± 0.1 %	ΔV <sub>1-2</sub> /V <sub>1-3</sub> ≤ ± 0.2 %
<b>Rotational life</b>	200 cycles	± 4 % Contact res. variation: < 1 % Rn	-

**Note**

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

<b>MARKING</b>	
<ul style="list-style-type: none"> <li>Vishay trademark</li> <li>Model</li> <li>Style</li> <li>Ohmic value (in Ω, kΩ, MΩ)</li> <li>Tolerance (in %)</li> <li>Manufacturing date</li> <li>Marking of terminal 3</li> </ul>	

**PACKAGING**

- In tube of 50 pieces code T20 (TU50)

**ORDERING INFORMATION** (part number)

<b>T</b>	<b>9</b>	<b>3</b>	<b>X</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>K</b>	<b>T</b>	<b>2</b>	<b>0</b>	<b> </b>	<b> </b>
Model	STYLE	OHMIC VALUE	TOLERANCE	PACKAGING	SPECIAL NUMBER								
T93	XA XB YA YB Z	From 10 Ω to 2.2 MΩ <b>224</b> = 220 kΩ	<b>K</b> = 10 % on request <b>J</b> = 5 %	T20 = tube 50 pieces	(If applicable) Given by Vishay for custom design								

**DESCRIPTION** (for information only)

T93	XA	220K	10 %		TU50	e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	LEAD FINISH

**RELATED DOCUMENTS**
**APPLICATION NOTES**

Potentiometers and Trimmers	<a href="http://www.vishay.com/doc?51001">www.vishay.com/doc?51001</a>
Guidelines for Vishay Sfernice Resistive and Inductive Components	<a href="http://www.vishay.com/doc?52029">www.vishay.com/doc?52029</a>



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