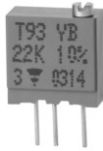


## 3/8" Square Multi-Turn Cermet Trimmers



### FEATURES

- Industrial Grade
- 0.5 W at 70 °C
- Tests according to CECC 41 000
- Contact resistance variation < 1 %
- Lead (Pb)-free and RoHS compliant

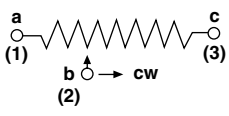
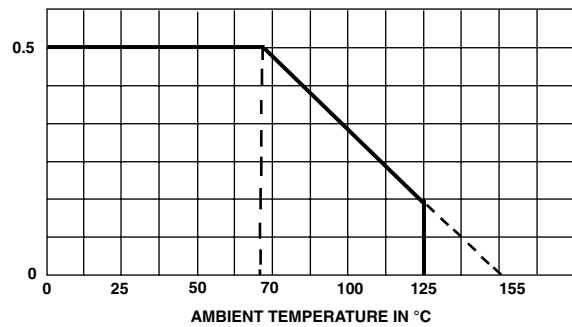

**RoHS**  
COMPLIANT

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.

<b>DIMENSIONS</b> in millimeters ( $\pm 0.5$ mm)			
<b>T93XA</b> 		<b>Terminal Spacing on a 2.54 PCB</b>	
<b>T93XB</b> 		<b>Terminal Spacing on a 2.54 PCB</b>	
<b>T93YA</b> 		<b>Terminal Spacing on a 2.54 PCB</b>	
<b>T93YB</b> 		<b>Terminal Spacing on a 2.54 PCB</b>	
<b>T93Z</b> 		<b>Terminal Spacing on a 2.54 PCB</b>	

**Note**

\* 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
	logarithmic	not applicable
Power Rating	<p><b>CIRCUIT DIAGRAM</b></p>  	
Temperature Coefficient	see Standard Resistance Element Table	
Limiting Element Voltage (Linear Law)	250 V	
Contact Resistance Variation	2 % R <sub>n</sub> or 2 $\Omega$	
End Resistance (Typical)	1 $\Omega$	
Dielectric Strength (RMS)	1000 V	
Insulation Resistance (500 VDC)	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 %

<b>ENVIRONMENTAL SPECIFICATIONS</b>	
Temperature Range	- 55 °C to + 155 °C
Climatic Category	55/125/56
Sealing	Fully sealed - Container IP67



STANDARD RESISTANCE ELEMENT DATA					
STANDARD RESISTANCE VALUES	LINEAR LAW			TYPICAL TCR - 55 °C + 125 °C	
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER		
Ω	W	V	mA	ppm/°C	
10	0.5 ↓	2.2	224	± 100	
22		3.3	150		
47		4.8	103		
100		7	70		
220		10.5	47		
470		15.3	32		
1K		22.4	22		
2.2K		33.2	15		
4.7K		48.5	10		
10K		70.7	7		
22K		105	4.8		
47K		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		

MARKING
<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
<ul style="list-style-type: none"> <li>• In magazine pack by 50 pieces (tube) code TU50</li> </ul>

PERFORMANCES			
TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS	
		$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)
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	± 0.5 % Dielectric strength: 1000 V <sub>RMS</sub> Insulation resistance: > 10 <sup>4</sup> MΩ	± 1 %
Rapid Temperature Change	5 cycles - 55 °C at + 125 °C	± 0.5 %	$\Delta V_{1-2}/\Delta V_{1-3} \leq \pm 1 \%$
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 0.1 %	± 0.2 %
Vibration	10 to 55 Hz 0.75 mm or 10 g during 6 h	± 0.1 %	$\Delta V_{1-2}/\Delta V_{1-3} \leq \pm 0.2 \%$
Rotational Life	200 cycles	± 4 % Contact res. variation: < 1 % Rn	-



SAP ORDERING INFORMATION (Part Number 15 digits)														
T	9	3	X	A	2	2	4	K	T	2	0			
MODEL	STYLE			OHMIC VALUE			TOLERANCE		PACKAGING		SPECIAL NUMBER			
	XA XB YA YB Z			From 10 Ω to 2.2 MΩ 224 = 220 kΩ			K = 10 % on request J = 5 %		T20 = Tube 50 pieces		(if applicable) Given by VISHAY for custom design			

PART NUMBER DESCRIPTION (for information only)						
T93	XA	220K	10 %		TU50	e3
MODEL	VERSION	VALUE	TOLERANCE	SPECIAL	PACKAGING	LEAD (Pb)-FREE



## Disclaimer

All product specifications and data are subject to change without notice.

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