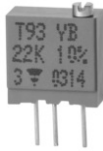


3/8" Square Multi-Turn Cermet Trimmers



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

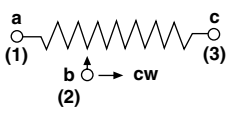
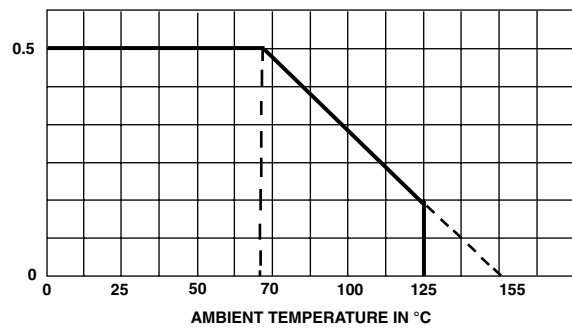
The T93 is a small size trimmer - 3/8" x 3/8" x 3/16" - answering PC board mounting requirements. Five versions are available which differ by the position of the control screw in relation to the PC board plane and by the spacing of the terminals. Excellent operational stability is provided by the use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

DIMENSIONS in millimeters (± 0.5 mm)			
T93XA			Terminal Spacing on a 2.54 PCB
T93XB			
T93YA			
T93YB			
T93Z			

Note

* to be measured at base level

ELECTRICAL SPECIFICATIONS

Resistive Element	CERMET
Electrical Travel	21 turns $\pm$ 2
Resistance Range	10 Ω to 2.2 M Ω
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
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 (500 VDC)	10 ⁶ M Ω

MECHANICAL SPECIFICATIONS

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 %

ENVIRONMENTAL SPECIFICATIONS

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 ppm/°C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	
Ω	W	V	mA	
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		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

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

PACKAGING

- In magazine pack by 50 pieces (tube) code TU50

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 % R _n	± 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 _{RMS} Insulation resistance: > 10 ⁴ M Ω	± 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 % R _n	-

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 M Ω 224 = 220 k Ω			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



Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.