

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



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.

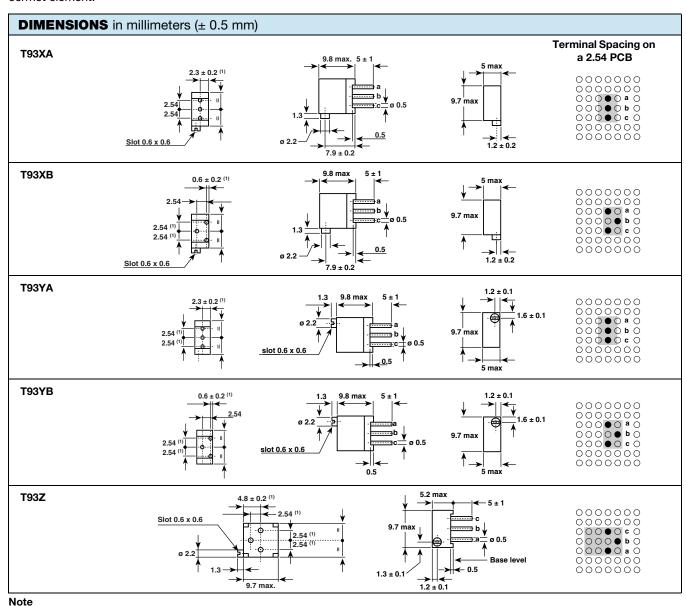
#### **FEATURES**

- 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>



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# Vishay Sfernice

### (1) To be measured at base level

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			
Standard	10 %			
Tolerance On request	5 %			
linear	0.5 W at +70 °C			
Power rating	0.5 N N N N N N N N N N N N N N N N N N N			
Circuit diagram	$ \begin{array}{c} a \\ \bigcirc \longrightarrow \bigvee \bigvee \bigvee \bigvee \bigcirc \bigcirc \bigcirc \\ (1) \\ b \\ \longrightarrow cw $ (2)			
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 Ω			
Dielectric strength (RMS)	1000 V			
Insulation resistance (500 V <sub>DC</sub> )	10 $^6$ 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 +155 °C	
Climatic category	55/125/56	
Sealing	Fully sealed - IP67	



STANDARD RESISTANCE VALUES		LINEAR LAW			
	MAX. POWER MAX. WORKING AT 70 °C VOLTAGE		MAX. CURRENT THROUGH WIPER	TCR -55 °C +125 °C	
Ω	W	٧	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		
12313	CONDITIONS	$\Delta R_{T}/R_{T}$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	
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	$\pm~0.5~\%$ Dielectric strength: 1000 $V_{RMS}$ Insulation resistance: $>10^4~M\Omega$	± 1 %	
Rapid temperature change	semperature change 5 cycles -55 °C to +125 °C		$\Delta V_{1-2}/V_{1-3} \le \pm 1 \%$	
Shock	50 g at 11 ms 3 successive shocks in 3 directions		± 0.2 %	
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g during 6 h		$\Delta V_{1-2}/V_{1-3} \le \pm \ 0.2 \%$	
Rotational life	200 cycles	± 4 % Contact res. variation: < 1 % Rn	-	

#### Note

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

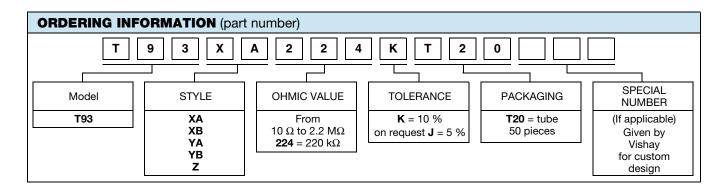
### **MARKING**

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

# Vishay Sfernice

### **PACKAGING**

• In tube of 50 pieces code T20 (TU50)



DESCRIPTIO	N (for information	n only)				
Т93	XA	220K	10 %		TU50	e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	LEAD FINISH

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			

## **Legal Disclaimer Notice**



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