

3/8" Square Multi-Turn Cermet Trimmer



DESIGN SUPPORT TOOLS

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FEATURES

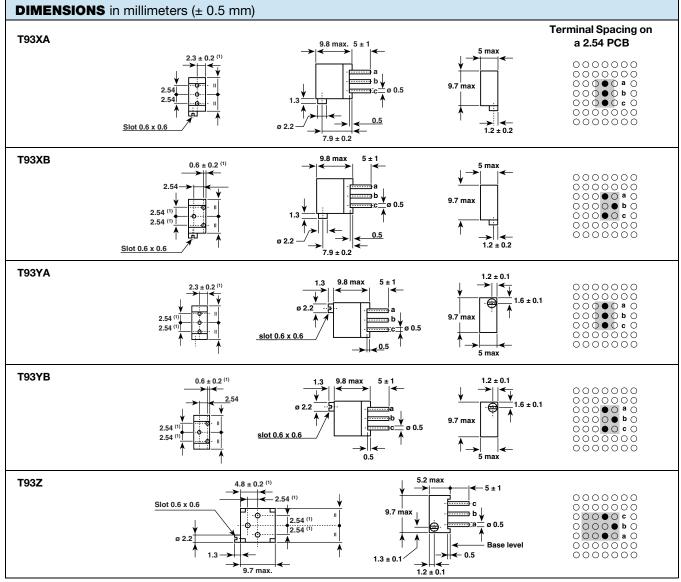
- Industrial grade
- 0.5 W at 70 °C



RoHS COMPLIANT

- Tests according to CECC 41000 or IEC 60393-1
- Contact resistance variation < 2 %
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

The T93 is a small size trimmer - 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.



Note

(1) To be measured at base level

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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		
T-laware Standard	10 %		
Tolerance On request	5 %		
linear	0.5 W at +70 °C		
Power rating	0.5 I I I I I I I I I I I I I I I I I I I		
Circuit diagram	$ \begin{array}{c} a \\ \bigcirc \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) \end{array} $ $ \begin{array}{c} c \\ \bigcirc \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) \end{array} $ $ \begin{array}{c} c \\) $ $ \begin{array}{c} c \\ $		
Temperature coefficient	See Standard Resistance Element table		
Limiting element voltage (linear law)	250 V		
Contact resistance variation	2 % Rn or 2 Ω		
End resistance (typical)	1 Ω		
Dielectric strength (RMS)	1000 V		
Insulation resistance (500 V _{DC})	$10^6\mathrm{M}\Omega$		

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 +125 °C	
Climatic category	55/125/56	
Sealing	Fully sealed - IP67	



STANDARD		LINEAR LAW		
RESISTANCE VALUES	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CURRENT THROUGH WIPER	TCR -55 °C +125 °C
Ω	W	V	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		
	CONDITIONS	∆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	5 cycles -55 °C to +125 °C	± 0.5 %	$\Delta V_{1-2}/V_{1-3} \le \pm 1 \%$	
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 0.1 %	± 0.2 %	
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g during 6 h	± 0.1 %	$\Delta V_{1-2}/V_{1-3} \le \pm \ 0.2 \%$	
Rotational life	200 cycles	± 4 % Contact res. variation: < 1 % Rn	-	

Note

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

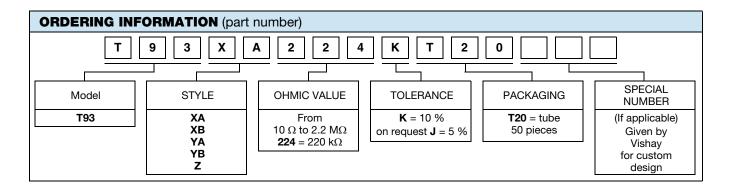
MARKING

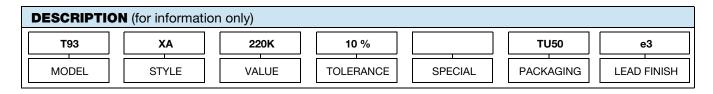
- Vishay trademark
- Model
- Style
- Ohmic value (in Ω , $k\Omega$, $M\Omega$)
- Tolerance (in %)
- Manufacturing date
- Marking of terminal 3

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PACKAGING

• In tube of 50 pieces code T20 (TU50)





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



Vishay

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