

3/8" Square Multi-Turn Cermet Trimmer



FEATURES

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


RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES

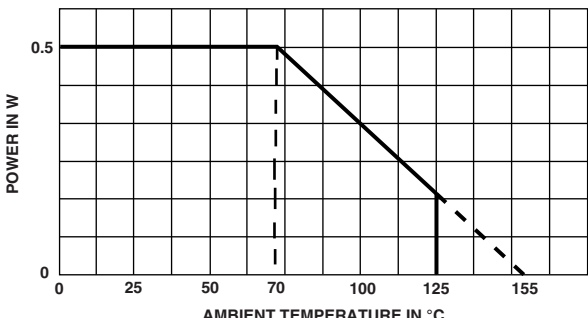
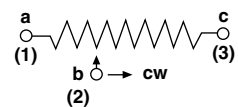


The T93 is a small size trimmer - 3/8" x 3/8" x 3/16" - answering PC board mounting requirements. Five versions are available which differ by the position of the control screw in relation to the PC board plane and by the spacing of the terminals. Excellent operational stability is provided by the use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

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

Note

(1) 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
		
Circuit diagram		
Temperature coefficient	$\pm$ 100 ppm/°C	
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 V _{DC})	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 %
Terminals	Pure Sn (code e3)

ENVIRONMENTAL SPECIFICATIONS	
Temperature range	-55 °C to +125 °C
Climatic category	55/125/56
Sealing	Fully sealed - 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. CURRENT THROUGH WIPER	
Ω	W	V	mA	ppm/°C
10	0.5	2.2	224	± 100
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	
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	
		$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)
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 _{RMS} Insulation resistance: > 10 ⁴ MΩ	± 1 %
Rapid temperature change	5 cycles -55 °C to +125 °C	± 0.5 %	$\Delta V_{1-2}/V_{1-3} \leq \pm 1 \%$
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 %	$\Delta V_{1-2}/V_{1-3} \leq \pm 0.2 \%$
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 Ω , M Ω)
- Tolerance (in %)
- Manufacturing date
- Marking of terminal 3



PACKAGING

- In tube of 50 pieces code T20 (TU50)

ORDERING INFORMATION (part number)

T	9	3	X	A	2	2	4	K	T	2	0			
MODEL		STYLE		OHMIC VALUE			TOLERANCE		PACKAGING		SPECIAL NUMBER			
T93		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			

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	www.vishay.com/doc?51001
Guidelines for Vishay Sfernice Resistive and Inductive Components	www.vishay.com/doc?52029
Selector Guide	www.vishay.com/doc?49286

ACCESSORIES

Screwdrivers (to order separately)	www.vishay.com/doc?57015
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