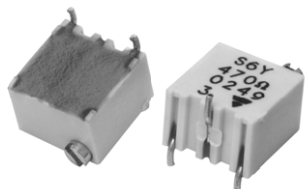


# Multi-Turn Surface Mount 1/4" Square Cermet Trimmers, Fully Sealed



Three variations are available according to the positioning of the control screw and contact positions.

The TS6 multi-turn trimmer has been designed for use in PCB surface mounting applications.

The cermet track gives a high stability performance with an extended ohmic capacity of 10  $\Omega$  to 2 M $\Omega$ .

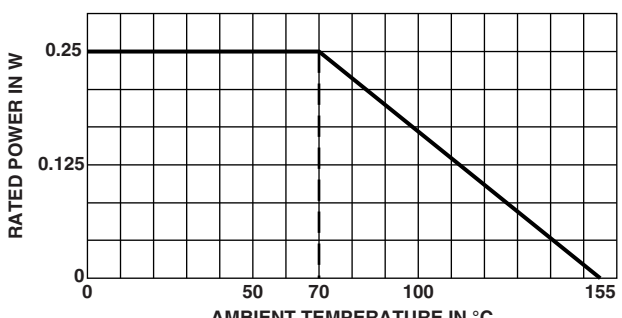
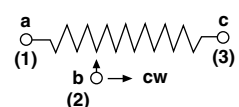
## FEATURES

- 0.25 W at 70 °C
- Military and professional grade
- Multi-turn operation
- A low contact resistance variation (down to 2 % R<sub>n</sub>)
- Low end contact resistance (1  $\Omega$  typical)
- Full sealing
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

DIMENSIONS in millimeters ( $\pm 0.5$ mm)			
<b>TS6X</b> 		<b>RECOMMENDED SOLDERING AREAS</b> 	
<b>TS6Z</b> 			
<b>TS6Y</b> 			

<b>ELECTRICAL SPECIFICATIONS</b>	
Resistive element	Cermet
Electrical travel	14 turns $\pm$ 2
Resistance range	10 $\Omega$ to 2 M $\Omega$
Standard series E3	1 - 2.2 - 4.7 and on request 1 - 2 - 5
Tolerance	Standard $\pm$ 10 %
	On request $\pm$ 5 %
Power rating	Linear 0.25 W at 70 °C 
Circuit diagram	
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	10 <sup>6</sup> M $\Omega$

<b>MECHANICAL SPECIFICATIONS</b>	
Mechanical travel	15 turns $\pm$ 5
Operating torque (max. Ncm)	1.5
End stop torque	Clutch action
Net weight (max. g)	0.5
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 IP67
MSL level	1

<b>SOLDERING RECOMMENDATIONS</b>	
Recommended reflow profile 2, see Application Note <a href="http://www.vishay.com/doc?52029">www.vishay.com/doc?52029</a>	



PERFORMANCES							
TESTS	CONDITIONS	REQUIREMENTS		OTHER	TYPICAL VALUES AND DRIFTS		
		$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)		$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	OTHER
Electrical endurance	1000 h at rated power 90°/30° - ambient temp. 70 °C	± 2 %	± 4 %	Contact res. variation: < 3 % R <sub>n</sub>	± 1 %	± 2 %	Contact res. variation: < 1 % R <sub>n</sub>
Climatic sequence	Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles	± 2 %	± 3 %		± 0.5 %	± 1 %	
Damp heat steady state	40 °C 93 % RH 56 days	± 2 %	± 3 %	Dielectric strength: 250 V <sub>RMS</sub> Insulation resistance: > 100 MΩ	± 0.5 %	± 1 %	Dielectric strength: 1000 V <sub>RMS</sub> Insulation resistance: > 10 <sup>4</sup> MΩ
Charge of temperature	-55 °C to +125 °C 5 cycles	± 1.5 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 %	± 0.5 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 1 %
Mechanical endurance	200 cycles at rated power	± 2 %		Contact res. variation: < 3 % R <sub>n</sub>	± (2 % + 3 Ω)		Contact res. variation: < 1 % R <sub>n</sub>
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 1 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 %	± 0.1 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ 0.2 %
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g for 6 h	± 1 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 2 %	± 0.1 %		$\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 0.2 %

**Note**

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

STANDARD RESISTANCE ELEMENT DATA				
STANDARD RESISTANCE VALUES	LINEAR LAW			TYPICAL TCR -55 °C +125 °C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. WIPER CURRENT	
Ω	W	V	mA	ppm/°C
10	0.25	1.58	158	± 100
22	0.25	2.34	107	
47	0.25	3.43	73	
100	0.25	5.00	50	
220	0.25	7.42	34	
470	0.25	10.8	23	
1K	0.25	15.8	15.8	
2.2K	0.25	23.4	10.7	
4.7K	0.25	34.3	7.3	
10K	0.25	50	5	
22K	0.25	74.2	3.37	
47K	0.25	108.4	2.31	
100K	0.25	158	1.58	
220K	0.25	234	1.97	
470K	0.13	250	0.53	
1M	0.06	250	0.25	
2M	0.03	250	0.125	

**MARKING**

Printed: Vishay trademark, model, style, ohmic value (in  $\Omega$ , k $\Omega$ , M $\Omega$ ), tolerance (in %) only if non standard, manufacturing date, marking of terminal 3.

**PACKAGING**

- In tube of 50 pieces code T20 (TU50)
- In reel of 500 pieces code R10 (TR500)

**ORDERING INFORMATION** (part number)

T	S	6	Y	4	7	4	K	R	1	0				
MODEL		STYLE		OHMIC VALUE			TOLERANCE		PACKAGING		SPECIAL NUMBER			
TS6		X Y Z		From 10 $\Omega$ to 2 M $\Omega$ 474 = 470 k $\Omega$			K = 10 % On request J = 5 %		T20 = tube 50 pieces On request R10 = reel 500 pieces		(If applicable) Given by Vishay for custom design			

**DESCRIPTION** (for information only)

TS6	Y	470K	10 %		TU	e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	LEAD FINISH

**RELATED DOCUMENTS****APPLICATION NOTES**

Potentiometers and Trimmers	<a href="http://www.vishay.com/doc?51001">www.vishay.com/doc?51001</a>
Guidelines for Vishay Sfernice Resistive and Inductive Components	<a href="http://www.vishay.com/doc?52029">www.vishay.com/doc?52029</a>

**ACCESSORIES**

Screwdrivers (to order separately)	<a href="http://www.vishay.com/doc?57015">www.vishay.com/doc?57015</a>
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