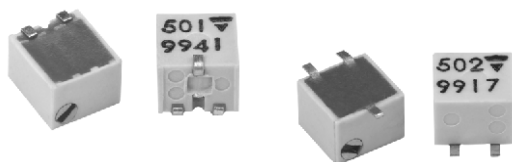


Surface Mount Miniature Trimmers Multi-Turn Cermet Sealed



The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency $5 \times 5 \times 3.7 \text{ mm}^3$ with high performance and stability.

The TSM4 design is suitable for both manual or automatic operation, and can withstand vapor phase and reflow soldering techniques.

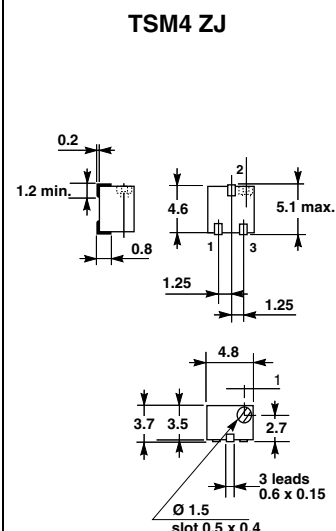
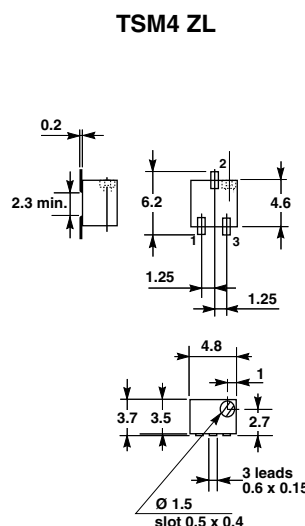
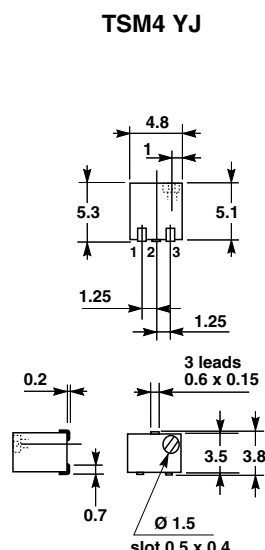
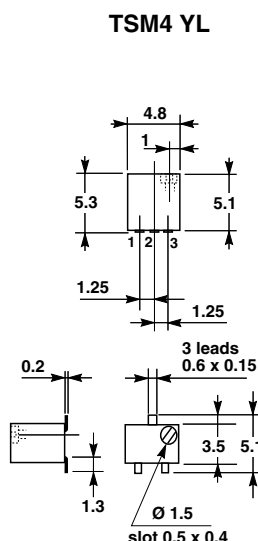
FEATURES

- 0.25 Watt at 85 °C
- Professional grade
- Wide ohmic range (10Ω to $1 \text{ M}\Omega$)
- Low contact resistance variation (2 % or 3Ω)
- Small size for optimum packing density
- Suitable for both manual or automatic operation

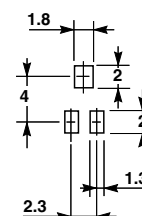
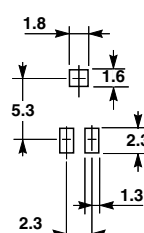
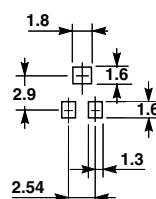
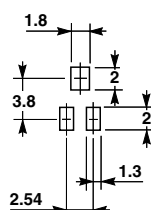


RoHS
COMPLIANT

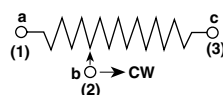
DIMENSIONS in millimeters



RECOMMENDED SOLDERING AREAS



CIRCUIT DIAGRAM



Tolerances unless otherwise specified ± 0.5

ELECTRICAL SPECIFICATIONS

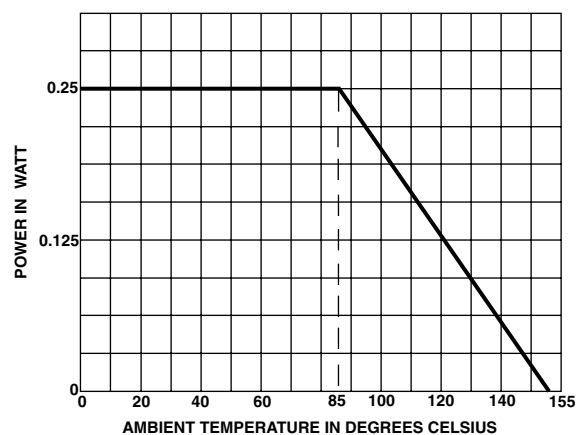
Resistive Element	Cermet
Electrical Travel	11 turns $\pm$ 2
Resistance Range	10 Ω to 1 M Ω
Standard Series	1 - 2 - 5
Tolerance Standard	$\pm$ 10 %
Power Rating	Linear
	0.25 W at + 85 °C
	Logarithmic
	not applicable
Temperature Coefficient	See Standard Resistance Element Table
Limiting Element Voltage (Linear Law)	200 V
Contact Resistance Variation (Typical)	2 % or 3 Ω
End Resistance (Typical)	1 Ω
Dielectric Strength (RMS)	600 V
Insulation Resistance	10 ⁶ M Ω

MECHANICAL SPECIFICATIONS

Mechanical Travel	13 turns $\pm$ 2
Operating Torque (max. Ncm)	1
End Stop Torque (Ncm)	clutch action (2 turns max)
Unit Weight (max. g)	0.15
Wiper (actual travel)	positioned at approx. 50 %

ENVIRONMENTAL SPECIFICATIONS

Temperature Range	- 55 °C to + 125 °C
Climatic Category	55/125/56
Sealing	sealed container solder immersion IP67

POWER RATING CHART**PERFORMANCE**

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS	
		$\frac{\Delta R T}{R T}$ (%)	$\frac{\Delta R_{1-2}}{R_{1-2}}$ (%)
Load Life	1000 hours at rated power 90°/30' - ambient temperature + 85 °C	$\pm$ 2 % Contact resistance variation: $\Delta > 1$ % R _n	$\pm$ 3 %
Moisture Resistance	MIL STD 202 Method 106 10 cycles of 24 hours constituted with damp heat - cold - vibrations	$\pm$ 2 % Dielectric strength: 1000 V RMS Insulation resistance: > 10 ⁴ M Ω	$\pm$ 3 %
Long Term Damp Heat	Temperature 40 °C - RH 93 % 56 days	$\pm$ 2 % Dielectric strength: 1000 V RMS Insulation resistance: > 10 ⁴ M Ω	$\pm$ 3 %
Thermal Shock	- 55 °C to + 125 °C - 5 cycles	$\pm$ 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 2$ %
Rotational Life (Electrical and Mechanical)	100 cycles - rated power	$\pm$ 3 %	
Shock	MIL STD 202 Method 213/1 100 g - 6 ms 3 successive shocks in 3 directions	$\pm$ 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 1$ %
Vibration	MIL STD 202 Method 204/D 20 g - 12 hours	$\pm$ 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 1$ %

STANDARD RESISTANCE ELEMENT DATA

STANDARD RESISTANCE VALUES	LINEAR LAW			TCR - 55 °C + 125 °C
	MAX. POWER AT 85 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH ELEMENT	
Ω	W	V	mA	ppm/°C
10 20 50	0.25	1.58 2.23 3.53	158 112 77	0 + 200
100 200 500 1K 2K 5K 10K 20K 50K 100K 200K 500K 1M	↓ 0.25 0.08 0.04	5.00 7.07 11.2 15.8 22.3 35.3 50.0 70.7 112 158 200 200 200	50 35 22 15.8 11.2 7.1 5.0 3.5 2.2 1.6 1.0 0.4 0.2	± 100

MARKING

VISHAY trademark, ohmic value, manufacturing date.

The ohmic value is indicated by a 3 figure code, the first two digits are significant figures, the third one is the multiplier.

Example: 100 = 10 Ω
 101 = 100 Ω
 102 = 1000 Ω
 503 = 50 000 Ω

SOLDERING RECOMMENDATIONS

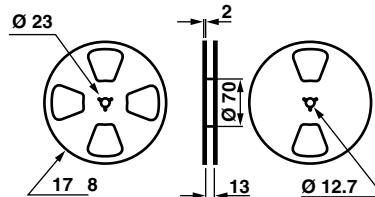
see Application notes

PACKAGING

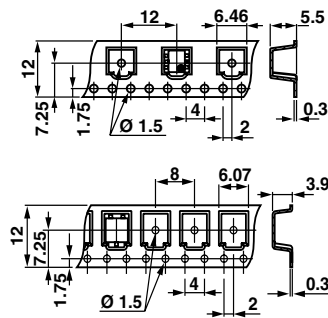
In bulk (plastic box of 50 pieces).

On tape and reel on request, by 500 pieces for Z version, or 250 pieces for Y version.

Version Y



Version Z


ORDERING INFORMATION

TSM4 SERIES	YL STYLE	500 k Ω OHMIC VALUE	± 10 % TOLERANCE	BO50 PACKAGING	e3 LEAD FINISH
				BO50 Version Z: code TR500 Version Y: code TR250	e3: pure Sn

SAP PART NUMBERING GUIDELINES

T	S	M	4	Y	L	5	0	4	K	B	2	5			
MODEL				STYLE		OHMIC VALUE			TOL	PACKAGING CODE			SPECIAL (IF APPLICABLE)		

See the end of this data book for conversion tables



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