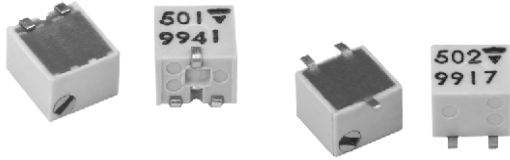


Surface Mount Miniature Trimmers Multi-Turn Cermet Sealed



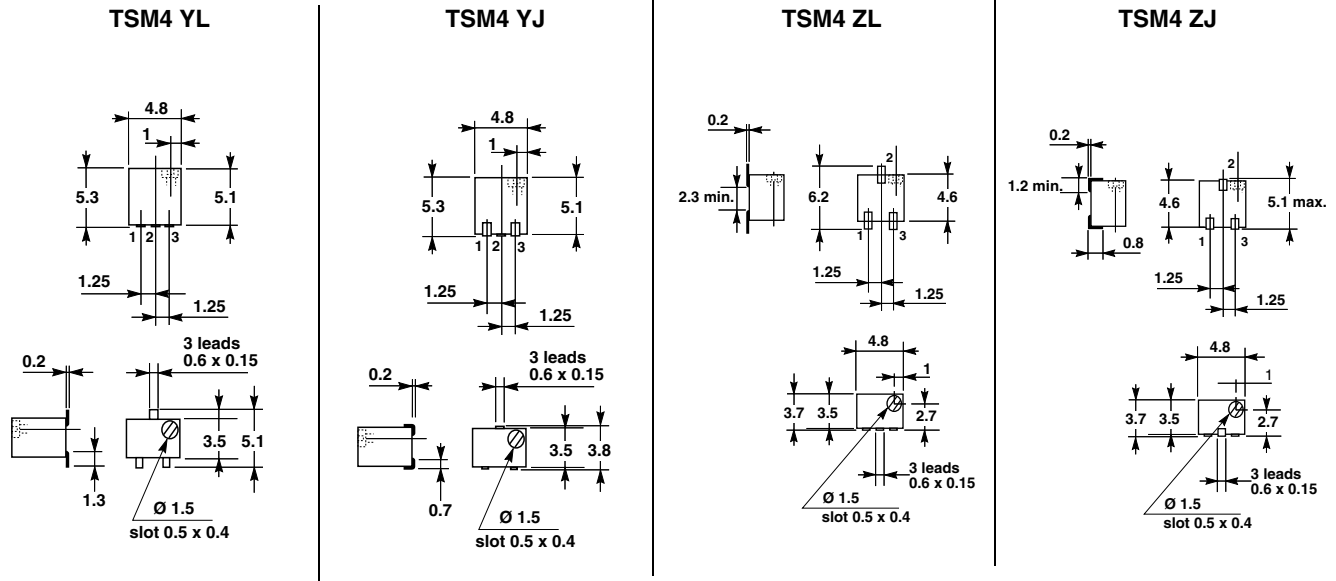
FEATURES

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

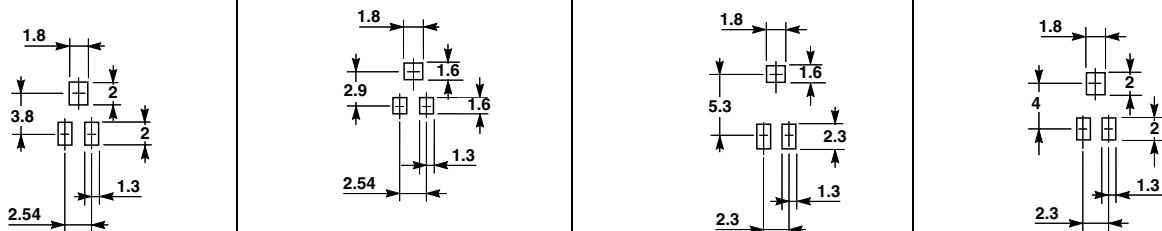
The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency 5 x 5 x 3.7 mm³ with high performance and stability.

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

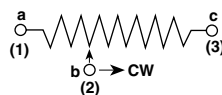
DIMENSIONS in millimeters



RECOMMENDED SOLDERING AREAS



CIRCUIT DIAGRAM



Tolerances unless otherwise specified ± 0.5



ELECTRICAL SPECIFICATIONS		
Resistive Element		Cermet
Electrical Travel		11 turns ± 2
Resistance Range		10 Ω to 1 MΩ
Standard Series		1 - 2 - 5
Tolerance Standard		± 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 MΩ

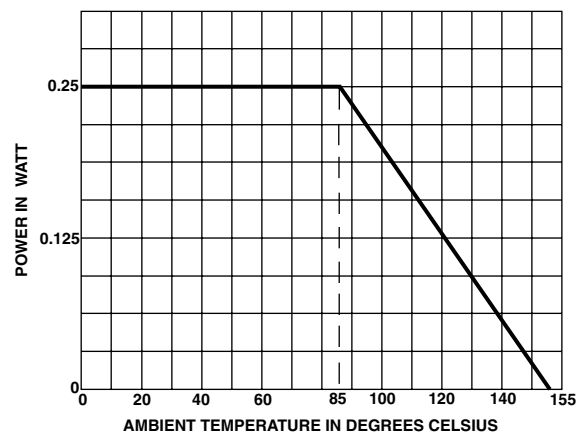
MECHANICAL SPECIFICATIONS

Mechanical Travel	13 turns ± 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	± 2 % Contact resistance variation: $\Delta > 1 \% R_n$	± 3 %
Moisture Resistance	MIL STD 202 Method 106 10 cycles of 24 hours constituted with damp heat - cold - vibrations	± 2 % Dielectric strength: 1000 V RMS Insulation resistance: $> 10^4 M\Omega$	± 3 %
Long Term Damp Heat	Temperature 40 °C - RH 93 % 56 days	± 2 % Dielectric strength: 1000 V RMS Insulation resistance: $> 10^4 M\Omega$	± 3 %
Thermal Shock	- 55 °C to + 125 °C - 5 cycles	± 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 2 \%$
Rotational Life (Electrical and Mechanical)	100 cycles - rated power	± 3 %	
Shock	MIL STD 202 Method 213/1 100 g - 6 ms 3 successive shocks in 3 directions	± 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 1 \%$
Vibration	MIL STD 202 Method 204/D 20 g - 12 hours	± 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 ppm/°C
	MAX. POWER AT 85 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH ELEMENT	
Ω	W	V	mA	
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.

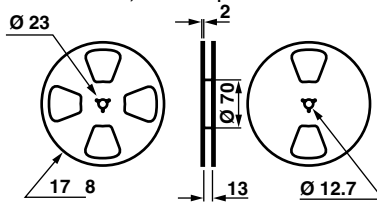
Example: 100 = 10 Ω
101 = 100 Ω
102 = 1000 Ω
503 = 50 000 Ω

SOLDERING RECOMMENDATIONS

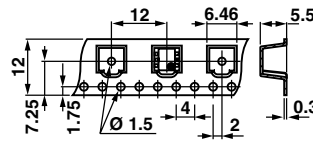
see Application notes

PACKAGING

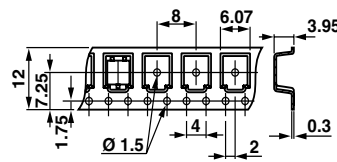
In bulk (plastic box of 50 pieces).
On tape and reel on request, by 500 pieces for Z version, or 250 pieces for Y version.



Version Y



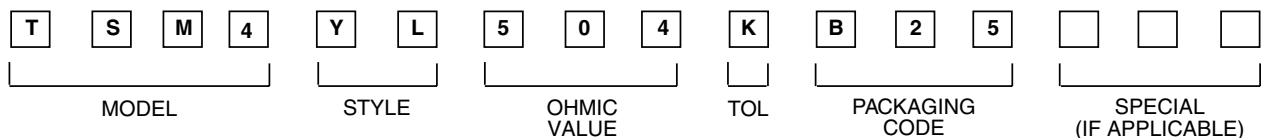
Version Z



ORDERING INFORMATION

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

SAP PART NUMBERING GUIDELINES



See the end of this data book for conversion tables



Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.