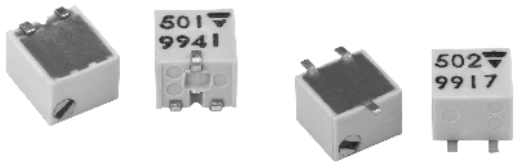
Surface Mount Miniature Trimmers
Multi-Turn Cermet Sealed



The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency 5 x 5 x 3.7 mm^3 with high performance and stability.

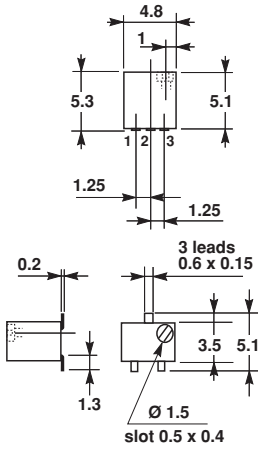
The TSM4 design is suitable for both manual or automatic operation, and can withstand vapor phase and reflow soldering techniques.

FEATURES

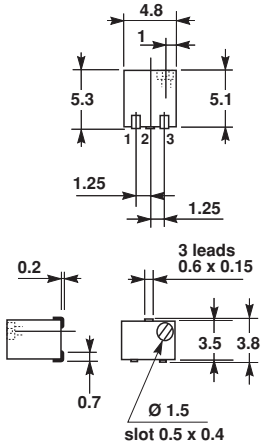
- 0.25 Watt at 85°C
- Professional grade
- Excellent stability
- Wide ohmic range
- Low contact resistance variation
- Small size for optimum packing density
- Suitable for both manual or automatic operation

DIMENSIONS in millimeters

TSM4 YL



TSM4 YJ



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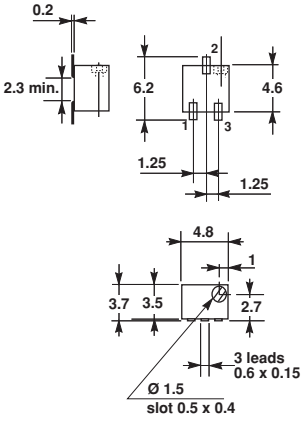
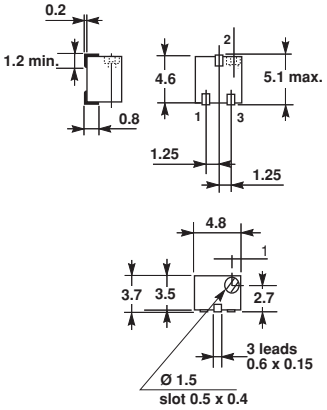
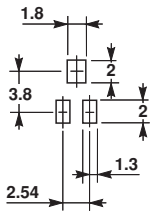
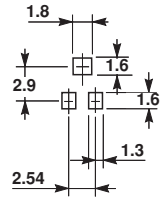


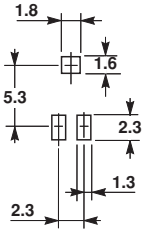
TSM4 ZJ

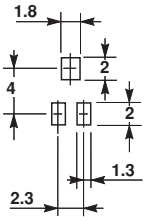


RECOMMENDED SOLDERING AREAS

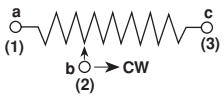








CIRCUIT DIAGRAM



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

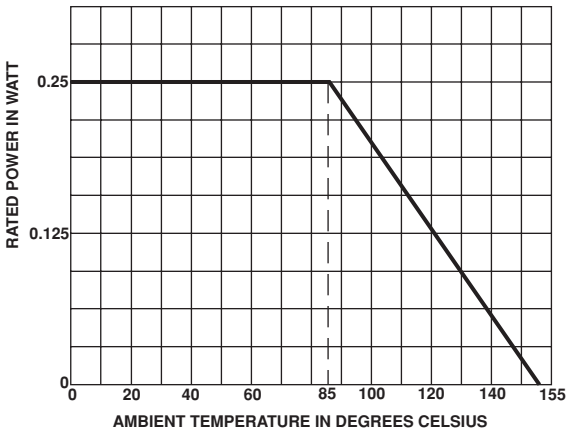
MECHANICAL SPECIFICATIONS

Mechanical Travel	13 turns ± 2
Operating Torque (max. Ncm)	1
End Stop Torque (Ncm)	clutch action
Unit Weight (max. g)	0.15

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**	
		$\frac{\Delta RT}{RT}$ (%)	$\frac{\Delta R_{1-2}}{R_{1-2}}$ (%)
Load Life	1000 hours at rated power 90'/30' - ambient temperature + 85°C	± 2%	± 3 % Contact resistance variation: Δ > 1% Rn
Moisture Resistance	MIL STD 202 Method 106 10 cycles of 24 hours constituted with damp heat - cold - vibrations	± 2 %	± 3 % Dielectric strength: 1000 V RMS Insulation resistance: > 10^4 MΩ
Long Term Damp Heat	Temperature 40°C - RH 93 % 56 days	± 2 %	± 3 % Dielectric strength: 1000 V RMS Insulation resistance: > 10^4 MΩ
Thermal Shock	- 55°C to + 125°C - 5 cycles	± 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}}$ ≤ ± 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 %	$\frac{\Delta V_{1-2}}{V_{1-3}}$ ≤ ± 1%
Vibration	MIL STD 202 Method 204/D 20 g - 12 hours	± 1 %	$\frac{\Delta V_{1-2}}{V_{1-3}}$ ≤ ± 1%

STANDARD RESISTANCE ELEMENT DATA

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

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 = 10Ω
101 = 100Ω
102 = 1000Ω
503 = 50000Ω

SOLDERING RECOMMENDATIONS

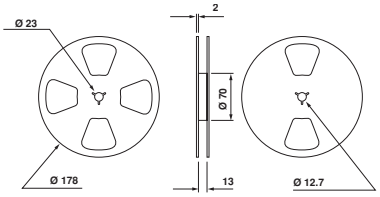
Vapor phase: 215°C/20 to 40 seconds.

Reflow: 230°C/20 seconds.

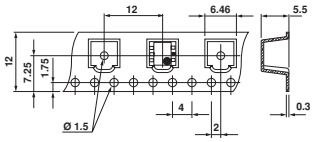
Do not exceed peak 260°C

PACKAGING

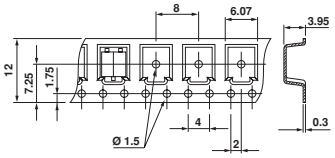
In bulk (plastic box of 50 pieces).
On tape and reel on request, by 500 pieces for Z version, or 250 pieces for Y version.



Version Y



Version Z



ORDERING INFORMATION

TSM4	YL	500KΩ	± 10%		BO50
SERIES	STYLE	OHMIC VALUE	TOLERANCE		PACKAGING
				On request	BO50 Version Z: code TR500 Version Y: code TR250

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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