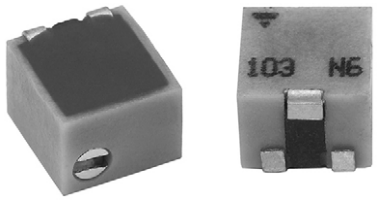
5 mm Square Surface Mount Miniature Trimmers Multi-Turn Cermet Sealed



FEATURES

- 0.25 W at 85 °C
- Professional and industrial grade
- Wide ohmic range (10 Ω to 1 MΩ)
- Low contact resistance variation (1 % or 3 Ω)
- Small size for optimum packaging density
- Top and side adjust styles
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

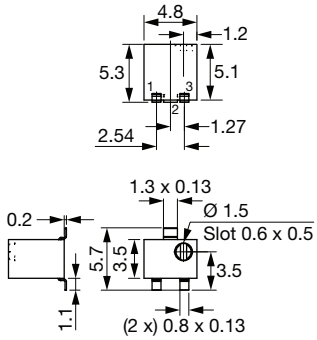
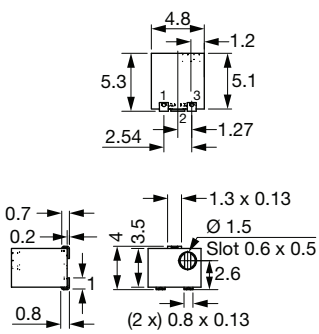
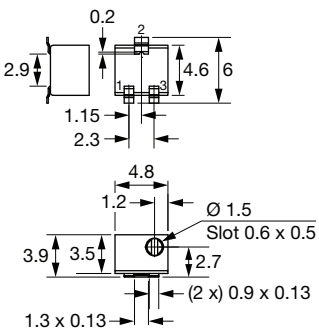
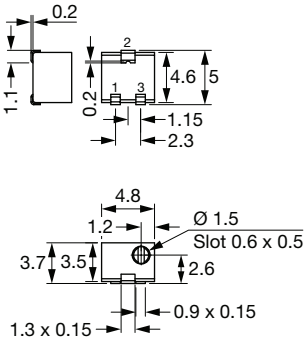
LINKS TO ADDITIONAL RESOURCES

3D Models

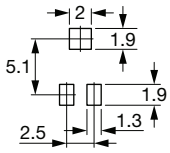
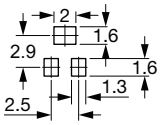
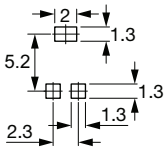
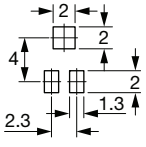
The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency 5 mm x 5 mm x 3.7 mm with high performance and stability.

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

DIMENSIONS in millimeters (± 0.5 mm)

TSM4 YL (TOP ADJUST)	TSM4 YJ (TOP ADJUST)	TSM4 ZL (SIDE ADJUST)	TSM4 ZJ (SIDE ADJUST)
			

RECOMMENDED SOLDERING AREAS

For technical questions, contact: sferpottrimmers@vishay.com

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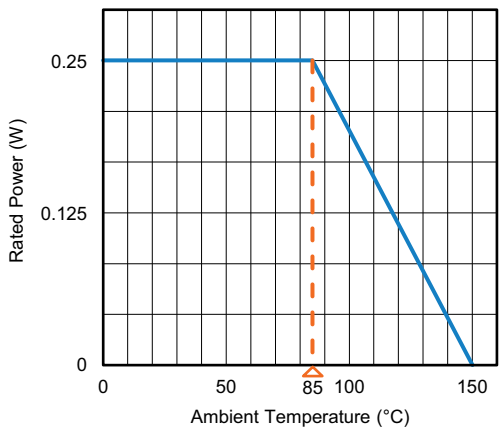
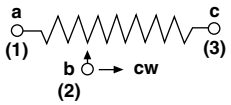
ELECTRICAL SPECIFICATIONS	
Resistive element	Cermet
Electrical travel	11 turns ± 2
Resistance range	10 Ω to 1 MΩ
Standard series	1 - 2 - 5
Tolerance standard	± 10 %
Power rating Linear	0.25 W at 85 °C 
Circuit diagram	
Temperature coefficient	See Standard Resistance Element table
Limiting element voltage (linear law)	300 V
Contact resistance variation (typical)	1 % or 3 Ω
End resistance (typical)	1 Ω
Dielectric strength (RMS)	600 V (1 minute)
Insulation resistance (500 V_{DC})	100 MΩ

MECHANICAL SPECIFICATIONS	
Mechanical travel	12 turns ± 2
Operating torque (max. Ncm)	1.8
End stop torque (Ncm)	Clutch action (2 turns max.)
Unit weight (max. g)	0.28
Wiper (actual travel)	Positioned at approx. 50 %

ENVIRONMENTAL SPECIFICATIONS	
Temperature range	-65 °C to +150 °C
Sealing	Sealed container IP67
MSL level	1

SOLDERING RECOMMENDATIONS
Recommended reflow profile 2, see Application Note www.vishay.com/doc?52029

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PERFORMANCES

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS
Load life	1000 h at rated power 90'/30' - ambient temp. +85 °C	Total resistance shift = ± 3 Ω or ± 3 % whichever is greater
Humidity moisture resistance	MIL-STD-202 method 106 10 cycles of 24 hours constituted with damp heat - cold - vibrations	Total resistance shift = ± 2 % Insulation resistance = 10 MΩ
Thermal shock	5 cycles	Total resistance shift = ± 2 % Voltage resistance shift = ± 1 %
Rotational cycling	200 cycles	Total resistance shift = ± 3 Ω or ± 3 % whichever is greater
Shock	MIL-STD-202 method 213 test condition C, 100 *g* - 6 ms, 3 successive shocks in each direction	Total resistance shift = ± 1 % Voltage resistance shift = ± 1 %
Vibration	MIL-STD-202 method 204, 20 *g* - 3 hours (1 hour per axis)	Total resistance shift = ± 1 % Voltage resistance shift = ± 1 %

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. CURRENT THROUGH ELEMENT	
Ω	W	V	mA	ppm/°C
10	0.25	1.58	158	± 100
20	0.25	2.23	112	
50	0.25	3.53	77	
100	0.25	5.00	50	
200	0.25	7.07	35	
500	0.25	11.2	22	
1K	0.25	15.8	15.8	
2K	0.25	22.3	11.2	
5K	0.25	35.3	7.1	
10K	0.25	50.0	5.0	
20K	0.25	70.7	3.5	
50K	0.25	112	2.2	
100K	0.25	158	1.6	
200K	0.25	223	1.12	
500K	0.08	300	0.83	
1M	0.04	300	0.83	

MARKING

Vishay trademark, ohmic value, manufacturing date
The ohmic value is indicated by a 3 figure code, the first two are significant figures, the third one is the multiplier.
Example: 100 = 10 Ω
101 = 100 Ω
102 = 1000 Ω
503 = 50 000 Ω

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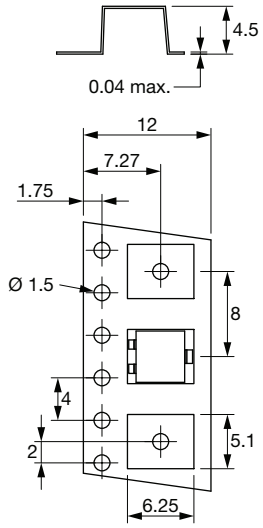
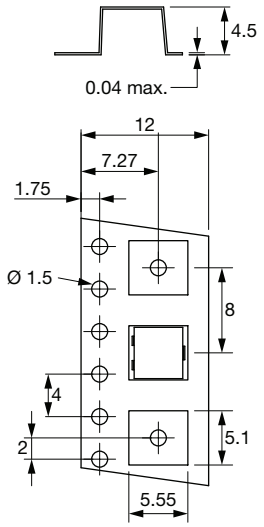
PACKAGING in millimeters

On tape and reel, by 500 pieces for Z version, 250 pieces for YJ version: code TR250, or 200 pieces for YL version.
In bulk on request (plastic box of 50 pieces): code BO50.

TSM4 ZL



TSM4 ZJ



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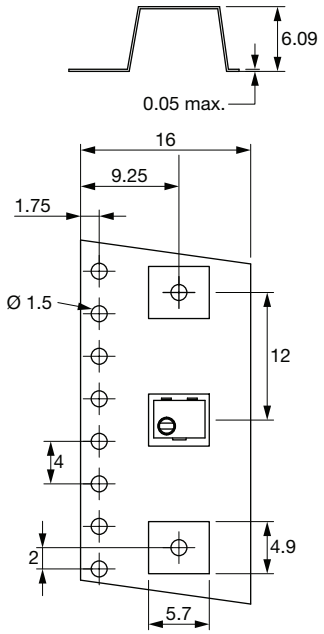
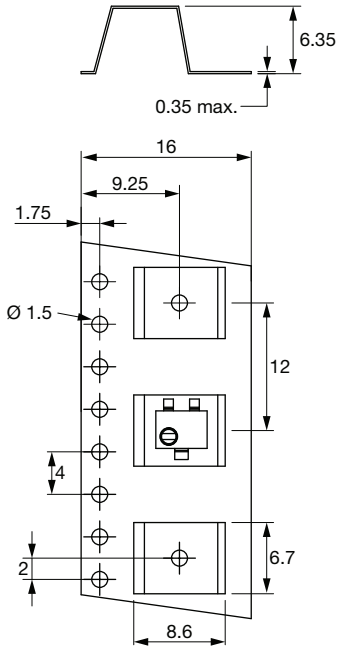
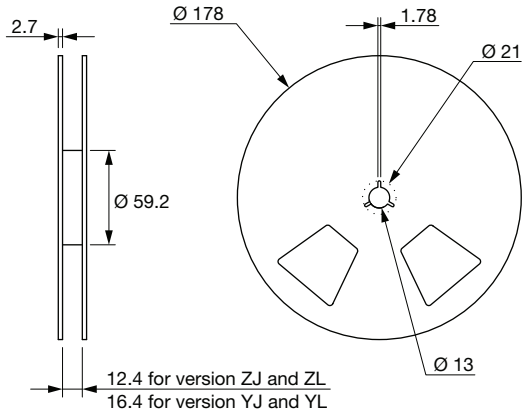


TSM4 YL





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ORDERING INFORMATION (part number)

T	S	M	4	Y	L	5	0	4	K	R	0	5				

MODEL	STYLE	OHMIC VALUE	TOLERANCE	PACKAGING	SPECIAL NUMBER
TSM4	**YJ** **YL** **ZJ** **ZL**	From 10 Ω to 1 MΩ **504** = 500 kΩ	**K** = 10 %	**R10** = reel 500 pieces for ZJ and ZL **R05** = reel 250 pieces for YJ and 200 pieces for YL On request **B25** = box of 50 pieces	(If applicable) Given by Vishay for custom design

DESCRIPTION (for information only)

TSM4	YL	500K	10 %		TR	e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	LEAD (Pb)-FREE

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

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