

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



FEATURES

- 0.25 W at 85 °C
- Professional grade
- Wide ohmic range (10 Ω to 1 M Ω)
- 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

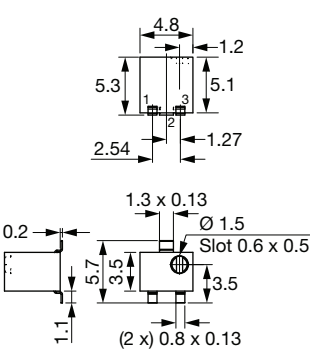
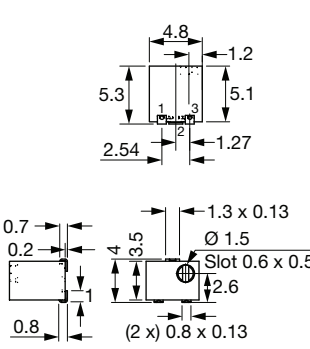
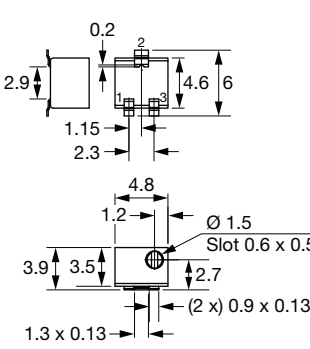
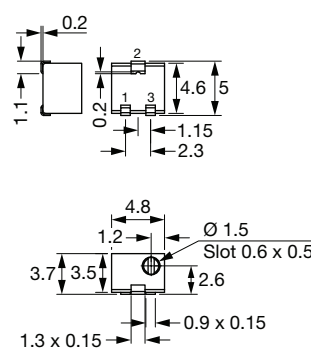
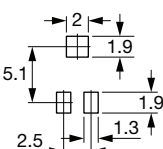
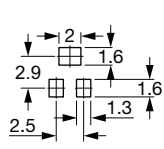
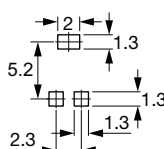
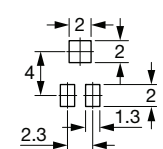

RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES

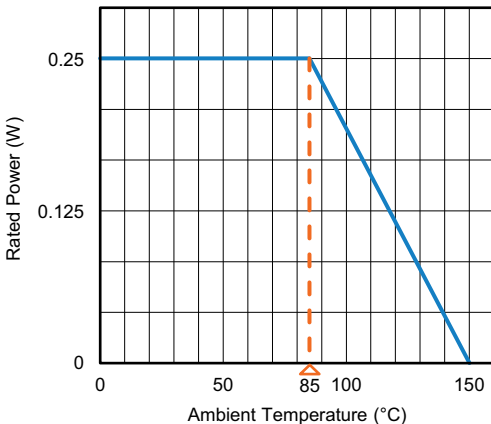
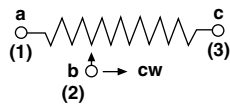


The TSM4 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency 5 mm x 5 mm x 3.7 mm with high performance and stability.

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

DIMENSIONS in millimeters (± 0.25 mm)			
TSM4 YL (TOP ADJUST)	TSM4 YJ (TOP ADJUST)	TSM4 ZL (SIDE ADJUST)	TSM4 ZJ (SIDE ADJUST)
			
RECOMMENDED SOLDERING AREAS			
			

**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 
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 M Ω

MECHANICAL SPECIFICATIONS

Mechanical travel	12 turns $\pm$ 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

**PERFORMANCES**

TESTS	CONDITIONS	TYPICAL VALUES AND DRIFTS
Load life	1000 h at rated power 90°/30° - ambient temp. +85 °C	Total resistance shift = $\pm 3 \Omega$ or $\pm 3 \%$ 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 = $\pm 2 \%$ Insulation resistance = 10 M Ω
Thermal shock	5 cycles	Total resistance shift = $\pm 2 \%$ Voltage resistance shift = $\pm 1 \%$
Rotational cycling	200 cycles	Total resistance shift = $\pm 3 \Omega$ or $\pm 3 \%$ 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 = $\pm 1 \%$ Voltage resistance shift = $\pm 1 \%$
Vibration	MIL-STD-202 method 204, 20 g - 3 hours (1 hour per axis)	Total resistance shift = $\pm 1 \%$ Voltage resistance shift = $\pm 1 \%$

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 85 °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

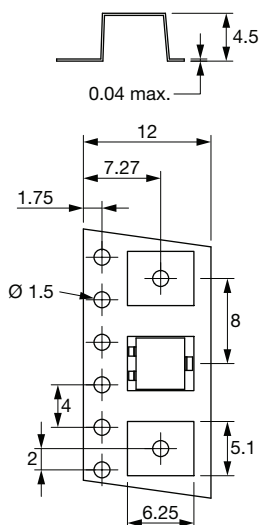
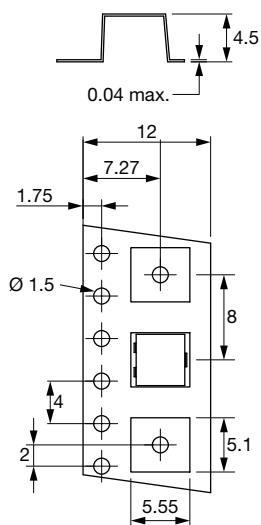
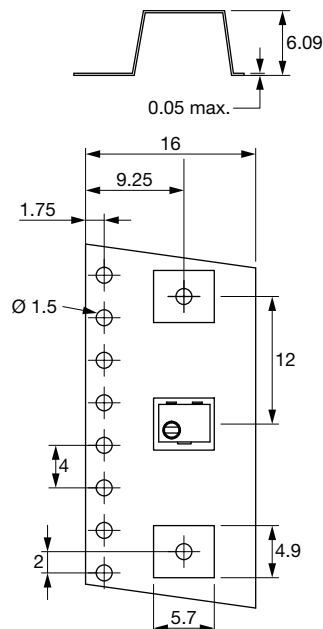
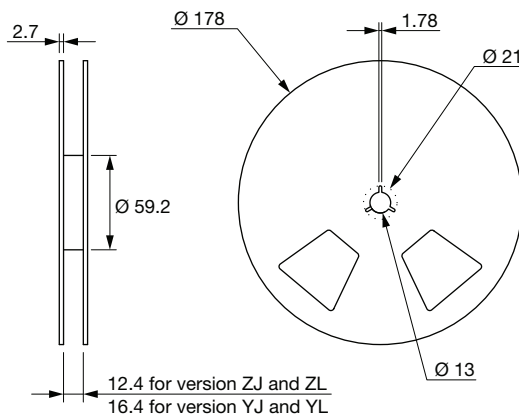
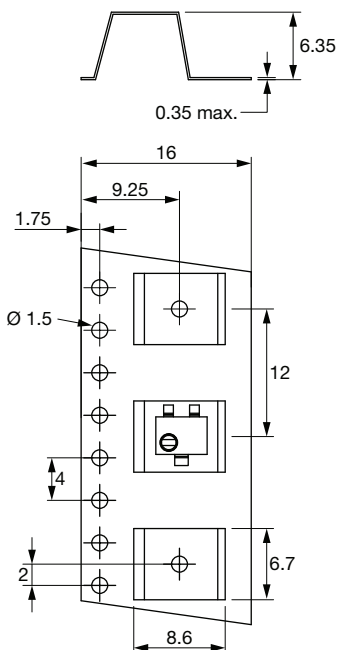
Vishay trademark, ohmic value, manufacturing date

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

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

TSM4 YJ

TSM4 YL




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 M Ω 504 = 500 k Ω			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



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.