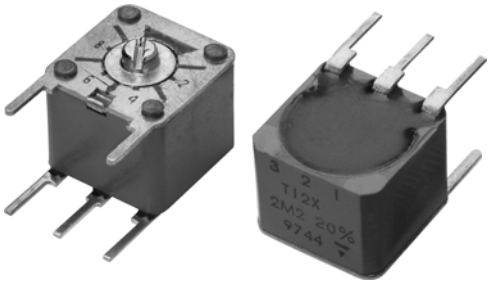
Fully Sealed Container 12 mm Square or Round Single-Turn Cermet Trimmer



The Vishay Sfernice trimming potentiometers T12 and T13 fully meet the requirements of CECC 41 100.

The use of a cermet track combined with sealing of the case provides unique characteristics and performances.

T12 and T13 have been specially designed for mounting on printed circuit board.

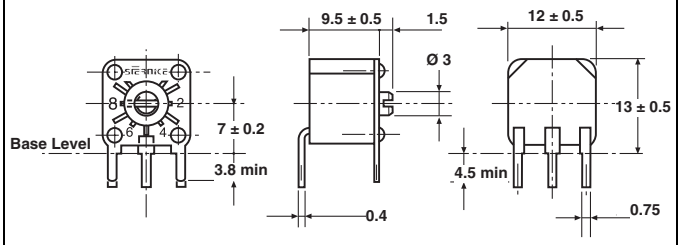
FEATURES

- Military and professional grade
- High power rating (1 W at 70 °C)
- Tests according to CECC 41000 or IEC 60393-1
- High stability (1 % typical)
- Mechanical strength
- Hermetic sealing of the case
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

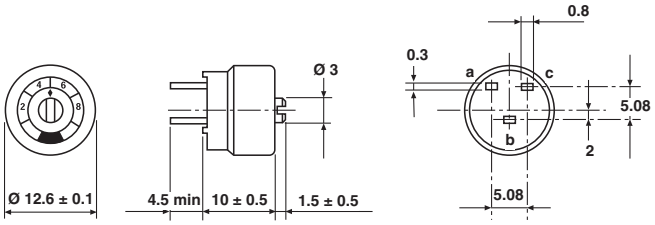
RoHS COMPLIANT

DIMENSIONS in millimeters (± 0.5 mm)

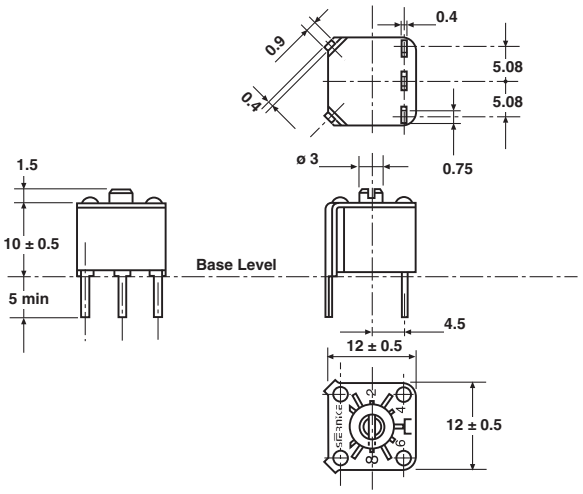
T12X - PM06X



T13Y

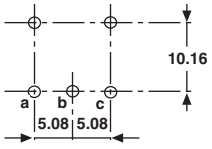


T12Y - PM06Y

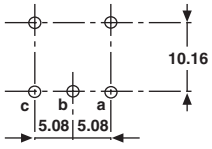


TERMINAL SPACING ON THE PCB
Drilling Diameter: 1.2 mm

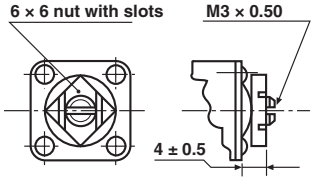
T12X

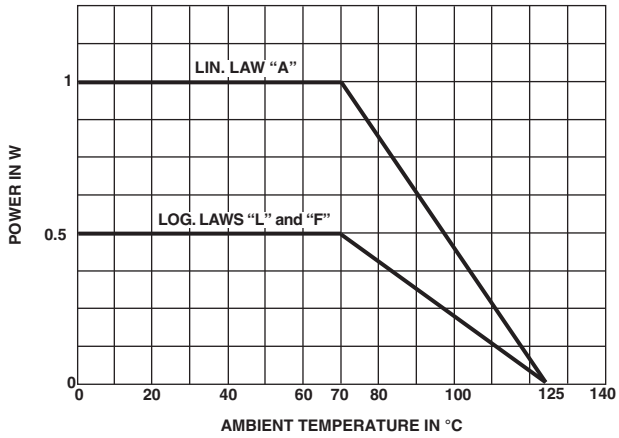
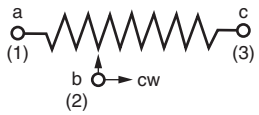
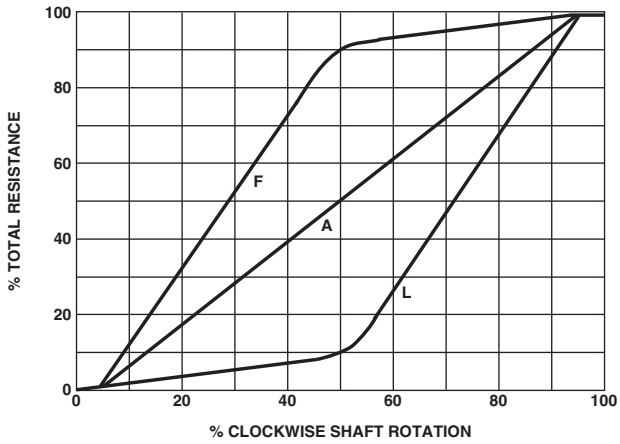


T12Y



LOCKING DEVICE: T12XB-YB



ELECTRICAL SPECIFICATIONS		
Resistive element		Cermet
Electrical travel		270° ± 10°
Resistance range		22 Ω to 10 MΩ
Standard series E3		1 - 2.2 - 4.7 and on request 1 - 2 - 5
Tolerance	standard	± 20 %
	on request	± 10 %, ± 5 %
Power rating	linear	1 W at 70 °C
	logarithmic	0.5 W at 70 °C
Power rating chart		
Circuit diagram		
Resistance laws		
Temperature coefficient		See Standard Resistance Element Table
Limiting element voltage (linear law)		350 V
Contact resistance variation		3 % *R*n or 3 Ω
End resistance (typical)		1 Ω
Dielectric strength (RMS)		1000 V
Insulation resistance (500 V_{DC})		10^6 MΩ

MECHANICAL SPECIFICATIONS	
Mechanical travel	300° ± 5°
Operating torque (max. Ncm)	3
End stop torque (max. Ncm)	15
Unit weight (max. g)	4.7
Terminals	Pure Sn (code e3)

ENVIRONMENTAL SPECIFICATIONS	
Temperature range	-55 °C to +125 °C
Climatic category	55/100/56
Sealing	IP67 Fully sealed

PERFORMANCES			
TESTS	**CONDITIONS**	**TYPICAL VALUES AND DRIFTS**	
		$\Delta R_T/R_T$ (%)	**$\Delta R_{1\text{-}2}/R_{1\text{-}2}$ (%)**
Load life	1000 h at rated power 90'/30' - ambient temperature 70 °C	± 1 % Contact res. variation: < 2 % Rn	± 2 %
Climatic sequence	Phase A dry heat 100 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles	± 0.5 %	± 1 %
Long term damp heat	56 days 40 °C, 93 % RH	± 0.5 % Dielectric strength: 1000 V_{RMS} Insulation resistance: > 10^4 MΩ	± 1 %
Rapid temperature change	5 cycles -55 °C to +125 °C	± 0.5 %	$\Delta V_{1\text{-}2}/\Delta V_{1\text{-}3}$ ≤ ± 1 %
Shock	50 *g* at 11 ms 3 successive shocks in 3 directions	± 0.1 %	± 0.5 %
Vibration	10 Hz to 55 Hz 0.75 mm or 10 *g* during 6 h	± 0.1 %	$\Delta V_{1\text{-}2}/\Delta V_{1\text{-}3}$ ≤ ± 0.5 %
Rotational life	200 cycles	± 1 % Contact res. variation: < 2 % *R*n	

Note

- Nothing stated herein shall be construed as a guarantee of quality or durability

STANDARD RESISTANCE ELEMENT DATA

STANDARD RESISTANCE VALUES	LINEAR LAW			LOG LAWS			TYPICAL TCR -55 °C to +125 °C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CURRENT THROUGH WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CURRENT THROUGH WIPER	
Ω	W	V	mA	W	V	mA	ppm/°C
22	1	4.69	213.2				± 100
47	1	6.85	145.8				
100	1	10	100				
220	1	14.8	67.4				
470	1	21.6	46.1				
1K	1	31.6	31.6	0.5	22.4	22.4	
2.2K	1	46.9	21.3	0.5	33.2	15.1	
4.7K	1	68.5	14.5	0.5	48.5	10.3	
10K	1	100	10	0.5	79.7	7.07	
22K	1	148.3	6.7	0.5	105	4.77	
47K	1	216.7	4.6	0.5	153	3.26	
100K	1	316.2	3.16	0.5	224	2.24	
220K	0.56	350	1.59	0.5	332	1.51	
470K	0.26	350	0.75	0.26	350	0.74	
1M	0.12	350	0.35	0.12	350	0.35	
2.2M	0.05	350	0.16				
4.7M	0.02	350	0.07				
10M	0.01	350	0.03				

MARKING

- Vishay trademark
- Model
- Ohmic value (in Ω, kΩ, MΩ)
- Tolerance (in %)
- Manufacturing date
- Marking of terminal: 1, 2, 3

PACKAGING

- For T13Y: In plastic box of 50 pieces, code B25 (BL50)
- For T12Y, T12X: In carton box of 50 pieces, code B25 (BO50)

ORDERING INFORMATION FOR T12 (part number)

T	1	2	X	B	2	2	3	M	A	B	2	5				

MODEL	STYLE	OPTION	OHMIC VALUE	TOLERANCE	TAPER	PACKAGING CODE	SPECIAL NUMBER
T12	**X** **Y**	**B** = locking shaft **0** = without	From 22 Ω to 10 MΩ **103** = 10 kΩ	**M** = 20 % On request: **K** = 10 % **J** = 5 %	**A** **L** **F**	**B25** = box 50 pieces	(If applicable) Given by Vishay for custom design

DESCRIPTION (for information only)

T12	X	B	22K	20 %	A		BO			e3
MODEL	STYLE	SPECIAL	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	SPECIAL	SHAFT	LEAD FINISH

ORDERING INFORMATION FOR T13 (part number)

T	1	3	Y	1	0	5	M	A	B	2	5				

MODEL	STYLE	OHMIC VALUE	TOLERANCE	TAPER	PACKAGING CODE	SPECIAL NUMBER
T13	**Y**	From 22 Ω to 10 MΩ **103** = 10 kΩ	**M** = 20 % On request: **K** = 10 %	**A** **L** **F**	**B25** = box 50 pieces	(If applicable) Given by Vishay for custom design

DESCRIPTION (for information only)

T13	Y	1M	20 %	A		BL50	e3
MODEL	STYLE	VALUE	TOLERANCE	TAPER	SPECIAL	PACKAGING	LEAD FINISH

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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.