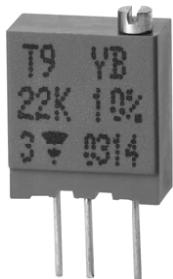


## 3/8" Square Multi-Turn Fully Sealed Container Cermet Trimmer



### FEATURES

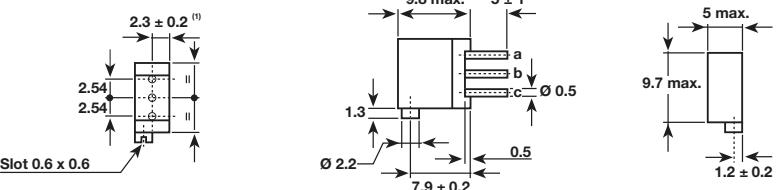
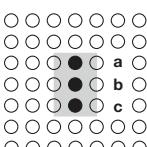
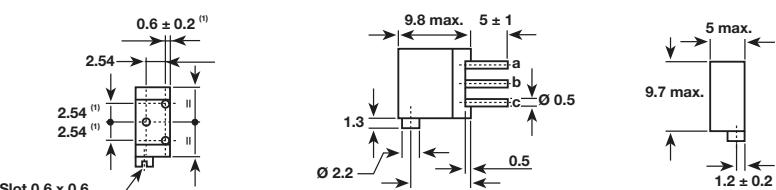
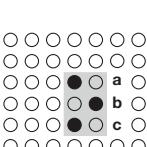
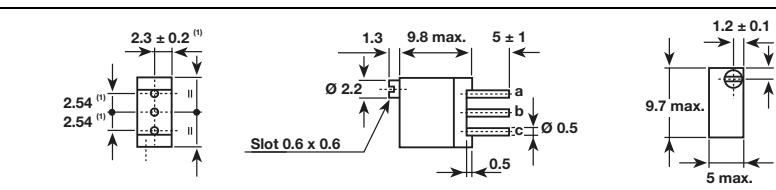
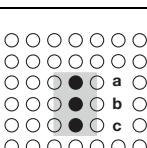
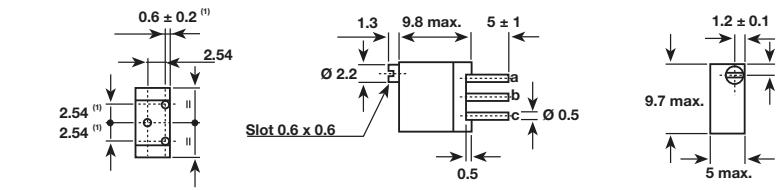
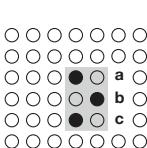
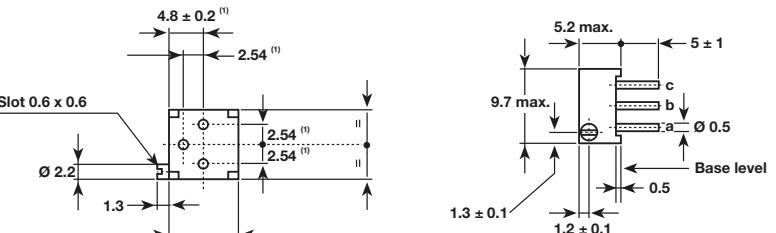
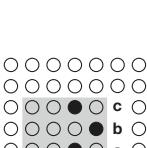
- 0.5 W at 70 °C
- Product qualification according to CECC 41101-004 (A, B, C, D, E)
- Tests according to CECC 41000 or IEC 60393-1
- GAM T1
- Operating temperature range -55 °C to +155 °C
- Wide ohmic range from 10 Ω to 2.2 MΩ
- Construction: fully sealed
- Military and professional grade
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### LINKS TO ADDITIONAL RESOURCES

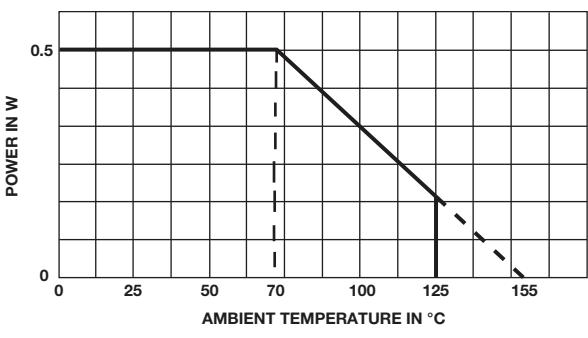
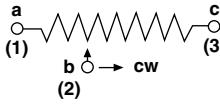


### DIMENSIONS in millimeters ( $\pm 0.5$ mm)

Part Number (PM81A) A	Terminal Spacing on a 2.54 PCB		
	Slot 0.6 x 0.6	9.8 max.	5 max.
T9XA (PM81A) A			
T9XB (PM81B) C			
T9YA (PM82A) B			
T9YB (PM82B) D			
T9Z (PM83) E			

### Note

<sup>(1)</sup> To be measured at base level

<b>ELECTRICAL SPECIFICATIONS</b>	
Resistive element	Cermet
Electrical travel	21 turns $\pm$ 2
Resistance range	10 $\Omega$ to 2.2 M $\Omega$
Standard series E3	1 - 2.2 - 4.7 and on request 1 - 2 - 5
Tolerance	Standard 10 % On request 5 %
Power rating	Linear 0.5 W at +70 °C 
Circuit diagram	
Temperature coefficient	$\pm$ 100 ppm/°C
Limiting element voltage (linear law)	250 V
Contact resistance variation	2 % Rn or 2 $\Omega$
End resistance (typical)	1 $\Omega$
Dielectric strength (RMS)	1000 V
Insulation resistance (500 V <sub>DC</sub> )	10 <sup>6</sup> M $\Omega$

<b>MECHANICAL SPECIFICATIONS</b>	
Mechanical travel	23 turns $\pm$ 5
Operating torque (max. Ncm)	1.5
End stop torque	Clutch action
Net weight	Approx. 0.82 g
Wiper (actual travel)	Positioned at approx. 50 %
Terminals	Pure Sn (code e3)

<b>ENVIRONMENTAL SPECIFICATIONS</b>	
Temperature range	-55 °C to +155 °C
Climatic category	55/125/56
Sealing	Fully sealed - IP67

PERFORMANCES					
CECC 41100		REQUIREMENTS		TYPICAL VALUES AND DRIFTS	
TESTS	CONDITIONS	$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)
Climatic sequence	Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles	± 2 %	± 3 %	± 0.5 %	± 1 %
Long term damp heat	56 days 40 °C, 93 % RH	± 2 % Dielectric strength: 700 V Insulation resistance: > 100 MΩ	± 3 %	± 0.5 % Dielectric strength: 1000 V Insulation resistance: > 10 <sup>4</sup> MΩ	± 1 %
Rotational life	200 cycles	± 2 % Contact res. variation: < 3 % Rn	-	± 2 % Contact res. variation: < 1 % Rn	-
Load life	1000 h at rated power 90'/30' - ambient temp. 70 °C	± 2 % Contact res. variation: < 3 % Rn	± 3 %	± 1 % Contact res. variation: < 1 % Rn	± 2 %
Rapid temp. change	5 cycles -55 °C to +125 °C	± 1.5 %	$\Delta V_{1-2}/V_{1-3}$ ± 1 %	± 0.5 %	$\Delta V_{1-2}/V_{1-3}$ < ± 1 %
Shock	50 g at 11 ms 3 successive shocks in 3 directions	± 1 %	± 2 %	± 0.1 %	± 0.2 %
Vibration	10 Hz to 55 Hz 0.75 mm or 10 g during 6 h	± 1 %	$\Delta V_{1-2}/V_{1-3}$ ± 2 %	± 0.1 %	$\Delta V_{1-2}/V_{1-3}$ < ± 0.2 %

**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 TO +125 °C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	
Ω	W	V	mA	ppm/°C
10	0.5	2.2	224	
22	0.5	3.3	150	
47	0.5	4.8	103	
100	0.5	7	70	
220	0.5	10.5	47	
470	0.5	15.3	32	
1K	0.5	22.4	22	
2.2K	0.5	33.2	15	
4.7K	0.5	48.5	10	± 100
10K	0.5	70.7	7	
22K	0.5	105	4.8	
47K	0.5	153	3.2	
100K	0.5	224	2.2	
220K	0.28	250	1.1	
470K	0.13	250	0.53	
1M	0.06	250	0.25	
2.2M	0.028	250	0.11	

MARKING	
<ul style="list-style-type: none"> <li>Vishay trademark</li> <li>Model</li> <li>Style</li> <li>Ohmic value (in Ω, kΩ, MΩ)</li> <li>Tolerance (in %)</li> <li>Manufacturing date</li> <li>Marking of terminal 3</li> </ul>	

PACKAGING	
<ul style="list-style-type: none"> <li>In tube of 50 pieces code T20 (TU50)</li> </ul>	

ORDERING INFORMATION (part number)																							
<table border="1"> <tr> <td>T</td><td>9</td><td>X</td><td>A</td><td>4</td><td>7</td><td>4</td><td>K</td><td>T</td><td>2</td><td>0</td><td></td></tr> </table>												T	9	X	A	4	7	4	K	T	2	0	
T	9	X	A	4	7	4	K	T	2	0													
Model	STYLE	OHMIC VALUE	TOLERANCE	PACKAGING	SPECIAL NUMBER																		
T9	XA XB YA YB Z	From 10 Ω to 2.2 MΩ <b>474</b> = 470 kΩ	K = 10 % on request J = 5 %	T20 = tube 50 pieces	(If applicable) Given by Vishay for custom design																		

DESCRIPTION (for information only)							
T9	XA	470K	10 %		TU		e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	SPECIAL	LEAD FINISH

RELATED DOCUMENTS							
APPLICATION NOTES							
Potentiometers and Trimmers						<a href="http://www.vishay.com/doc?51001">www.vishay.com/doc?51001</a>	
Guidelines for Vishay Sfernice Resistive and Inductive Components						<a href="http://www.vishay.com/doc?52029">www.vishay.com/doc?52029</a>	
Selector guide						<a href="http://www.vishay.com/doc?49286">www.vishay.com/doc?49286</a>	

ACCESSORIES							
Screwdrivers (to order separately)							
							<a href="http://www.vishay.com/doc?57015">www.vishay.com/doc?57015</a>

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