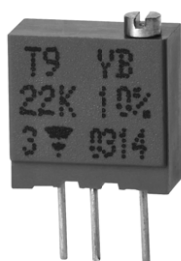


# 3/8" Square Multi-Turn Fully Sealed Container Cermet Trimmer



## FEATURES

- Military and professional grade
- 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
- Fully sealed
- Operating temperature range -55 °C to +155 °C
- Wide ohmic range from 10 Ω to 2.2 MΩ
- 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

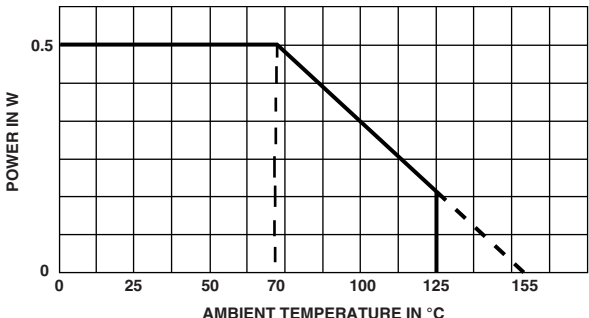
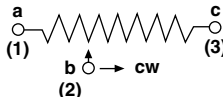


## DIMENSIONS in millimeters (± 0.5 mm)

<b>T9XA (PM81A) A</b>	<b>Terminal Spacing on a 2.54 PCB</b>

### Note

(1) To be measured at base level

ELECTRICAL SPECIFICATIONS	
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	See Standard Resistance Element table
Limiting element voltage (linear law)	250 V
Contact resistance variation	2 % R <sub>n</sub> 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 $\Omega$

MECHANICAL SPECIFICATIONS	
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)

ENVIRONMENTAL SPECIFICATIONS	
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	$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)	$\Delta R_T/R_T$ (%)	$\Delta R_{1-2}/R_{1-2}$ (%)
<b>Climatic sequence</b>	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 %
<b>Long term damp heat</b>	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 %
<b>Rotational life</b>	200 cycles	± 2 % Contact res. variation: < 3 % Rn	-	± 2 % Contact res. variation: < 1 % Rn	-
<b>Load life</b>	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 %
<b>Rapid temp. change</b>	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 %
<b>Shock</b>	50 g at 11 ms 3 successive shocks in 3 directions	± 1 %	± 2 %	± 0.1 %	± 0.2 %
<b>Vibration</b>	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	± 100
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	
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**

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

**PACKAGING**

- In tube of 50 pieces code T20 (TU50)



### ORDERING INFORMATION (part number)

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 $\Omega$ to 2.2 M $\Omega$ 474 = 470 k $\Omega$			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>

### ACCESSORIES

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