

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



### FEATURES

- Military and Professional Grade
- 0.5 W at 70 °C
- CECC 41 101-004 (A, B, C, D, E)
- Tests according to CECC 41 000
- GAM T1
- Fully sealed
- Operating temperature range - 55 °C to + 155 °C
- Wide ohmic range from 10 Ω to 2M2 Ω
- Lead (Pb)-free and RoHS compliant



DIMENSIONS in millimeters ( $\pm 0.5$ mm)			
<b>T9XA</b> (PM81A) A			<b>Terminal Spacing on a 2.54 PCB</b> 
<b>T9XB</b> (PM81B) C			
<b>T9YA</b> (PM82A) B			
<b>T9YB</b> (PM82B) D			
<b>T9Z</b> (PM83) E			

**Note**

\* to be measured at base level

Undergoes European Quality Assurance System (CECC)

<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															
	logarithmic not applicable															
	<p><b>CIRCUIT DIAGRAM</b></p> <p><b>POWER RATING GRAPH</b></p> <table border="1"> <caption>Power Rating Graph Data</caption> <thead> <tr> <th>Ambient Temperature (°C)</th> <th>Power (W)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.5</td></tr> <tr><td>25</td><td>0.5</td></tr> <tr><td>50</td><td>0.5</td></tr> <tr><td>70</td><td>0.5</td></tr> <tr><td>100</td><td>0.33</td></tr> <tr><td>125</td><td>0.17</td></tr> <tr><td>155</td><td>0</td></tr> </tbody> </table>	Ambient Temperature (°C)	Power (W)	0	0.5	25	0.5	50	0.5	70	0.5	100	0.33	125	0.17	155
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155	0															
Temperature Coefficient	see Standard Resistance Element Table															
Limiting Element Voltage (Linear Law)	250 V															
Contact Resistance Variation	2 % Rn or 1 $\Omega$															
End Resistance (Typical)	1 $\Omega$															
Dielectric Strength (RMS)	1000 V															
Insulation Resistance (500 VDC)	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 %

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

**STANDARD RESISTANCE ELEMENT DATA**

STANDARD RESISTANCE VALUES	LINEAR LAW			TYPICAL TCR - 55 °C + 125 °C  ppm/°C
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	
Ω	W	V	mA	
10	0.5	2.2	224	± 100
22	↓	3.3	150	
47		4.8	103	
100		7	70	
220		10.5	47	
470		15.3	32	
1K		22.4	22	
2.2K		33.2	15	
4.7K		48.5	10	
10K		70.7	7	
22K		105	4.8	
47K		153	3.2	
100K		0.5	224	
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**

Printed:

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

**PACKAGING**

- In magazine pack by 50 pieces (tube) code TU50



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

Vishay Sfernice

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 Temperature Change</b>	5 cycles - 55 °C to + 125 °C	± 1.5 %	$\Delta V_{1-2}/\Delta V_{1-3}$ ± 1 %	± 0.5 %	$\Delta V_{1-2}/\Delta V_{1-3}$ < ± 1 %
<b>Shocks</b>	50 g at 11 ms 3 successive shocks in 3 directions	± 1 %	± 2 %	± 0.1 %	± 0.2 %
<b>Vibrations</b>	10 to 55 Hz 0.75 mm or 10 g during 6 h	± 1 %	$\Delta V_{1-2}/\Delta V_{1-3}$ ± 2 %	± 0.1 %	$\Delta V_{1-2}/\Delta V_{1-3}$ < ± 0.2 %

SAP ORDERING INFORMATION (Part Number 15 digits)													
T	9	X	A	4	7	4	K	T	2	0			
MODEL	STYLE	OHMIC VALUE		TOLERANCE		PACKAGING		SPECIAL NUMBER					
	XA XB YA YB Z	From 10 Ω to 2.2 MΩ 474 = 470 kΩ		K = 10 % on request J = 5 %		T20 = Tube 50 pieces		(if applicable) Given by VISHAY for custom design					

PART NUMBER DESCRIPTION (for information only)							
T9	XA	470K	± 10 %		TU		e3
MODEL	STYLE	VALUE	TOLERANCE	SPECIAL	PACKAGING	SPECIAL	LEAD (Pb)-FREE



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