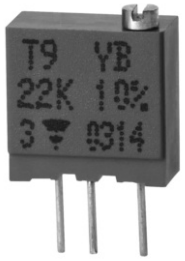
# 3/8" Square Multi-Turn Fully Sealed Container Cermet Trimmers



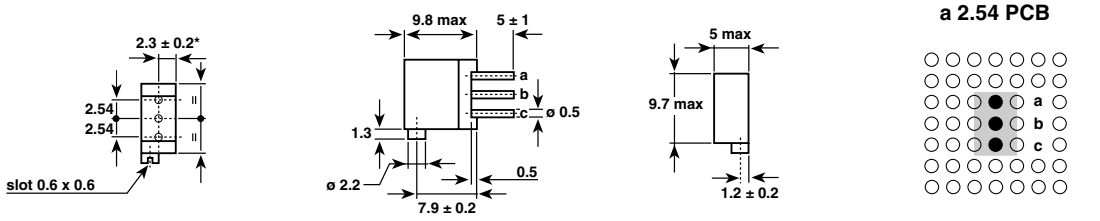

## FEATURES

- 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

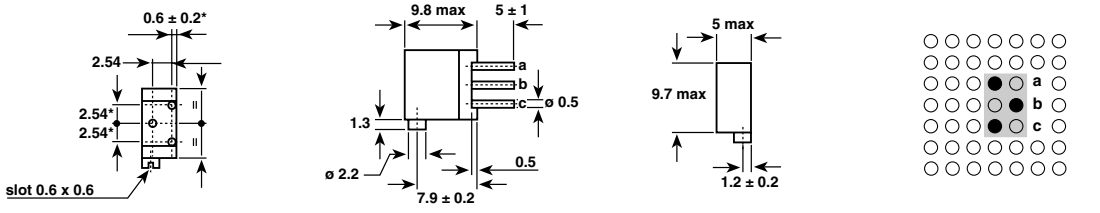
RoHS COMPLIANT

## DIMENSIONS in millimeters (± 0.5 mm)

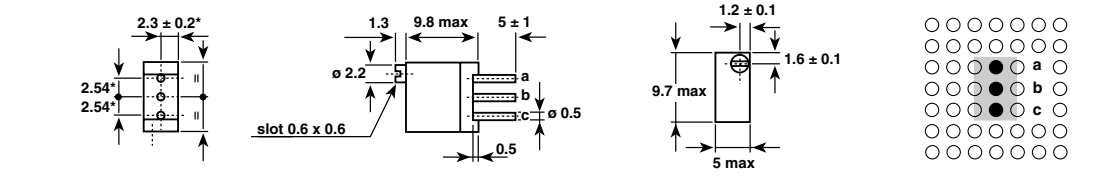
**T9XA (PM81A) A**



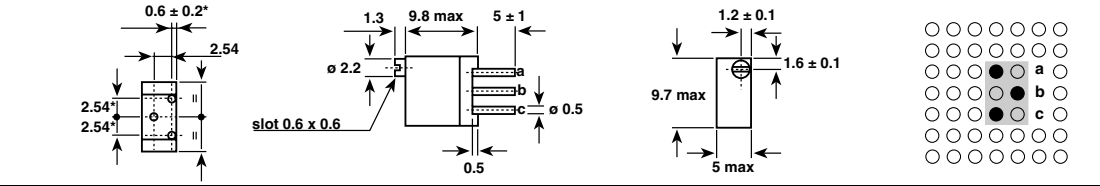

**T9XB (PM81B) C**



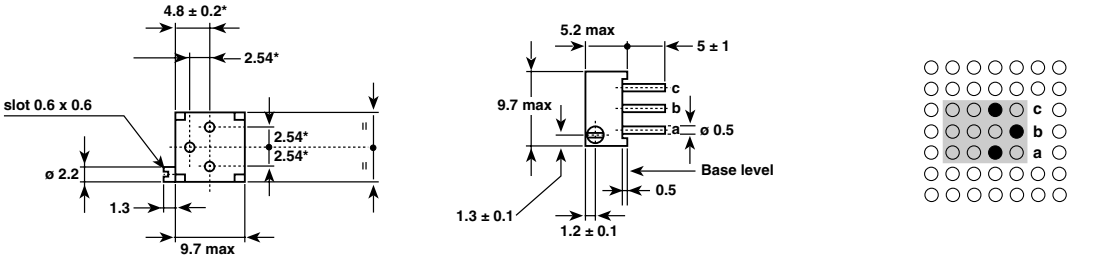

**T9YA (PM82A) B**




**T9YB (PM82B) D**



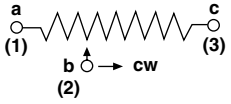
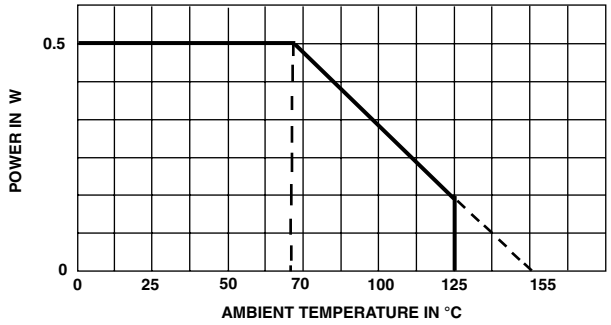

**T9Z (PM83) E**




**Note**

* to be measured at base level

**Undergoes European Quality Assurance System (CECC)**

| ELECTRICAL SPECIFICATIONS | |
|---|---|
| **Resistive Element** | Cermet |
| **Electrical Travel** | 21 turns ± 2 |
| **Resistance Range** | 10 Ω to 2.2 MΩ |
| **Standard Series E3** | 1 - 2.2 - 4.7 and on request 1 - 2 - 5 |
| **Tolerance** **standard** | 10 % |
| **Tolerance** **on request** | 5 % |
| **Power Rating** **linear** | 0.5 W at + 70 °C |
| **Power Rating** **logarithmic** | not applicable |
| **Power Rating** | **CIRCUIT DIAGRAM**     |
| **Temperature Coefficient** | see Standard Resistance Element Table |
| **Limiting Element Voltage (Linear Law)** | 250 V |
| **Contact Resistance Variation** | 2 % Rn or 1 Ω |
| **End Resistance (Typical)** | 1 Ω |
| **Dielectric Strength (RMS)** | 1000 V |
| **Insulation Resistance (500 VDC)** | $10^6$ MΩ |

| MECHANICAL SPECIFICATIONS | |
|---|---|
| **Mechanical Travel** | 23 turns ± 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 % |

| ENVIRONMENTAL SPECIFICATIONS | |
|---|---|
| **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 |
|---|---|---|---|---|
| | 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 | | 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 | ± 100 |
| 10K | | 70.7 | 7 | |
| 22K | | 105 | 4.8 | |
| 47K | | 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

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

## 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<br>Phase B damp heat<br>Phase C cold - 55 °C<br>Phase D damp heat 5 cycles | ± 2 % | ± 3 % | ± 0.5 % | ± 1 % |
| **Long Term Damp Heat** | 56 days<br>40 °C, 93 % RH | ± 2 %<br>Dielectric strength:<br>700 V<br>Insulation resistance:<br>> 100 MΩ | ± 3 % | ± 0.5 %<br>Dielectric strength:<br>1000 V<br>Insulation resistance:<br>> $10^4$ MΩ | ± 1 % |
| **Rotational Life** | 200 cycles | ± 2 %<br>Contact res. variation:<br>< 3 % Rn | - | ± 2 %<br>Contact res. variation:<br>< 1 % Rn | - |
| **Load Life** | 1000 h at rated power<br>90'/30' - ambient temp. 70 °C | ± 2 %<br>Contact res. variation:<br>< 3 % Rn | ± 3 % | ± 1 %<br>Contact res. variation:<br>< 1 % Rn | ± 2 % |
| **Rapid Temperature Change** | 5 cycles<br>- 55 °C to + 125 °C | ± 1.5 % | $\Delta V_{1-2}/\Delta V_{1-3}$<br>± 1 % | ± 0.5 % | $\Delta V_{1-2}/\Delta V_{1-3}$<br>< ± 1 % |
| **Shocks** | 50 g at 11 ms<br>3 successive shocks<br>in 3 directions | ± 1 % | ± 2 % | ± 0.1 % | ± 0.2 % |
| **Vibrations** | 10 to 55 Hz<br>0.75 mm or 10 g<br>during 6 h | ± 1 % | $\Delta V_{1-2}/\Delta V_{1-3}$<br>± 2 % | ± 0.1 % | $\Delta V_{1-2}/\Delta V_{1-3}$<br>< ± 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<br>XB<br>YA<br>YB<br>Z | From<br>10 Ω to 2.2 MΩ<br>474 = 470 kΩ | K = 10 %<br>on request J = 5 % | T20 = Tube<br>50 pieces | (if applicable)<br>Given by<br>VISHAY<br>for custom<br>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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