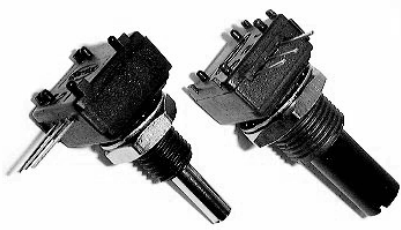


# 1/2" (12.7 mm) Conductive Plastic and Cermet Potentiometers



## FEATURES

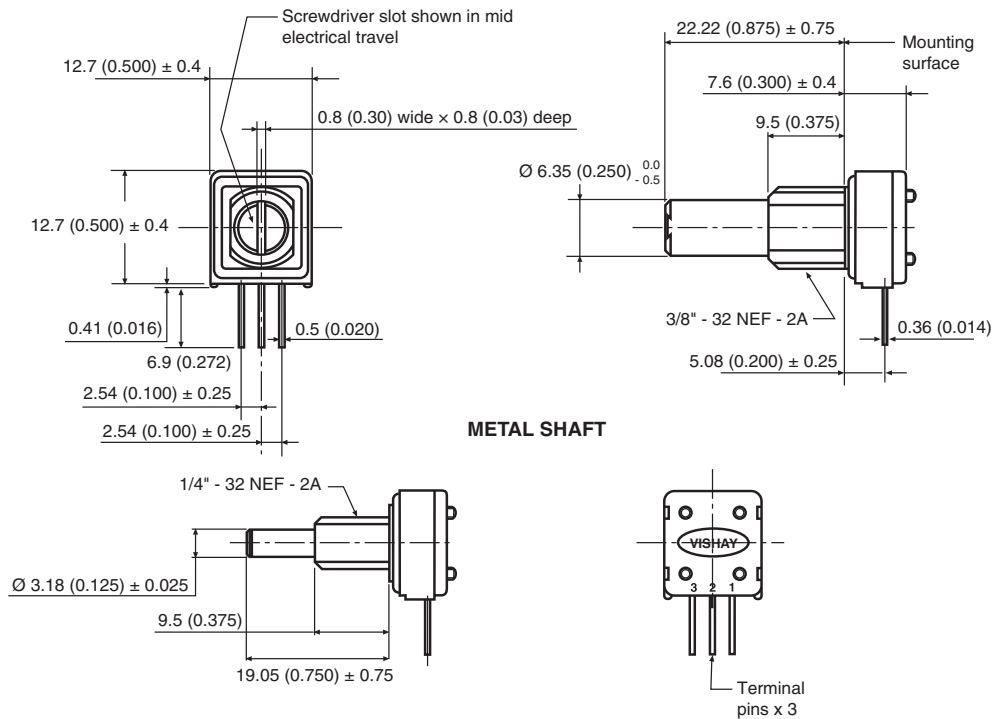
- Model 248: 0.5 W at 70 °C (conductive plastic element)
- Model 249: 1 W at 70 °C (cermet element)
- Cost effective panel potentiometer
- PCB mounting
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

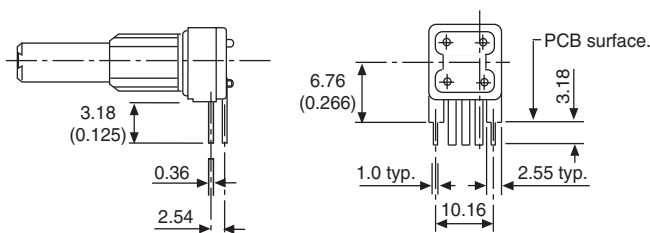
## DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

**X = Standards leads**

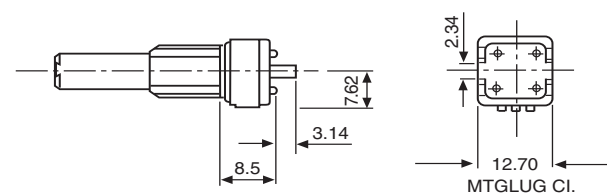
### METAL OR PLASTIC SHAFTS



### E = Rear stand off



### D = Rear locating lugs





| ELECTRICAL SPECIFICATIONS                       |  |                            |
|---|--|----------------------------|
| PARAMETER                                       | MODEL 248                                | MODEL 249                  |
| Element Type                                    | Conductive plastic                       | Cermet                     |
| Total Resistance Range                          | 500 Ω to 1 MΩ                            |                            |
| Standard Series                                 | 1, 2, 5                                  |                            |
| Resistance Tolerance                            | ± 20 %                                   | ± 20 % (on request ± 10 %) |
| Power Rating                                    | 0.5 W at 70 °C                           | 1.0 W at 70 °C             |
|   |  |                            |
| Circuit Diagram                                 |  |                            |
| Temperature Coefficient of Resistance (Typical) | ± 500 ppm/°C                             | ± 150 ppm/°C               |
| Linearity (Typical)                             | ± 5 % independent                        |                            |
| Limiting Element Voltage                        | 300 V                                    |                            |
| Contact Resistance Variation (Typical)          | 5 % of the total resistance              |                            |
| Insulation Resistance                           | 1000 MΩ minimum, 500 V <sub>DC</sub>     |                            |
| Dielectric Strength                             | 750 V <sub>RMS</sub> minimum 50 Hz/60 Hz |                            |
| End Resistance                                  | 2 Ω maximum each end                     |                            |
| Effective Electrical Travel                     | 265° ± 5°                                |                            |

| MECHANICAL SPECIFICATIONS |   |
|---------------------------|---|
| Mechanical Travel         | 295° ± 5°   |
| Operating Torque          | 0.1 Ncm to 2 Ncm                                  |
| End Stop Torque           | 35 Ncm (50 oz.-inch)                              |
| Max. Tightening Torque    | 50 Ncm  |
| 1/4" Bush                 |   |
| 3/8" Bush                 | 70 Ncm  |
| Weight                    | 8.3 g (0.29 oz.)<br>(1/4" x 7/8" FMF metal shaft) |

| ENVIRONMENTAL SPECIFICATIONS |                   |
|------------------------------|-------------------|
| Temperature Range            | -55 °C to +125 °C |
| Climatic Category            | 55/125/4          |
| Sealing                      | IP50              |

| MARKING  |
|--|
| <ul style="list-style-type: none"> <li>Vishay trademark</li> <li>Part number</li> <li>Tolerance</li> <li>Date code</li> <li>Terminal identification</li> </ul> |

| PACKAGING                              |
|--|
| - In box of 50 pieces, code B25 (BO50) |



| PERFORMANCE             |   |                                   |                              |   |
|-------------------------|---|-----------------------------------|------------------------------|---|
| TESTS                   | CONDITIONS  | TYPICAL VALUES AND DRIFTS FOR 249 |                              |   |
|                         |   | $\Delta R_T/R_T$ (%)              | $\Delta R_{1-2}/R_{1-2}$ (%) | OTHER   |
| Electrical Endurance    | 1000 h at rated power<br>90°/30° - ambient temp. 70 °C    | ± 3 %                             | ± 5 %                        | Contact res. variation: < 1 %   |
| Damp Heat, Steady State | 4 days<br>40 °C 93 % HR                                   | ± 2 %                             | -                            | Dielectric strength: 1000 V <sub>RMS</sub><br>Insulation resistance: > 10 <sup>4</sup> MΩ |
| Change of Temperature   | 5 cycles, -55 °C at +125 °C                               | ± 1 %                             | -                            | $\Delta V_{1-2}/V_{1-3} \leq \pm 2 \%$  |
| Mechanical Endurance    | 10 000 cycles   | ± 3 %                             | -                            | Contact res. variation: ≤ 2 % R <sub>n</sub>  |
| Shock                   | 50 g's at 11 ms<br>3 successive shocks<br>in 3 directions | ± 1 %                             | ± 2 %                        | -   |
| Vibration               | 10 Hz to 55 Hz, 0.75 mm or 10 g's<br>during 6 h           | ± 1 %                             | -                            | $\Delta V_{1-2}/V_{1-3} \leq \pm 2 \%$  |

**Note**

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

| STANDARD RESISTANCE ELEMENT DATA |                     |                      |                    |                     |                      |                    |
|----------------------------------|---------------------|----------------------|--------------------|---------------------|----------------------|--------------------|
| STANDARD RESISTANCE VALUES       | 248 LINEAR TAPER    |                      |                    | 249 LINEAR TAPER    |                      |                    |
|                                  | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. WIPER CURRENT | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. WIPER CURRENT |
| Ω                                | W                   | V                    | mA                 | W                   | V                    | mA                 |
| 500                              | 0.5                 | 15.8                 | 32                 | 1                   | 22.4                 | 45                 |
| 1K                               | 0.5                 | 22.4                 | 22                 | 1                   | 31.6                 | 32                 |
| 2K                               | 0.5                 | 31.6                 | 16                 | 1                   | 44.7                 | 22                 |
| 2.5K                             | 0.5                 | 35.4                 | 14                 | 1                   | 50.0                 | 20                 |
| 5K                               | 0.5                 | 50.0                 | 10                 | 1                   | 70.7                 | 14                 |
| 10K                              | 0.5                 | 70.7                 | 7                  | 1                   | 100                  | 10                 |
| 20K                              | 0.5                 | 100                  | 5.0                | 1                   | 141                  | 7                  |
| 25K                              | 0.5                 | 112                  | 4.5                | 1                   | 158                  | 6                  |
| 50K                              | 0.5                 | 158                  | 3.2                | 1                   | 224                  | 4                  |
| 100K                             | 0.5                 | 224                  | 2.2                | 0.90                | 300                  | 3.0                |
| 200K                             | 0.45                | 300                  | 1.50               | 0.45                | 300                  | 1.5                |
| 250K                             | 0.36                | 300                  | 1.20               | 0.36                | 300                  | 1.2                |
| 500K                             | 0.18                | 300                  | 0.60               | 0.18                | 300                  | 0.6                |
| 1M                               | 0.09                | 300                  | 0.30               | 0.09                | 300                  | 0.3                |



| ORDERING INFORMATION (part number)   |                          |       |              |           |   |   |                   |                     |  |  |  |  |
|--|--------------------------|-------|--------------|-----------|---|---|-------------------|---------------------|--|--|--|--|
| <div style="display: flex; justify-content: space-around; font-weight: bold;"> <span>2</span><span>4</span><span>8</span><span>F</span><span>G</span><span>J</span><span>S</span><span>P</span><span>X</span><span>B</span><span>2</span><span>5</span><span>2</span><span>5</span><span>2</span><span>M</span><span>A</span> </div> |                          |       |              |           |   |   |                   |                     |  |  |  |  |
| MODEL  | BUSHING                  | SHAFT |              |           | SHAFT END   | SHAFT MATERIAL  | LEADS             | PACKAGING           | RESISTANCE CODE/TOLERANCE/TAPER OR SPECIAL   |  |  |  |
| 248 = Plastic conductive<br>249 = Cermet element   | F = Ø 3/8"<br>B = Ø 1/4" | Ø     | L            | Old codes | S = Slotted<br>R = Round<br>F = Flatted<br>D = Custom | 0 = Metal (old codes 8 and 9)<br>P = Plastic (old code 7) | D<br>E<br>X = Std | B25 = Box 50 pieces | Resistance:<br>From 501 = 500 Ω to 105 = 1 MΩ<br><br>Tolerance:<br>M = 20 %;<br>On request :<br>K = 10 % (249 only)<br><br>Taper:<br>A = Linear;<br>L = Logarithmic (old code J) or special code given by Vishay |  |  |  |
|  |                          | GJ    | 1/4"         | 7/8"      | 7 and 9   |   |                   |                     |  |  |  |  |
|  |                          | BH    | 1/8"         | 3/4"      | 8   |   |                   |                     |  |  |  |  |
|  |                          | AP    | Custom shaft |           |   |   |                   |                     |  |  |  |  |

| PART NUMBER DESCRIPTION (for information only) |         |       |           |                |       |           |       |           |       |         |         |             |
|--|---------|-------|-----------|----------------|-------|-----------|-------|-----------|-------|---------|---------|-------------|
| 248  | F       | GJ    | S         | P              | X     | BO50      | 2K5   | 20 %      | A     |         |         | e3          |
| MODEL  | BUSHING | SHAFT | SHAFT END | SHAFT MATERIAL | LEADS | PACKAGING | VALUE | TOLERANCE | TAPER | SPECIAL | SPECIAL | LEAD FINISH |



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