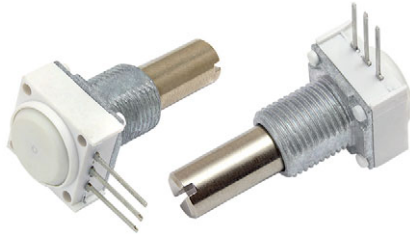


1/2" (12.7 mm) Conductive Plastic and Cermet Potentiometers



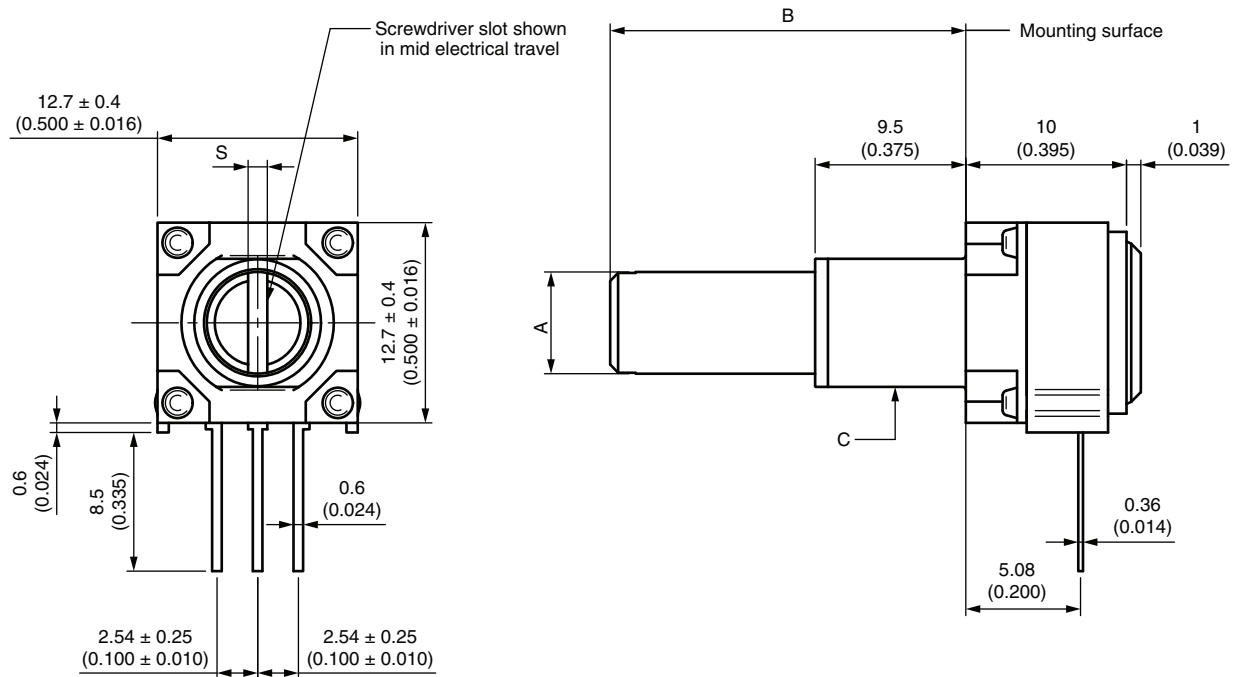
FEATURES

- 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


RoHS
COMPLIANT

| QUICK REFERENCE DATA | |
|-------------------------|---------------------------|
| Multiple module | No |
| Switch module | n/a |
| Detent module | n/a |
| Special electrical laws | A: linear, L: logarithmic |
| Sealing level | IP 50 |
| Lifespan | 10K cycles |

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



| VERSION BUSHING / SHAFT | A | B | C | S |
|-------------------------|-------|------|---------|-------------|
| | SHAFT | | BUSHING | SCREWDRIVER |
| | Ø | L | Ø | SLOT |
| B / BH | 1/8" | 3/4" | 1/4" | 0.8 |
| F / GJ | 1/4" | 7/8" | 3/8" | 1.2 |

| ELECTRICAL SPECIFICATIONS | | |
|---|--|-------------------------------------|
| PARAMETER | MODEL 248 | MODEL 249 |
| Element type | Conductive plastic | Cermet |
| Total resistance range | 1 k Ω to 500 k Ω | 500 Ω to 1 M Ω |
| Standard series | 1, 2, 5 | |
| Resistance tolerance | $\pm 20\%$ | $\pm 20\%$ (on request $\pm 10\%$) |
| 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) | $\pm 5\%$ independent | |
| Limiting element voltage | 300 V | |
| Contact resistance variation (typical) | 5 % of the total resistance | |
| Insulation resistance | 1000 M Ω minimum, 500 V _{DC} | |
| Dielectric strength | 750 V _{RMS} minimum 50 Hz / 60 Hz | |
| End resistance | 2 Ω maximum each end | |
| Effective electrical travel | 265° \pm 5° | |

| MECHANICAL SPECIFICATIONS | |
|---------------------------|---|
| Mechanical travel | 295° \pm 5° |
| Operating torque | 0.1 Ncm to 2 Ncm |
| End stop torque | 35 Ncm (50 oz.-inch) |
| Max. tightening torque | 150 Ncm |
| Weight | 8.3 g (0.29 oz.) (1/4" x 7/8" FMF metal shaft) |

| ENVIRONMENTAL SPECIFICATIONS | |
|------------------------------|-------------------|
| Temperature range | -55 °C to +125 °C |
| Climatic category | 55 / 125 / 4 |
| Sealing | IP 50 |

MARKING

- Vishay model
- Vishay logo
- Variation law
- SAP code for ohmic value
- Tolerance in %
- Date code (4 digits)
- Terminal identification "3" for lead 3

PACKAGING

- In box of 25 pieces, code BO25

Note

- Hardware supplied in separate bags



| 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 90°/30° - ambient temp. 70 °C | ± 3 % | ± 5 % | Contact res. variation: < 1 % |
| Damp heat, steady state | 4 days 40 °C 93 % HR | ± 2 % | - | Dielectric strength: 1000 V _{RMS} Insulation resistance: > 10 ⁴ 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 _n |
| Shock | 50 g's at 11 ms 3 successive shocks in 3 directions | ± 1 % | ± 2 % | - |
| Vibration | 10 Hz to 55 Hz, 0.75 mm or 10 g's 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) | | | | | | | | | | | | | | | | |
|--|--------------------------|-------|------|------|---|----------------|---------|------------------------------|---|---|---|---|---|---|---|---|
| 2 | 4 | 8 | F | G | J | S | 0 | X | B | 2 | 5 | 2 | 5 | 2 | M | A |
| MODEL | BUSHING | SHAFT | | | SHAFT END | SHAFT MATERIAL | LEADS | PACKAGING | RESISTANCE CODE / TOLERANCE / TAPER OR SPECIAL | | | | | | | |
| 248 = plastic conductive 249 = cermet element | F = Ø 3/8" B = Ø 1/4" | Ø | L | | S = slotted R = round F = flatted | 0 or P = metal | X = std | B25 = box of 25 pieces | Resistance: From 501 = 500 Ω to 105 = 1 MΩ Tolerance: M = 20 %; On request: K = 10 % (249 only) Taper: A = linear; L = logarithmic | | | | | | | |
| | | GJ | 1/4" | 7/8" | | | | | | | | | | | | |
| | | BH | 1/8" | 3/4" | | | | | | | | | | | | |

| ACCESSORIES | |
|--|--|
| Additional Accessories (to order separately) | www.vishay.com/doc?51051 |

| RELATED DOCUMENTS | |
|---|--|
| APPLICATION NOTES | |
| Potentiometers and Trimmers | www.vishay.com/doc?51001 |
| Guidelines for Vishay Sfernice Resistive and Inductive Components | www.vishay.com/doc?52029 |



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.