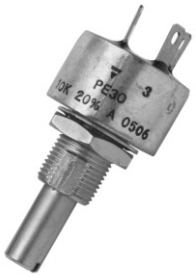
# Fully Sealed Container Cermet Potentiometer
# Military and Professional Grade



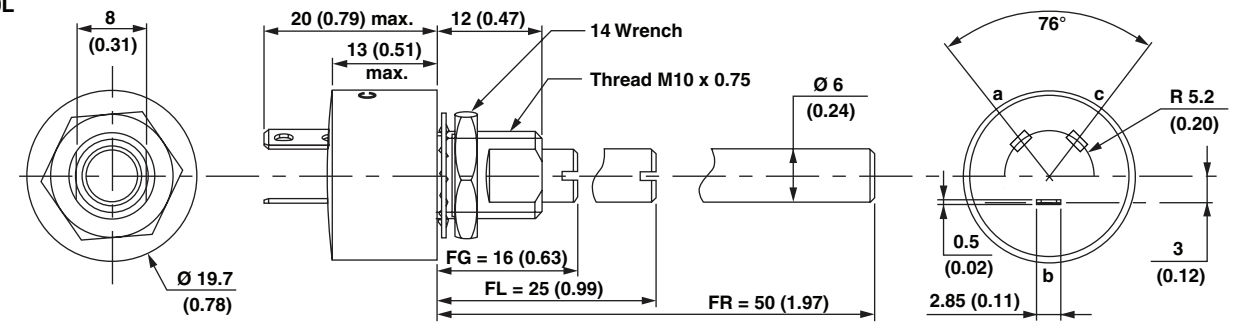
## FEATURES

- High power rating (3 W at 70 °C)
- Low temperature coefficient (150 ppm/°C typical)
- Full sealing
- Use of faston 2.86 connections
- Tests according to CECC 41 000
- Wires and connectors available
- Custom design on request

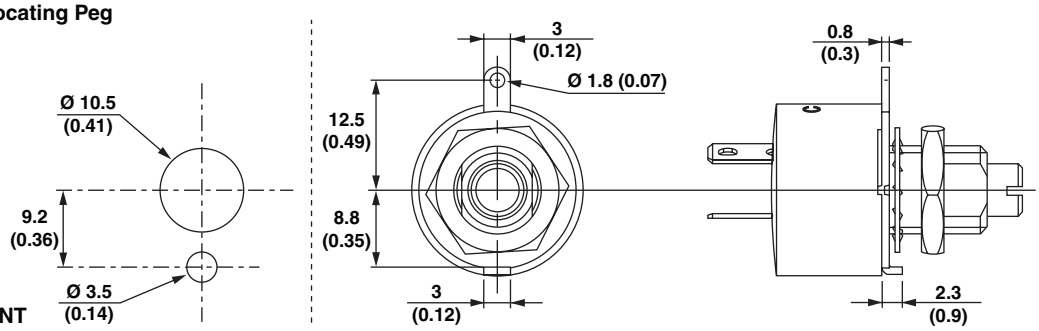
RoHS COMPLIANT

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

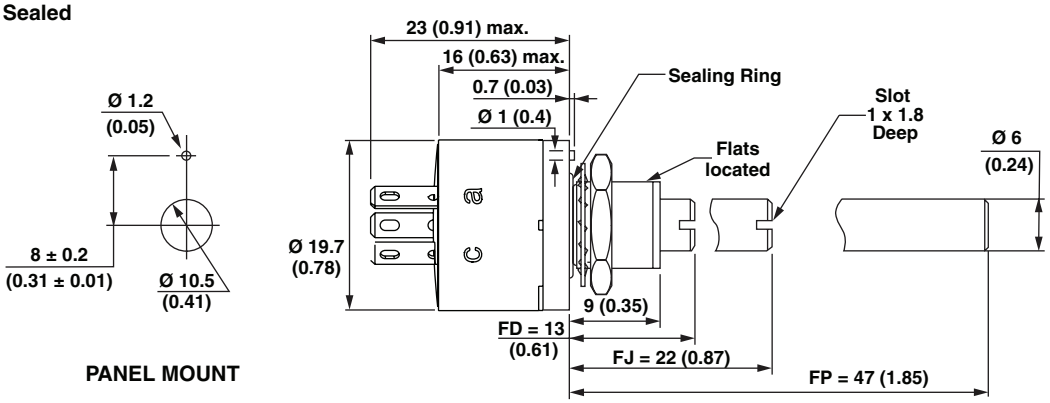
**PE30L**

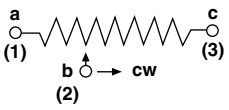
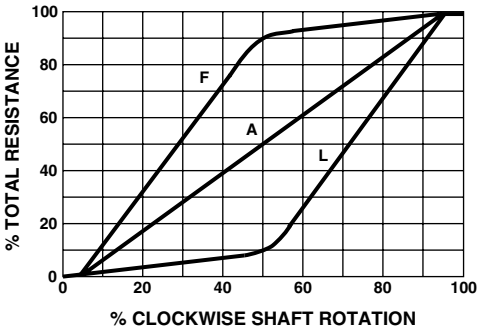
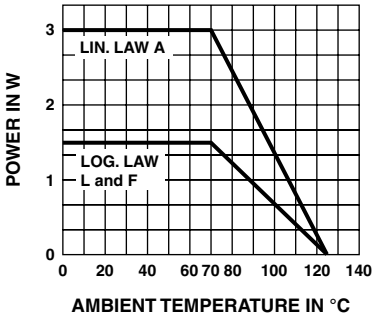



**PE30LL: LPRP - Locating Peg**




**PE30ME: Panel Sealed**



| ELECTRICAL SPECIFICATIONS | | |
|---|---|---|
| **Resistive Element** | | Cermet |
| **Electrical Travel** | | 270° ± 10 ° |
| **Resistance Range** | **Linear Law** | 22 Ω to 10 MΩ |
| | **Logarithmic Laws** | 100 Ω to 2.2 MΩ |
| **Standard Series E3** | | 1 - 2.2 - 4.7 and on request 1 - 2 - 5 |
| **Tolerance** | **Standard** | ± 20 % |
| | **On Request** | ± 10 % to ± 5 % |
| **Varation Law** | Linear | A |
| | **CIRCUIT DIAGRAM**   |   |
| **Power Rating** | Linear<br>3 W at 70 °C<br><br>Logarithmic<br>1.5 W at 70 °C |   |
| **Temperature Coefficient (Typical)** | | ± 150 ppm/°C |
| **Limiting Element Voltage** | | 300 V |
| **Contact Resistance Variation** | | 3 % Rn or 3 Ω |
| **End Resistance (Typical)** | | 1 Ω |
| **Dielectric Strength (RMS)** | | 2500 V |
| **Insulation Resistance (300 VDC)** | | $10^5$ MΩ |
| **Independent Linearity (Typical)** | | ± 5 % |

## STANDARD RESISTANCE ELEMENT DATA

| STANDARD RESISTANCE VALUES | LINEAR LAW | | | LOGS LAW | | | TYPICAL TCR - 55 °C + 125 °C |
|---|---|---|---|---|---|---|---|
| | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CUR. THROUGH WIPER | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CUR. THROUGH WIPER | |
| Ω | W | V | mA | W | V | mA | ppm/°C |
| 22 | 3 | 8.12 | 369 | | | | ± 150 |
| 47 | 3 | 11.87 | 252 | | | | |
| 100 | 3 | 17.32 | 173 | | | | |
| 220 | 3 | 25.69 | 116 | | | | |
| 470 | 3 | 37.55 | 79 | | | | |
| 1K | 3 | 57.44 | 54 | 1.5 | 38.7 | 38.7 | |
| 2.2K | 3 | 81.24 | 37 | 1.5 | 57.4 | 26.1 | |
| 4.7K | 3 | 118.74 | 25 | 1.5 | 83.9 | 17.9 | |
| 10K | 3 | 173.20 | 17 | 1.5 | 122 | 12.2 | |
| 22K | 3 | 256.9 | 11 | 1.5 | 181.6 | 8.25 | |
| 47K | 1.91 | 300 | 6.3 | 1.5 | 265 | 5.64 | |
| 100K | 0.90 | 300 | 3 | 0.9 | 300 | 3 | |
| 220K | 0.41 | 300 | 1.36 | 0.41 | 300 | 1.36 | |
| 470K | 0.19 | 300 | 0.63 | 0.19 | 300 | 0.63 | |
| 1M | 0.09 | 300 | 0.30 | 0.09 | 300 | 0.30 | |
| 2.2M | 0.04 | 300 | 0.13 | | | | |
| 4.7M | 0.02 | 300 | 0.06 | | | | |
| 10M | 0.01 | 300 | 0.03 | | | | |

## MECHANICAL SPECIFICATIONS

| | | |
|---|---|---|
| **Mechanical Travel** | 300° ± 5° | |
| **Operating Torque (Typical)** | 3 Ncm max. | 4.25 oz.-inch max. |
| **End Stop Torque** | 120 Ncm max. | 10.51 lb oz.-inch max. |
| **Tightening Torque of Mounting Nut** | 250 Ncm max. | 22 lb-inch max. |
| **Unit Weight** | 23 to 32 g max. | 0.8 to 1.13 oz. |
| **Terminals** | e3: pure Sn | |

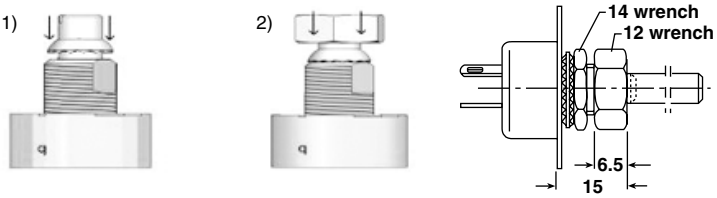
## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| **Temperature Range** | - 55 °C to 125 °C |
| **Climatic Category** | 55/125/56 |
| **Sealing** | Fully sealed - Container IP67 |

## OPTIONS

| | |
|---|---|
| **Special Feature Command Shaft** | Length is measured from the mounting surface to the free end of the shaft. The screwdriver slot is aligned with the wiper within ± 10°. Special shafts are available, in accordance to drawings supplied by customers. We recommend that customers should not machine tool shafts, in order to avoid damage. Bending or torsion of terminals should also be avoided. |
| **Panel Sealing (PE30M)** | The panel sealing device consists of a ring located in a groove on the potentiometer face. Sealing is obtained by tightening the ring against the panel when mounting the potentiometer. Old code: PE30P |

## OPTIONS

| | |
|---|---|
| **Locating Peg (PE30LL)** | Location is obtained by fitting a special washer on the mounting face of the potentiometer.<br>Old code: LPRP |
| **Shaft Locking (PE30LD)** | The shaft locking device consists of a tapered nut tightening a slotted notched washer against both bushing and shaft.<br>DBAN tightening torque is 200 Ncm, shaft locking torque being 30 Ncm.<br>DBAN is also available with all special types.<br>This device is normally supplied in a separate bag. Can be pre-mounted on request.<br>**Assembling Method**<br>  <br> |

## MARKING

- VISHAY trademark
- Model
- Ohmic Value (in Ω, kΩ or MΩ)
- Tolerance (in %)
- Manufacturing date code
- Marking of terminals 3, and a, b, c

## PERFORMANCE

| CECC 41 301 - 002 | | | | TYPICAL VALUES AND DRIFTS | |
|---|---|---|---|---|---|
| **TESTS** | **CONDITIONS** | $\frac{\Delta RT}{RT}$ **(%) REQUIREMENTS** | $\frac{\Delta R1\text{-}2}{R1\text{-}2}$ **(%)** | $\frac{\Delta RT}{RT}$ **(%)** | $\frac{\Delta R1\text{-}2}{R1\text{-}2}$ **(%)** |
| **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 | ± 10 % | ± 10 % | ± 0.5 % | ± 1 % |
| **Long Term Damp Heat** | 56 days<br>40 °C 93 % HR | ± 10 %<br>Insulation resistance: > 100 MΩ | | ± 0.5 %<br>Insulation resistance: > $10^4$ MΩ | ± 1 % |
| **Rotational Life** | 25 000 cycles | ± 10 %<br>Contact res. variation: < 7 % Rn | | ± 3 %<br>Contact res. variation: < 2 % Rn | |
| **Load Life** | 1000 h at rated power<br>90'/30' - ambient temp. 70 °C | ± 10 %<br>Contact res. variation: < 7 % Rn | | ± 1 %<br>Contact res. variation: < 3 % Rn | |
| **Rapid Temperature Change** | 5 cycles<br>- 55 °C at + 125 °C | ± 3 % | | ± 0.5 % | |
| **Shock** | 50 g at 11 ms<br>3 successive shocks<br>in 3 directions | ± 2 % | | ± 0.1 % | ± 0.2 % |
| **Vibration** | 10 to 55 Hz<br>0.75 mm or 10 g<br>during 6 hours | ± 2 % | | ± 0.1 % | ± 0.2 % |

## SAP ORDERING INFORMATION (Part Number 18 digits)

| P | E | 3 | 0 | L | B | F | G | 2 | 0 | 4 | M | A | B | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MODEL | BUSHING | OPTION | SHAFT | OHMIC VALUE | TOLERANCE | LAW | PACKAGING | SPECIAL NUMBER |
|---|---|---|---|---|---|---|---|---|
| | L = M10 x 0.75<br><br>M = Panel sealed M10 x 0.75 | 0 = none<br><br>For L Bushing<br>D = DBAN<br>L = LPRP<br>B = DBAN and LPRP<br>A = Peg and DBAN<br><br>For M Bushing<br>E = Peg | For L Bushing (= old codes:)<br>FG 16 mm, slotted = AC<br>FL 25 mm, slotted = AM<br>FR 50 mm, plain = AL<br><br>For M Bushing<br>FD = 13 mm, slotted = AC<br>FJ = 22 mm, slotted = AM<br>FP = 47 mm, plain = AL | A law = from 22 Ω to 10 MΩ<br><br>L and F laws = from 100 Ω to 2.2 MΩ | ± 20 %<br>on request<br>± 10 %<br>± 5 % | A = Linear<br>L = Clockwise logarithmic<br>F = Clockwise inverse logarithmic | B = Box of 10 pieces | (if applicable)<br>Given by VISHAY for custom design |

## PART NUMBER DESCRIPTION (for information only)

| PE30 | | LPRP | AC | 200K | 20 % | A | DBAN | | BO10 | | | e3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODEL | FEATURES | OPTION | SHAFT | VALUE | TOLERANCE | TAPER | OPTION | SPECIAL | PACKAGING | CUSTOM SHAFT | SPECIAL | LEAD (Pb)-FREE |

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