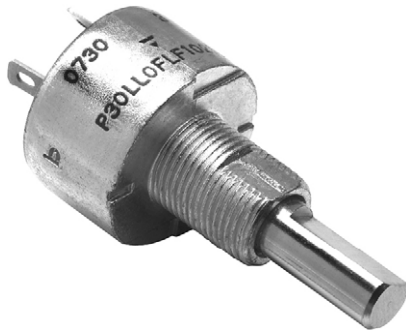




Long Life Potentiometer - 2 Million Cycles, Heavy Duty - Cermet, Fully Sealed



FEATURES

- 2 million cycles
- High power rating 3 W at 70 °C
- Cermet element
- Low temperature coefficient (± 150 ppm/°C typical)
- Custom designs on request
- Tests according to CECC 41000 or IEC 60393-1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

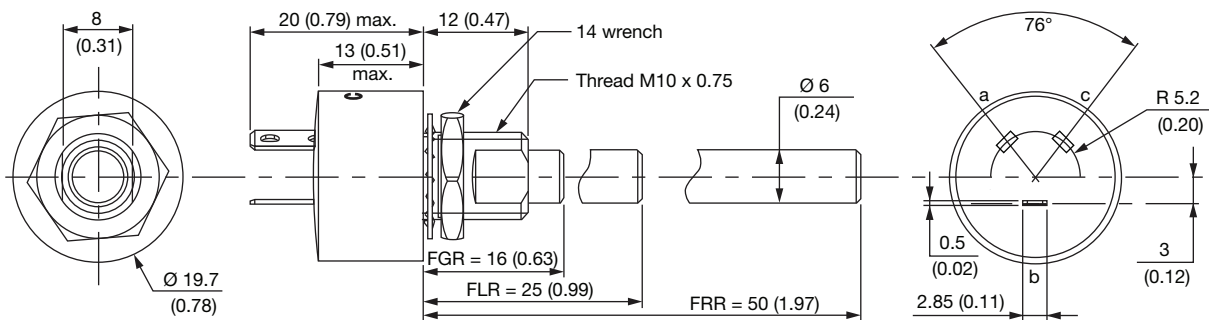


RoHS COMPLIANT

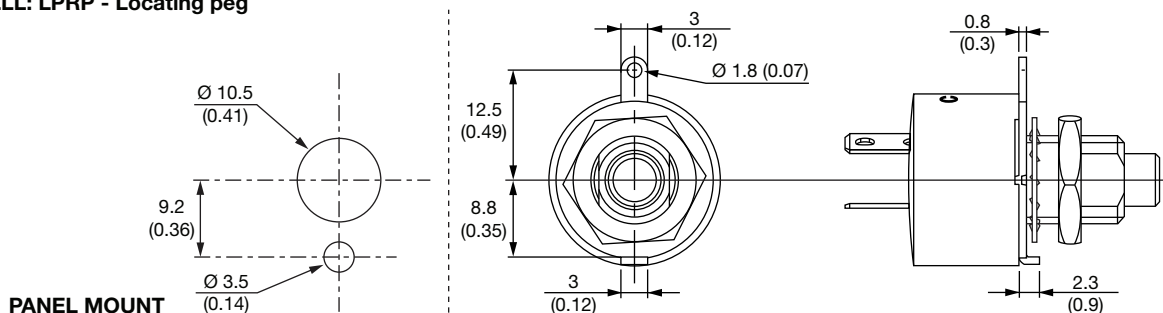
| QUICK REFERENCE DATA | |
|-------------------------|---|
| Multiple module | No |
| Switch module | n/a |
| Detent module | n/a |
| Special electrical laws | A: linear, L: logarithmic, F: reverse logarithmic |
| Sealing level | IP 67 |
| Lifespan | 2M cycles |

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

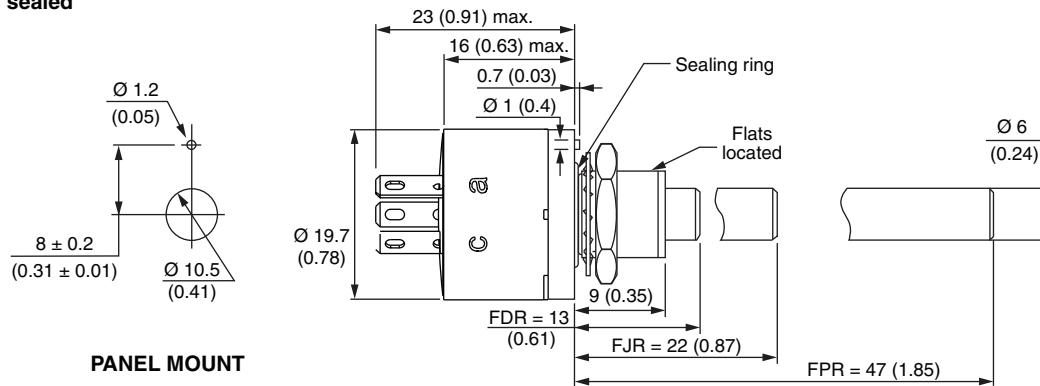
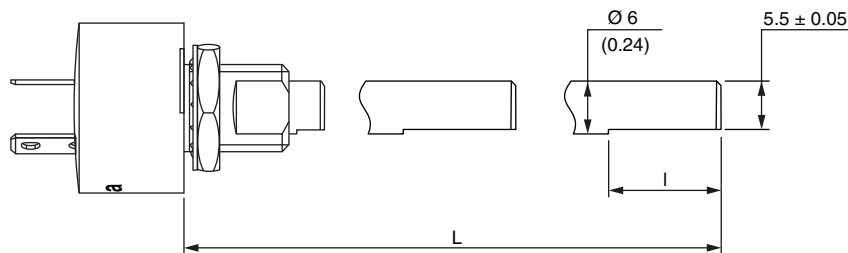
P30LL



P30LLL: LPRP - Locating peg



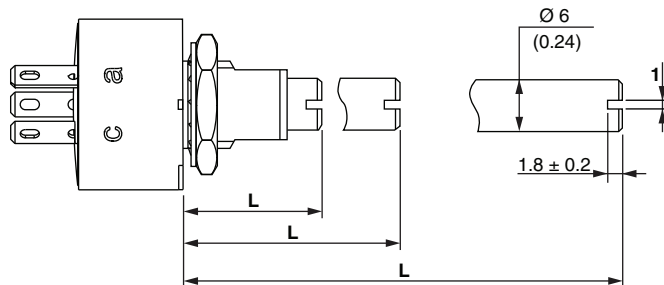
DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02 ")

P30LME: Panel sealed

PANEL MOUNT
Standard shaft style F (flatted)


| MODEL | SHAFT CONFIGURATION | L (mm) | I (mm) |
|-------|---------------------|--------|--------|
| P30LL | FGF | 16 | 3.17 |
| | FLF | 25 | 12 |
| | FRF | 30 | 12 |
| P30LM | FDF | 13 | 3.17 |
| | FJF | 22 | 12 |
| | FPF | 47 | 12 |

Note

- Shaft shown at center position. Flat opposite to the wiper

Standard shaft style S (slotted)


| MODEL | SHAFT CONFIGURATION | L (mm) |
|-------|---------------------|--------|
| P30LL | FGS | 16 |
| | FLS | 25 |
| | FRS | 50 |
| P30LM | FDS | 13 |
| | FJS | 22 |
| | FPS | 47 |

Note

- Slot aligned to the wiper at $\pm 10^\circ$

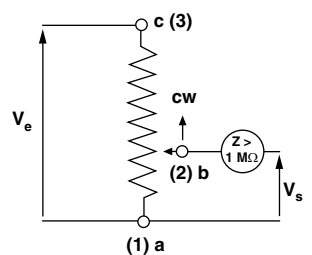
| ELECTRICAL SPECIFICATIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|-------------------------|--------------------------|------------------|--|-------------------------|--------------------------|-------------------------|--------------------------|---|---|------|-----|------|---|---|-----|-----|------|----|---|-----|-----|-----|----|-----|-----|-----|-----|
| Resistive element | Cermet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical travel | 270° ± 10° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Standard resistance values | 1 kΩ - 5 kΩ - 10 kΩ - 50 kΩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tolerance | 20 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Taper | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power rating | <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> Linear Non-linear taper </div> <div style="width: 30%;"> 3 W at 70 °C 1.5 W at 70 °C </div> <div style="width: 40%;"> </div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Circuit diagram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Standard resistance element data | <table border="1"> <thead> <tr> <th rowspan="2">RESISTANCE VALUE (kΩ)</th> <th colspan="2">LINEAR TAPER</th> <th colspan="2">NON-LINEAR TAPER</th> </tr> <tr> <th>MAX. POWER AT 70 °C (W)</th> <th>MAX. WORKING VOLTAGE (V)</th> <th>MAX. POWER AT 70 °C (W)</th> <th>MAX. WORKING VOLTAGE (V)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>54.8</td> <td>1.5</td> <td>38.7</td> </tr> <tr> <td>5</td> <td>3</td> <td>122</td> <td>1.5</td> <td>86.6</td> </tr> <tr> <td>10</td> <td>3</td> <td>173</td> <td>1.5</td> <td>122</td> </tr> <tr> <td>50</td> <td>1.8</td> <td>300</td> <td>1.5</td> <td>274</td> </tr> </tbody> </table> | RESISTANCE VALUE (kΩ) | LINEAR TAPER | | NON-LINEAR TAPER | | MAX. POWER AT 70 °C (W) | MAX. WORKING VOLTAGE (V) | MAX. POWER AT 70 °C (W) | MAX. WORKING VOLTAGE (V) | 1 | 3 | 54.8 | 1.5 | 38.7 | 5 | 3 | 122 | 1.5 | 86.6 | 10 | 3 | 173 | 1.5 | 122 | 50 | 1.8 | 300 | 1.5 | 274 |
| RESISTANCE VALUE (kΩ) | LINEAR TAPER | | NON-LINEAR TAPER | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MAX. POWER AT 70 °C (W) | MAX. WORKING VOLTAGE (V) | MAX. POWER AT 70 °C (W) | MAX. WORKING VOLTAGE (V) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | 54.8 | 1.5 | 38.7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 3 | 122 | 1.5 | 86.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 3 | 173 | 1.5 | 122 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 1.8 | 300 | 1.5 | 274 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature coefficient (typical) | ± 150 ppm/°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Limiting element voltage | 300 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| End resistance (typical) | 1 Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dielectric strength (RMS) | 2500 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Insulation resistance (300 V _{DC}) | 10 ⁵ MΩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Independent linearity (typical) | ± 5 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| MECHANICAL SPECIFICATIONS | | |
|-----------------------------------|-------------------|---------------------|
| Mechanical travel | 300° ± 5° | |
| Operating torque / typical value | 3 Ncm | 4.25 oz.-inch |
| End stop torque | 70 Ncm max. | 99 oz.-inch max. |
| Tightening torque of mounting nut | 250 Ncm max. | 22.13 lb-inch max. |
| Unit weight | 23 g to 32 g max. | 0.8 oz. 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 | 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. |
| Locating peg | Location is obtained by fitting a special washer on the mounting face of the potentiometer. |

| MARKING |
|--|
| <ul style="list-style-type: none"> • Vishay trademark • Full ordering information (see Ordering Information table) • Manufacturing date code • Marking of terminals 3, and a, b, c |

| APPLICATION NOTE | |
|---|---|
| <p>The potentiometer shall be used in voltage divider with an impedance load at least 100 times higher than the total potentiometer nominal resistance value.</p> <p>Advised load impedance: 1 MΩ min. for resistance range of 1kΩ to 50 kΩ</p> |  |



| PERFORMANCE | | | | |
|-------------------------|---|---------------------------|------------------------------|--|
| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS | | |
| | | $\Delta R_T/R_T$ (%) | $\Delta R_{1-2}/R_{1-2}$ (%) | OTHER |
| Electrical endurance | 1000 h at rated power 90°/30° - ambient temp. 70 °C | ± 20 % | ± 20 % | - |
| Climatic sequence | Phase A dry heat 125 °C Phase B damp heat Phase C cold -55 °C Phase D damp heat 5 cycles | ± 0.5 % | ± 1 % | - |
| Damp heat, steady state | 56 days 40 °C 93 % HR | ± 0.5 % | ± 1 % | Insulation resistance: > 100 M Ω |
| Change of temperature | 5 cycles -55 °C at +125 °C | ± 0.5 % | - | - |
| Mechanical endurance | 2 000 000 cycles at rated power Turn angle: ± 60° Temperature: 20 °C | ± 20 % | - | Independent linearity: ± 10 % |
| Shock | 50 g's at 11 ms 3 successive shocks in 3 directions | ± 0.1 % | ± 0.2 % | - |
| Vibration | 10 Hz to 55 Hz 0.75 mm or 10 g's during 6 h | ± 0.1 % | ± 0.2 % | - |

Note

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

| ORDERING INFORMATION (part number) | | | | | | | | | | | | | | | | | |
|------------------------------------|---|--|---|--|--|--|-----------|--|---|---|---|---|---|--|--|--|--|
| P | 3 | 0 | L | L | 0 | F | G | R | 1 | 0 | 3 | M | A | | | | |
| MODEL | BUSHING | OPTION | SHAFT | | | RESISTANCE CODE / TOLERANCE CODE / TAPER | | | SPECIAL NUMBER | | | | | | | | |
| P30L | L = M10 x 0.75 M = panel sealed M10 x 0.75 | 0 = none E = with locating peg (for M bushing only) L = LPRP | Diameter | Length | End Shaft Shape | Ohmic Value | Tolerance | Taper | (if applicable) Given by Vishay for custom design | | | | | | | | |
| | | | F = \varnothing 6 mm AP = custom shaft | For L bushing G = 16 mm L = 25 mm R = 50 mm For M bushing D = 13 mm J = 22 mm P = 47 mm | R = round On request: S = slotted D = custom end shaft F = flatted | 102 = 1 k Ω 502 = 5 k Ω 103 = 10 k Ω 503 = 50 k Ω | M = 20 % | A = linear L = logarithmic F = inverse clockwise logarithmic | | | | | | | | | |

| PART NUMBER DESCRIPTION (for information only) | | | | | | | | | | | |
|--|---------|--------|-------|-------|-----------|-------|---------|-----------|---------|---------|----------------|
| P30L | L | 0 | FGR | 10K | 20 % | A | | BO10 | | | e3 |
| MODEL | BUSHING | OPTION | SHAFT | VALUE | TOLERANCE | TAPER | SPECIAL | PACKAGING | SPECIAL | SPECIAL | LEAD (Pb)-FREE |

| 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 |



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