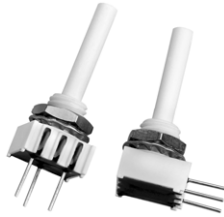


## Long Life Potentiometer - 500 000 Cycles Miniature - Cermet - Fully Sealed



### FEATURES

- 500 000 cycles
- Cermet element
- Low temperature coefficient ( $\pm 150$  ppm/ $^{\circ}$ C typical)
- Plastic housing and shaft
- Compact (3/8" square)
- Fully sealed
- Test 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)



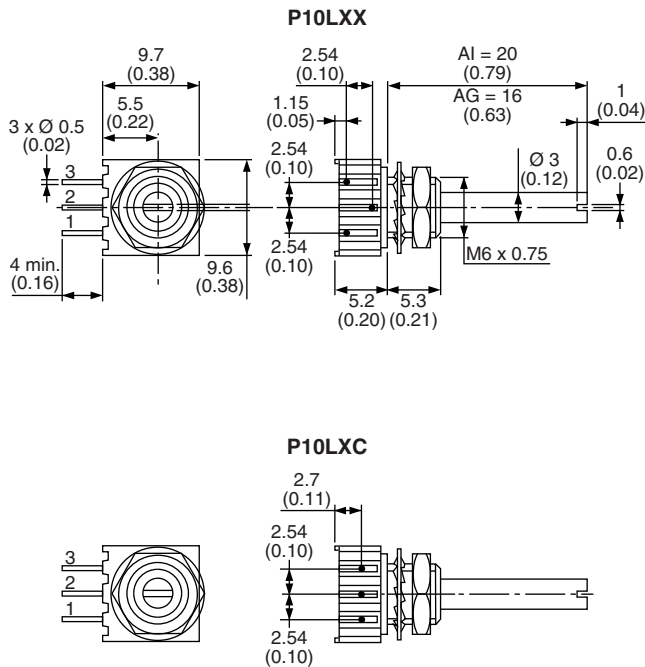
**RoHS**  
COMPLIANT

### QUICK REFERENCE DATA

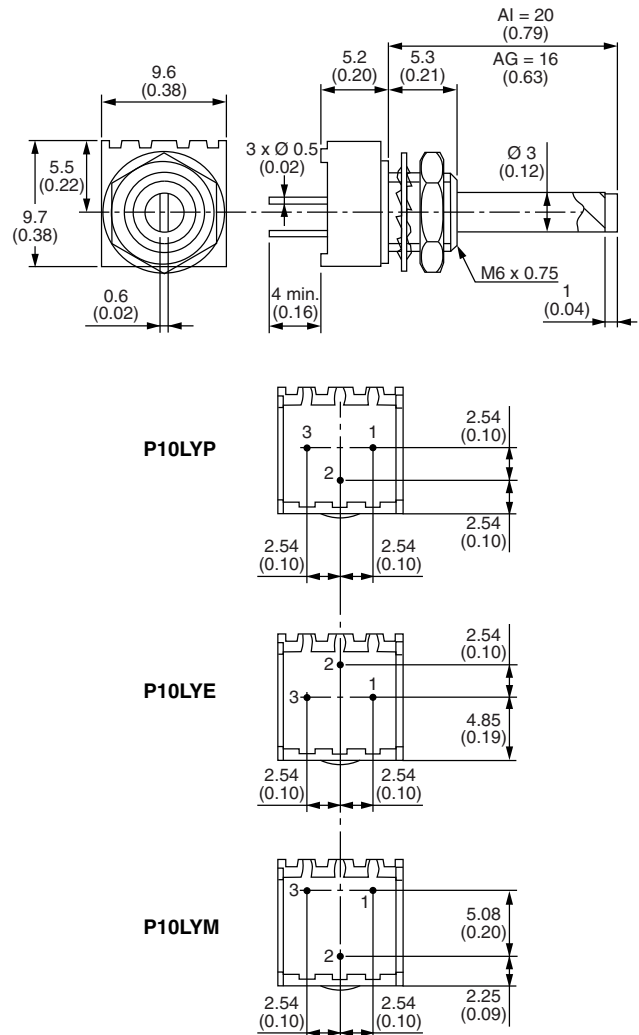
|                         |                    |
|-------------------------|--------------------|
| Multiple module         | No                 |
| Switch module           | n/a                |
| Detent module           | n/a                |
| Special electrical laws | No, only A: linear |
| Sealing level           | IP 67              |
| Lifespan                | 500K cycles        |

### DIMENSIONS in millimeters (inches) $\pm 0.5$ mm ( $\pm 0.02$ " )

#### P10L: Side Adjust



#### P10L: Top Adjust



| <b>ELECTRICAL SPECIFICATIONS</b>             |  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
|--|--|--------------------------|-------------------------|--------------------------|---|-----|----|---|-----|------|----|-----|------|----|-----|------|
| Resistive element                            | Cermet   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Electrical travel                            | 250° ± 15°   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Standard resistance values                   | 1 kΩ - 5 kΩ - 10 kΩ - 50 kΩ  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Tolerance                                    | 20 % - 10 % on request   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Taper  | Linear<br>A  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
|  |  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Circuit diagram                              |  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Power rating                                 | 0.1 W at 70 °C<br>   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Standard resistance element data             | <table border="1"> <thead> <tr> <th>Resistance Value (kΩ)</th> <th>Max. Power at 70 °C (W)</th> <th>Max. Working Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.1</td> <td>10</td> </tr> <tr> <td>5</td> <td>0.1</td> <td>22.3</td> </tr> <tr> <td>10</td> <td>0.1</td> <td>31.6</td> </tr> <tr> <td>50</td> <td>0.1</td> <td>70.7</td> </tr> </tbody> </table> | Resistance Value (kΩ)    | Max. Power at 70 °C (W) | Max. Working Voltage (V) | 1 | 0.1 | 10 | 5 | 0.1 | 22.3 | 10 | 0.1 | 31.6 | 50 | 0.1 | 70.7 |
| Resistance Value (kΩ)                        | Max. Power at 70 °C (W)  | Max. Working Voltage (V) |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| 1  | 0.1  | 10                       |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| 5  | 0.1  | 22.3                     |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| 10   | 0.1  | 31.6                     |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| 50   | 0.1  | 70.7                     |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Temperature coefficient (typical)            | ± 150 ppm/°C   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Limiting element voltage                     | 75 V   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| End resistance (typical)                     | 1 Ω  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Dielectric strength (RMS)                    | 1000 V   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Insulation resistance (300 V <sub>DC</sub> ) | 10 <sup>6</sup> MΩ   |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |
| Independent linearity (typical)              | ± 5 %  |                          |                         |                          |   |     |    |   |     |      |    |     |      |    |     |      |

| <b>MECHANICAL SPECIFICATIONS</b>  |             |                          |
|-----------------------------------|-------------|--------------------------|
| Mechanical travel                 | 290° ± 5    |                          |
| Operating torque (typical)        | 2 Ncm max.  | 2.83 oz.-inch max.       |
| End stop torque                   | 7 Ncm max.  | 9.9 oz.-inch max.        |
| Tightening torque of mounting nut | 25 Ncm max. | 2.2 lb.-inch max.        |
| Unit weight                       | 1 g         | 3.5 10 <sup>-2</sup> oz. |
| Terminals                         | e3: Pure Sn |                          |

| <b>ENVIRONMENTAL SPECIFICATIONS</b> |                               |
|-------------------------------------|-------------------------------|
| Temperature range                   | -40 °C to +100 °C             |
| Climatic category                   | 40/100/56                     |
| Sealing                             | Fully sealed - container IP67 |

| <b>MARKING</b>   |
|--|
| <ul style="list-style-type: none"> <li>• Vishay trademark</li> <li>• Model</li> <li>• Ohmic value code</li> <li>• Tolerance code</li> <li>• Manufacturing date code</li> <li>• Marking of terminals 3</li> </ul> |

| <b>APPLICATION NOTE</b>   |  |
|---|--|
| <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:<br/>1 MΩ min. for resistance range of 1kΩ to 50 kΩ</p> |  |

| <b>PERFORMANCE</b>      |   |                           |                              |  |
|-------------------------|---|---------------------------|------------------------------|--|
| 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<br>90°/30° - ambient temp. 70 °C  | ± 20 %                    | ± 20 %                       | -  |
| Climatic sequence       | Phase A dry heat 100 °C<br>Phase B damp heat<br>Phase C cold -40 °C<br>Phase D damp heat 5 cycles | ± 1 %                     | ± 2 %                        | -  |
| Damp heat, steady state | 56 days<br>40 °C 93 % HR  | ± 1 %                     | ± 2 %                        | Insulation resistance:<br>> 10 <sup>4</sup> MΩ |
| Change of temperature   | 5 cycles<br>-40 °C at 100 °C  | ± 1 %                     | ± 2 %                        | -  |
| Mechanical endurance    | 500 000 cycles at rated power<br>Turn angle: ± 50°<br>Temperature: 20 °C                          | ± 20 %                    | -                            | Independent linearity:<br>± 20 %               |
| Shock                   | 50 g's at 11 ms<br>3 successive shocks<br>in 3 directions   | ± 0.5 %                   | ± 1 %                        | -  |
| Vibration               | 10 Hz to 55 Hz<br>0.75 mm or 10 g's<br>during 6 h   | ± 0.5 %                   | ± 1 %                        | -  |

**Note**

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



| ORDERING INFORMATION (part number) |                            |  |  |   |                     |   |   |   |   |   |   |   |   |  |  |  |  |
|------------------------------------|----------------------------|--|--|---|---------------------|---|---|---|---|---|---|---|---|--|--|--|--|
| P                                  | 1                          | 0  | L  | X                                       | X                   | A   | G | 1 | 0 | 2 | M | B | 4 |  |  |  |  |
| MODEL                              | STYLE                      | SHAFT  | RESISTANCE CODE  | TOLERANCE CODE                          | PACKAGING CODE      | SPECIAL NUMBER  |   |   |   |   |   |   |   |  |  |  |  |
| P10L                               | XC<br>XX<br>YE<br>YM<br>YP | AG =<br>Ø 3 mm to 16 mm<br>AI =<br>Ø 3 mm to 20 mm | 102 = 1 kΩ<br>502 = 5 kΩ<br>103 = 10 kΩ<br>503 = 50 kΩ | M = 20 %<br><br>On request:<br>K = 10 % | B4 = box 100 pieces | (if applicable)<br>Given by<br>Vishay<br>for custom<br>design |   |   |   |   |   |   |   |  |  |  |  |

| PART NUMBER DESCRIPTION (for information only) |       |       |       |           |         |           |                |
|--|-------|-------|-------|-----------|---------|-----------|----------------|
| P10L   | XX    | AG    | 1K    | 20 %      |         | BO100     | e3             |
| MODEL  | STYLE | SHAFT | VALUE | TOLERANCE | SPECIAL | PACKAGING | LEAD (Pb)-FREE |

| RELATED DOCUMENTS   |  |
|---|--|
| <b>APPLICATION NOTES</b>  |  |
| Potentiometers and Trimmers                                       | <a href="http://www.vishay.com/doc?51001">www.vishay.com/doc?51001</a> |
| Guidelines for Vishay Sfernice Resistive and Inductive Components | <a href="http://www.vishay.com/doc?52029">www.vishay.com/doc?52029</a> |



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