



## Features

- Repeatable settings
- Resolution to 0.001 %
- Digital display provides excellent readability
- Snap-in panel mount

# 3680 Family - Precision Potentiometer

### Electrical Characteristics<sup>1</sup>

|   |   |
|---|---|
| Standard Resistance Range .....   | 10 ohms to 1 megohm                             |
| Total Resistance Tolerance .....  | ±3 %  |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)<br>Sea Level .....      | 1,000 VAC minimum                               |
| Power Rating (Voltage Limited By Power Dissipation or 500 VAC, Whichever is Less) |   |
| +25 °C .....  | .2 watts  |
| +85 °C .....  | .0 watt   |
| Insulation Resistance (500 VDC) .....   | 1,000 megohms minimum                           |
| Resolution  |   |
| 3681 .....  | .10 %   |
| 3682 .....  | .1 %  |
| 3683 .....  | .0.1 %  |
| 3684 .....  | .0.01 %   |
| 3685 .....  | .0.001 %  |
| Absolute Minimum Resistance .....   | .3 ohms or 0.2 % maximum (whichever is greater) |
| Accuracy (Dial Reading to Output Ratio) .....                                     | ±1.0 % full scale                               |

### Environmental Characteristics<sup>1</sup>

|  |                                      |
|--|--------------------------------------|
| Operating Temperature Range .....                            | -25 °C to +85 °C                     |
| Storage Temperature Range .....                              | -25 °C to +85 °C                     |
| Temperature Coefficient Over Storage Temperature Range ..... | ±100 ppm/°C maximum                  |
| Vibration .....  | 10 G                                 |
| Wiper Bounce .....   | .0.1 millisecond maximum             |
| Total Resistance Shift .....                                 | ±1 % maximum                         |
| Voltage Ratio Shift .....                                    | ±0.2 % maximum                       |
| Shock .....  | 50 G                                 |
| Wiper Bounce .....   | .0.1 millisecond maximum             |
| Total Resistance Shift .....                                 | ±1 % maximum                         |
| Voltage Ratio Shift .....                                    | ±0.2 % maximum                       |
| Load Life .....  | 1,000 hours, 2 watts                 |
| Total Resistance Shift .....                                 | ±2 % maximum                         |
| Rotational Life .....  | 75,000 button operations each decade |
| Total Resistance Shift .....                                 | ±2 % maximum                         |
| IP Rating .....  | IP 40                                |

### Mechanical Characteristics<sup>1</sup>

|   |   |
|---|---|
| Weight .....                                    | 3681 (9 gm); 3682 (16 gm); 3683 (23 gm); 3684 (30 gm); 3685 (37 gm)                             |
| Terminals .....                                 | 2.79 mm (0.11 in.) wide x .41 mm (.016 in.) thick, tinned solder lugs for 3 #20 AWG wires       |
| Soldering Condition                             |   |
| Manual Soldering .....                          | .96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds |
| Wave Soldering .....                            | .96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds               |
| Wash processes .....                            | Not recommended   |
| Marking .....                                   | Manufacturer's name and part number, resistance value and date code.                            |
| Ganging (Multiple Section Potentiometers) ..... | Up to 5 decades maximum   |
| Readout Marking .....                           | 10 positions, 0-9   |
| Actuating Force .....                           | 19 to 29 oz. on detent decades  |
| Actuating Force Variation .....                 | 4 oz. maximum   |

<sup>1</sup>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.  
NOTE: Terminals 1 & 3 are reversed from illustration for models 3682 and 3684.

### Product Dimensions

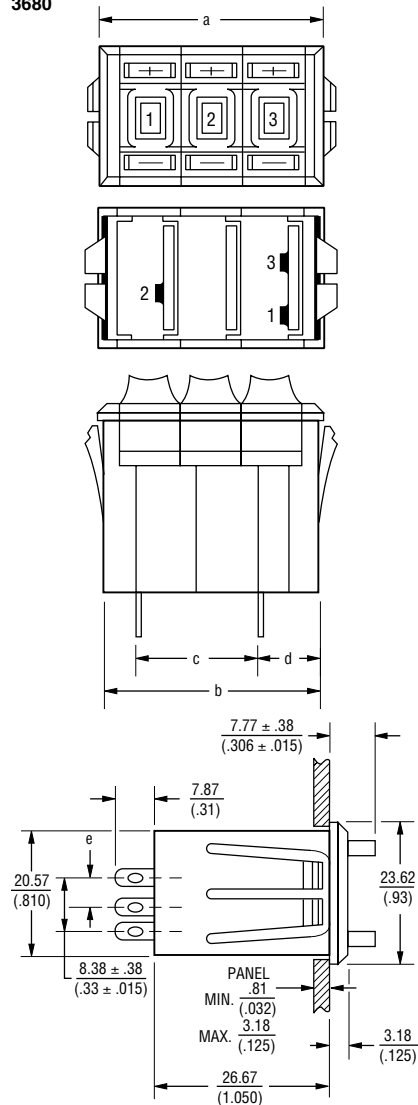
| Model | Dimensions    |               |               |             |                  | Weight (Approx.) |      |
|-------|---------------|---------------|---------------|-------------|------------------|------------------|------|
|       | a             | b             | c             | d           | e - .381 (-.015) | oz.              | gms. |
| 3681  | 16.51 (.650)  | 14.99 (.590)  | —             | 9.91 (.39)  | 4.19 (.165)      | .336             | 9.5  |
| 3682  | 26.67 (1.050) | 25.15 (.99)   | 10.67 (.42)   | 11.94 (.47) | 8.38 (.330)      | .576             | 16.5 |
| 3683  | 37.08 (1.46)  | 35.31 (1.39)  | 18.54 (.73)   | 11.94 (.47) | 4.19 (.165)      | .824             | 23.5 |
| 3684  | 47.50 (1.87)  | 45.47 (1.79)  | 30.73 (1.21)  | 11.94 (.47) | 8.38 (.330)      | 1.072            | 30.5 |
| 3685  | 57.66 (2.270) | 55.63 (2.190) | 39.12 (1.540) | 11.94 (.47) | 4.19 (.165)      | 1.320            | 37.5 |

| Model | Dimensions      |                 |
|-------|-----------------|-----------------|
|       | f -.010 (-.254) | g -.010 (-.254) |
| 3681  | 21.08 (.830)    | 15.75 (.620)    |
| 3682  | 21.08 (.830)    | 25.91 (1.020)   |
| 3683  | 21.08 (.830)    | 36.07 (1.420)   |
| 3684  | 21.08 (.830)    | 46.23 (1.820)   |
| 3685  | 21.08 (.830)    | 56.39 (2.220)   |

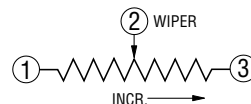


### Product Dimensions

3680



TOLERANCES: EXCEPT WHERE NOTED  
 DECIMALS: .XX ± .38 (.015) .XXX ± .13 (.005)  
 FRACTIONS: ±1/64  
 DIMENSIONS: MM (IN.)



\*RoHS Directive 2002/95/EC Jan 27 2003 including Annex  
 Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

# 3680 Family - Precision Potentiometer

**BOURNS®**

## Recommended Part Numbers

| Resistance<br>( $\Omega$ ) | 3681S-1<br>1<br>Decade | 3682S-1<br>2<br>Decade | 3683S-1<br>3<br>Decade | 3684S-1<br>4<br>Decade | 3685S-1<br>5<br>Decade |
|----------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 50                         | -500L                  |                        |                        |                        |                        |
| 100                        | -101L                  |                        |                        |                        |                        |
| 200                        | -201L                  |                        |                        |                        |                        |
| 500                        | -501L                  | -501L                  |                        |                        |                        |
| <b>1,000</b>               | -102L                  | <b>-102L</b>           | <b>-102L</b>           |                        |                        |
| 2,000                      | -202L                  | -202L                  | -202L                  |                        |                        |
| <b>5,000</b>               | -502L                  | <b>-502L</b>           | <b>-502L</b>           |                        |                        |
| <b>10 K</b>                | -103L                  | <b>-103L</b>           | <b>-103L</b>           | -103L                  |                        |
| 20 K                       |                        | -203L                  | -203L                  | -203L                  |                        |
| 50 K                       |                        | -503L                  | -503L                  | -503L                  |                        |
| 100 K                      | -104L                  | -104L                  | -104L                  | -104L                  | -104L                  |
| 500 K                      |                        |                        | -504L                  | -504L                  | -504L                  |
| 1 Meg                      |                        | -105L                  | -105L                  | -105L                  | -105L                  |

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FOR OTHER OPTIONS CONSULT FACTORY.

RoHS IDENTIFIER:

L = COMPLIANT

BLANK = NON-COMPLIANT

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