



## Features

- Single-turn (3851 and 3852)
- 3-3/4-turn (3856)
- Linear and audio tapers
- Wide resistance range
- Minimal depth package
- Good resolution

## 3851/3852/3856 - 3/4 " Diameter Panel Control

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

|                                                                                   | 3851<br>Conductive Plastic Element | 3852/3856<br>Cermet Element                                  |
|-----------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------|
| Standard Resistance Range                                                         |                                    |                                                              |
| Linear Tapers (A, B, E, and H) .....                                              | 1 K to 1 megohm .....              | 100 ohms to 1 megohm                                         |
| Audio Tapers (C, D, F, and G) .....                                               | 1 K to 1 megohm .....              | 1 K ohms to 1 megohm                                         |
| Total Resistance Tolerance .....                                                  | ±10 % or ±20 % .....               | ±5 % or ±10 %                                                |
| Independent Linearity .....                                                       | ±10 % .....                        | (A & H tapers) ±5 %                                          |
| Absolute Minimum Resistance .....                                                 | 2 ohms maximum .....               | 2 ohms maximum                                               |
| Effective Electrical Angle .....                                                  | (Linear tapers) 250 ° ±5 ° .....   | (Linear tapers) 250 ° ±5 °                                   |
|                                                                                   | (Audio tapers) 225 ° ±5 ° .....    | (Audio tapers) 225 ° ±5 °                                    |
| Contact Resistance Variation .....                                                | ±1 % .....                         | ±3 % of total resistance or 3 ohms<br>(whichever is greater) |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)                         |                                    |                                                              |
| Sea Level .....                                                                   | 900 VAC minimum .....              | 900 VAC minimum                                              |
| 70,000 Feet .....                                                                 | 350 VAC minimum .....              | 350 VAC minimum                                              |
| Insulation Resistance (500 VDC) .....                                             | 1,000 megohms minimum .....        | 1,000 megohms minimum                                        |
| Power Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less) |                                    |                                                              |
| +70 °C .....                                                                      | (Linear tapers) 1 watt .....       | (Linear tapers) 2 watts                                      |
|                                                                                   | (Audio tapers) 0.5 watt .....      | (Audio tapers) 1 watt                                        |
| +125 °C .....                                                                     | 0 watt                             |                                                              |
| +150 °C .....                                                                     |                                    | 0 watt                                                       |
| Theoretical Resolution .....                                                      | Essentially infinite .....         | Essentially infinite                                         |

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

|                                                            |                         |                                         |
|------------------------------------------------------------|-------------------------|-----------------------------------------|
| Operating Temperature Range .....                          | -1 °C to +125 °C .....  | -1 °C to +125 °C                        |
| Storage Temperature Range .....                            | -65 °C to +125 °C ..... | -65 °C to +150 °C                       |
| Temperature Coefficient Over                               |                         |                                         |
| Storage Temperature Range .....                            | ±1,000 ppm/°C .....     | ±150 ppm/°C                             |
| Vibration .....                                            | 20 G .....              | 20 G                                    |
| Total Resistance Shift .....                               | ±2 % maximum .....      | ±2 % maximum                            |
| Voltage Ratio Shift .....                                  | ±5 % maximum .....      | ±6 % maximum                            |
| Shock .....                                                | 100 G .....             | 100 G                                   |
| Total Resistance Shift .....                               | ±2 % maximum .....      | ±2 % maximum                            |
| Voltage Ratio Shift .....                                  | ±5 % maximum .....      | ±6 % maximum                            |
| Load Life .....                                            | 1,000 hours .....       | 1,000 hours                             |
| Total Resistance Shift .....                               | ±10 % maximum .....     | ±3 % maximum                            |
| Rotational Life (No Load) .....                            | 100,000 cycles .....    | 20,000 cycles                           |
| Total Resistance Shift .....                               | ±15 % TRS maximum ..... | ±5 % or 5 ohms TRS whichever is greater |
| Contact Resistance Variation .....                         | ±3 % .....              | ±3 %                                    |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) |                         |                                         |
| Total Resistance Shift .....                               | ±10 % maximum .....     | ±2 % maximum                            |
| IP Rating .....                                            | IP 40 .....             | IP 40                                   |

<sup>1</sup> At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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## 3851/3852/3856 - 3/4 " Diameter Panel Control

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

|                                                |                                                                                                                |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Stop Strength                                  |                                                                                                                |
| 3851 & 3852 .....                              | 56.5 N-cm (5 lb.-in.)                                                                                          |
| 3856.....                                      | Continuous turn                                                                                                |
| Mechanical Angle.....                          | 280 ° ±5 ° / 3856 – 1350 ° ±50 °                                                                               |
| Torque (Starting and Running) .....            | A & B bushings 0.35 to 4.23 N-cm (0.05 to 6.0 oz.-in.)                                                         |
|                                                | C & E bushings 0.21 to 4.23 N-cm (0.3 to 6.0 oz.-in.)                                                          |
|                                                | 3856 – 0.11 to 2.12 N-cm (0.15 to 3.0 oz.-in.)                                                                 |
| Mounting (Torque on Bushing) .....             | 1.7-2.0 N-m (15-18 lb.-in.) maximum                                                                            |
| Weight (Single Section) .....                  | 30 grams maximum                                                                                               |
| Terminals .....                                | Printed circuit terminals or solder lugs                                                                       |
| Soldering Condition .....                      | Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025 " wire diameter.                              |
|                                                | Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux.              |
|                                                | Part can be wave soldered at 260 °C (500 °F) for 5 seconds, no wash process with no clean flux.                |
| Marking .....                                  | Manufacturer's trademark, wiring diagram, resistance, date code, and part number                               |
| Ganging (Multiple Section Potentiometers)..... | 1 cup maximum                                                                                                  |
| Hardware.....                                  | One lockwasher and one mounting nut is shipped with each potentiometer, except where noted in the part number. |

<sup>1</sup> At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

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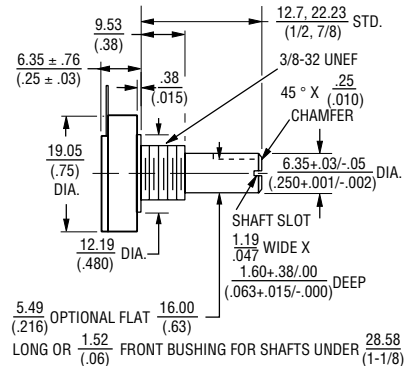
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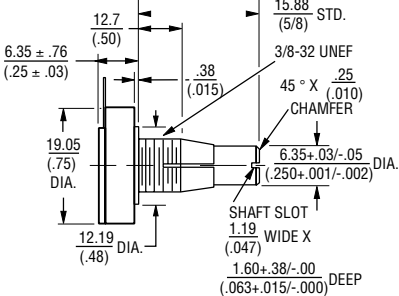
**BOURNS®**

## Product Dimensions

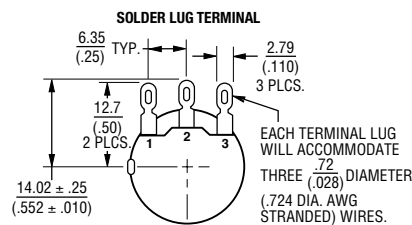
### 3851A/3852A



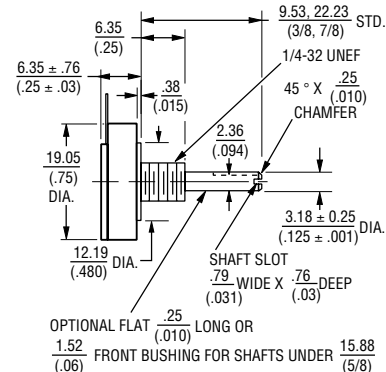
### 3851B/3852B



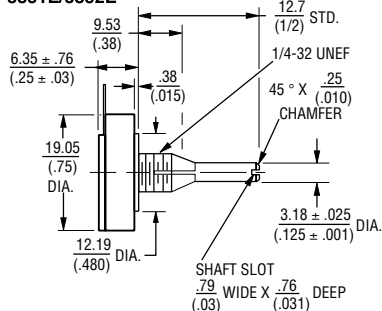
## Terminal Configuration



### 3851C/3852C

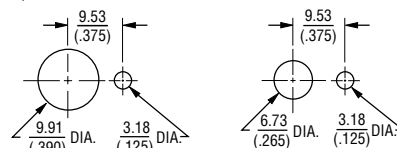


### 3851E/3852E

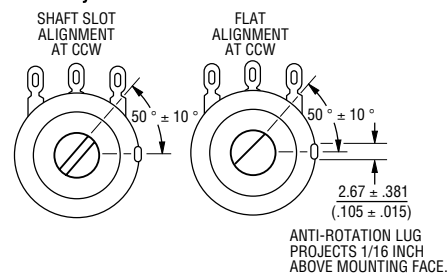


## 3851/3852/3856

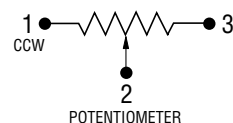
### A, B & H BUSHINGS



## Shaft End Detail 3850 Family



TOLERANCES EXCEPT AS NOTED:  
 DECIMALS: .XXX ± .127 (.005), .XX ± .38 (.015)  
 FRACTIONS: ± 1/64  
 ANGLE: ± 3 %



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# 3851/3852/3856 - 3/4 " Diameter Panel Control

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## How To Order

3852 A - 28 2 - 103 A L

| SHAFT TYPE<br>(FMS) & DIAMETER |                                        | AVAILABLE ONLY IN  |           |
|--------------------------------|----------------------------------------|--------------------|-----------|
|                                |                                        | MODELS             | BUSHINGS  |
| 12                             | 3/8 " (9.53 mm) L X 1/8 " (3.18 mm) D  | 3851, 3852         | C         |
| 16                             | 1/2 " (12.7 mm) L x 1/4 " (6.35 mm) D  | 3851, 3852         | A         |
| 16                             | 1/2 " (12.7 mm) L x 1/8 " (3.18 mm) D  | 3851, 3852         | C, E      |
| 20                             | 5/8 " (15.88 mm) L X 1/4 " (6.35 mm) D | 3851, 3852         | A, B      |
| 28                             | 7/8 " (22.20 mm) L X 1/4 " (6.35 mm) D | 3851, 3852<br>3856 | A, B<br>A |
| 28                             | 7/8 " (22.20 mm) L X 1/8 " (3.18 mm) D | 3851, 3852<br>3856 | C, E<br>H |

Consult factory for lengths not shown.

| BUSHING                                         | APPLICABLE MODELS      |
|-------------------------------------------------|------------------------|
| A Plain 3/8 " (9.53 mm) D x 3/8 " (9.53 mm) L   | 3851, 3852, 3856       |
| B Locking 3/8 " (9.53 mm) D x 1/2 " (12.7 mm) L | 3851, 3852             |
| C Plain 1/4 " (6.35 mm) D x 1/4 " (6.35 mm) L   | 3851, 3852             |
| E Locking 1/4 " (6.35 mm) D x 1/2 " (12.7 mm) L | 3851, 3852             |
| H Plain 3/8 " (9.53 mm) D x 3/8 " (9.53 mm) L   | 3856 (3.18 mm D Shaft) |

| MODEL                                      |
|--------------------------------------------|
| 3851 3/4 " (19.05 mm) D Single-Turn C.P.   |
| 3852 3/4 " (19.05 mm) D Single-Turn Cermet |
| 3856 3/4 " (19.05 mm) D 3-3/4-Turn Cermet  |

**Boldface features are Bourns standard options.**  
**All others are available with higher minimum order quantities.**

| TERMINAL STYLE AND<br>SHAFT TYPE  |
|-----------------------------------|
| 1 Solder Lugs, Plain End          |
| <b>2 Solder Lugs, Slotted End</b> |
| 3 Solder Lugs, Flatted Shaft      |
| 5 PC Pins, Plain End              |
| <b>6 PC Pins, Slotted End</b>     |
| 7 PC Pins, Flatted Shaft          |

| RESISTANCE<br>CODE/VALUE<br>(IN OHMS)<br>Model 3851 |              |
|-----------------------------------------------------|--------------|
| (102)                                               | <b>1 K</b>   |
| (252)                                               | 2.5 K        |
| (502)                                               | <b>5 K</b>   |
| (103)                                               | <b>10 K</b>  |
| (253)                                               | 25 K         |
| (503)                                               | <b>50 K</b>  |
| (104)                                               | <b>100 K</b> |
| (254)                                               | 250 K        |
| (504)                                               | 500 K        |
| (105)                                               | 1 M          |
| Models 3852/3856                                    |              |
| (101)                                               | 100          |
| (251)                                               | 250          |
| (501)                                               | 500          |
| (102)                                               | <b>1 K</b>   |
| (252)                                               | <b>2.5 K</b> |
| (502)                                               | <b>5 K</b>   |
| (103)                                               | <b>10 K</b>  |
| (253)                                               | 25 K         |
| (503)                                               | <b>50 K</b>  |
| (104)                                               | <b>100 K</b> |
| (254)                                               | 250 K        |
| (504)                                               | 500 K        |
| (105)                                               | 1 M          |

| RoHS IDENTIFIER |           |
|-----------------|-----------|
| L               | Compliant |

| ELEMENT<br>TAPER/TOLERANCE | APPLICABLE<br>MODELS |
|----------------------------|----------------------|
| A Linear ±10 %             | 3852, 3856           |
| B Linear ±20 %             | 3851                 |
| C Audio CW ±10 %           | 3852, 3856           |
| D Audio CW ±20 %           | 3851                 |
| E Linear ±10 %             | 3851                 |
| F Audio CCW ±10 %          | 3852, 3856           |
| G Audio CCW ±20 %          | 3851                 |
| H Linear ±5 %              | 3852, 3856           |

REV. 03/19

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| <a href="#"><u>3852C-282-252AL</u></a> | <a href="#"><u>3852A-162-254AL</u></a> | <a href="#"><u>3852A-166-251AL</u></a> | <a href="#"><u>3852A-286-102AL</u></a> | <a href="#"><u>3852A-206-502AL</u></a> | <a href="#"><u>3852C-282-952HL</u></a> |
| <a href="#"><u>3852C-166-103AL</u></a> | <a href="#"><u>3852A-282-253CL</u></a> | <a href="#"><u>3852A-245-252AL</u></a> | <a href="#"><u>3852A-283-113CL</u></a> | <a href="#"><u>3852C-282-254AL</u></a> | <a href="#"><u>3852C-282-251AL</u></a> |
| <a href="#"><u>3852C-162-103AL</u></a> | <a href="#"><u>3852A-166-252AL</u></a> | <a href="#"><u>3852C-202-103AL</u></a> | <a href="#"><u>3852A-282-254HL</u></a> | <a href="#"><u>3852A-202-503AL</u></a> | <a href="#"><u>3852C-283-253FL</u></a> |
| <a href="#"><u>3852A-286-253AL</u></a> | <a href="#"><u>3852A-282-251AL</u></a> | <a href="#"><u>3852A-166-254AL</u></a> | <a href="#"><u>3852C-202-102AL</u></a> | <a href="#"><u>3852C-126-153AL</u></a> | <a href="#"><u>3852A-252-252AL</u></a> |
| <a href="#"><u>3852C-162-503AL</u></a> | <a href="#"><u>3852A-202-252AL</u></a> | <a href="#"><u>3852C-162-502AL</u></a> | <a href="#"><u>3852C-202-101AL</u></a> | <a href="#"><u>3852A-282-151AL</u></a> | <a href="#"><u>3852A-162-253AL</u></a> |
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| <a href="#"><u>3852A-202-102AL</u></a> | <a href="#"><u>3852C-122-253AL</u></a> | <a href="#"><u>3852A-166-103AL</u></a> | <a href="#"><u>3852A-202-103AL</u></a> | <a href="#"><u>3852A-286-251AL</u></a> | <a href="#"><u>3852A-286-252AL</u></a> |
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| <a href="#"><u>3852A-162-503AL</u></a> | <a href="#"><u>3852A-282-252AL</u></a> | <a href="#"><u>3852A-162-103AL</u></a> | <a href="#"><u>3852A-282-103AL</u></a> | <a href="#"><u>3852A-282-253AL</u></a> | <a href="#"><u>3852A-282-104AL</u></a> |
| <a href="#"><u>3852A-282-102AL</u></a> |                                        |                                        |                                        |                                        |                                        |