



## 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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Users should verify actual device performance in their specific applications.

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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.)<br>C & E bushings 0.21 to 4.23 N-cm (0.3 to 6.0 oz.-in.)<br>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.<br>Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux.<br>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.  |

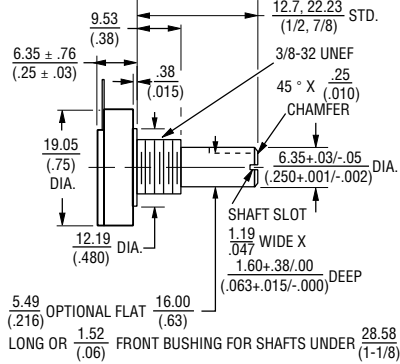
<sup>1</sup> At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

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

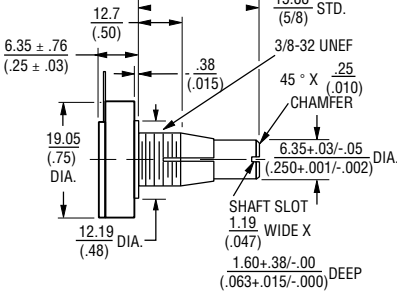
**BOURNS®**

## Product Dimensions

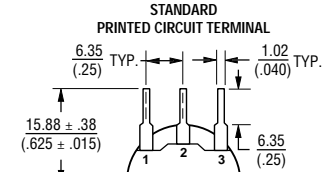
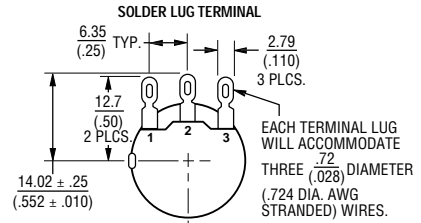
### 3851A/3852A



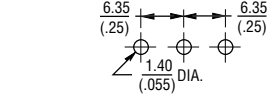
### 3851B/3852B



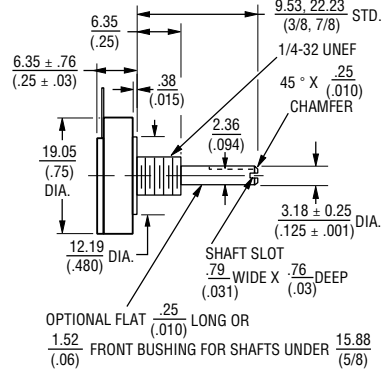
## Terminal Configuration



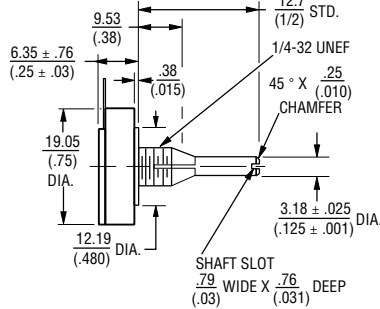
## SUGGESTED BOARD LAYOUT



### 3851C/3852C

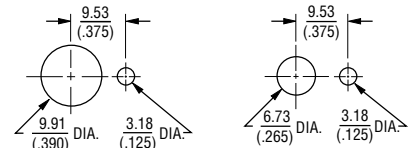


### 3851E/3852E

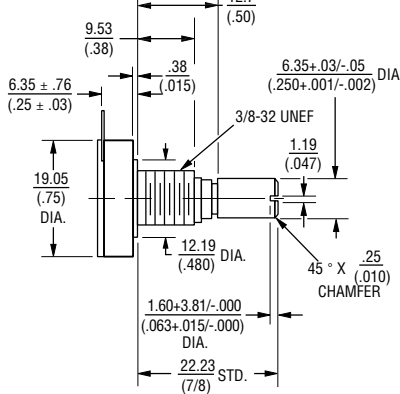


## 3851/3852/3856

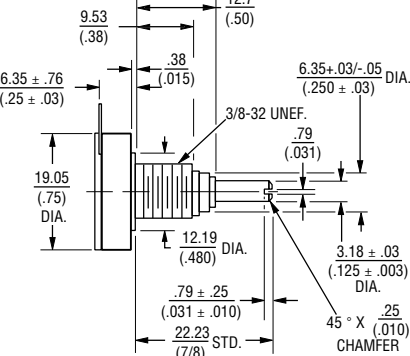
### A, B & H BUSHINGS



### 3856A



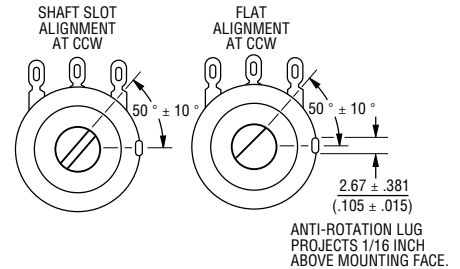
### 3856H



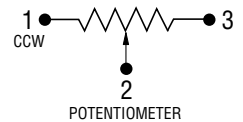
DIMENSIONS: MM (INCHES)

## Shaft End Detail

### 3850 Family



TOLERANCES EXCEPT AS NOTED:  
 DECIMALS: .XXX ± .127 (0.005), .XX ± .38 (0.015)  
 FRACTIONS: ± 1/64  
 ANGLE: ± 3°



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



## How To Order

3852 A - 28 2 - 103 A L

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

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

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

| ELEMENT TAPER/TOLERANCE | APPLICABLE 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        |

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