



Features

- RoHS compliant*
- Push-pull switch
- Linear and audio tapers
- PC board and bushing mount
- Splash seal
- Metal bushing and shaft

Applications

- Test and measurement equipment
- Communications equipment
- Medical diagnostic equipment
- Professional audio equipment

54 - 1/2 " (12.5 mm) Panel Control w/Push-Pull Switch

Electrical Characteristics¹

| | |
|----------------------------------------------------------------------|-----------------------|
| Standard Resistance Range | |
| Linear | 1K to 500K ohms |
| Audio | 1K to 500K ohms |
| Total Resistance Tolerance | |
| B & D Tapers | ±20 % |
| E & S Tapers | ±10 % |
| Independent Linearity | ±5 % |
| Absolute Minimum Resistance | 2 ohms maximum |
| Effective Electrical Angle | 270 ° ±5 |
| Contact Resistance Variation | ±2 % |
| Dielectric Withstanding Voltage (MIL-STD-202 – Method 301) | |
| Sea Level | 1,500 VAC minimum |
| 70,000 | 500 VAC minimum |
| Insulation Resistance | 1,000 megohms minimum |
| Power Rating At 70 °C (Derate To 0 At 125 °C) | |
| (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less) | |
| Linear Tapers | 0.5 watt |
| Audio Tapers | 0.25 watt |
| Theoretical Resolution | Essentially infinite |

Environmental Characteristics¹

| | |
|--------------------------------------------------------------|-------------------|
| Operating Temperature Range | +1 °C to +125 °C |
| Storage Temperature Range | -55 °C to +125 °C |
| Temperature Coefficient Over Storage Temperature Range | ±1,000 ppm/°C |
| Vibration | 8 G |
| Total Resistance Shift | ±2 % maximum |
| Voltage Ratio Shift | ±5 % maximum |
| Shock | 20 G |
| Total Resistance Shift | +2 % maximum |
| Voltage Ratio Shift | ±5 % maximum |
| Load Life | 1,000 hours |
| Total Resistance Shift | ±10 % TRS maximum |
| Rotational Life (No Load) | 50,000 cycles |
| Total Resistance Shift | ±10 % TRS maximum |
| Contact Resistance Variation | ±2 % |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) | |
| B & E | ±10 % TRS |
| D & S | ±20 % TRS |
| IP Rating | |
| Entire Unit | IP 64 |
| Shaft/Bushing | IP 65 |

Mechanical Characteristics

| | |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stop Strength | 39.5 N-cm (3.5 lb.-in.) |
| Mechanical Angle | 290 ° ±5 ° |
| Torque | |
| Starting/Running | 0.2 to 1.3 N-cm (0.25 to 2.0 oz.-in.) |
| Mounting (Torque on Bushing) | 1.7 to 2.0 N-m (15 to 18 lb.-in.) |
| Weight | 10 grams |
| Terminals | PC pin or solder lug |
| 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, part number, resistance value and date code. |
| Ganging (Multiple Section Potentiometers) | Inquire for availability, minimum order quantity and price. |
| Hardware | One lockwasher and one mounting nut is shipped with each potentiometer. |

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

54 - 1/2 " (12.5 mm) Panel Control w/Push-Pull Switch

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Initial Electrical Characteristics - Switch

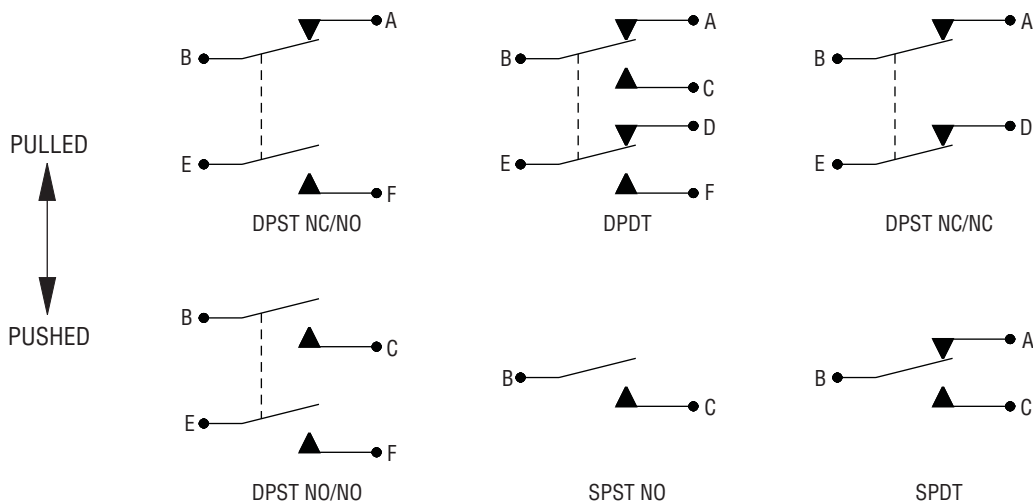
| | |
|------------------------------------------------------------------------------|----------------------------|
| Switch Type | DPDT (Break before make) |
| Power Rating (Resistive Load) | 0.25 A @ 30 VDC |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301) Sea Level | 1000 VAC minimum |
| Insulation Resistance | 1500 megohms minimum |
| Contact Resistance | 100 milliohms maximum |
| Actuating Stroke | 0.41 cm (0.16 in.) maximum |

Environmental Characteristics¹

| | |
|----------------------------------------------------------------------------------------|--------------------------|
| Vibration | 8 G |
| Contact Resistance | 100 milliohms maximum |
| Contact Bounce..... | 0.1 milliseconds maximum |
| Shock | 20 G |
| Contact Resistance | 100 milliohms maximum |
| Contact Bounce..... | 0.1 milliseconds maximum |
| Switch Life @ Rated Power | 15,000 actuations |
| Switch Actuating Force | 0.45 kg (1.0 lb) minimum |
| Contact Resistance | 100 milliohms maximum |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) Contact Resistance | 100 milliohms maximum |
| Insulation Resistance (After 24 Hours @ Room Temperature - 500 VDC) | 100 megohms minimum |

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

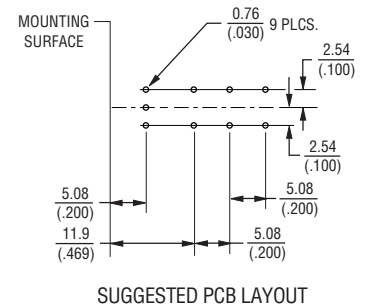
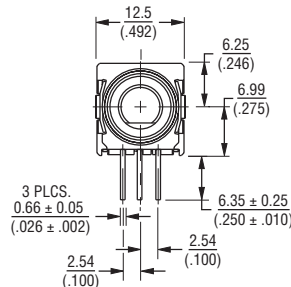
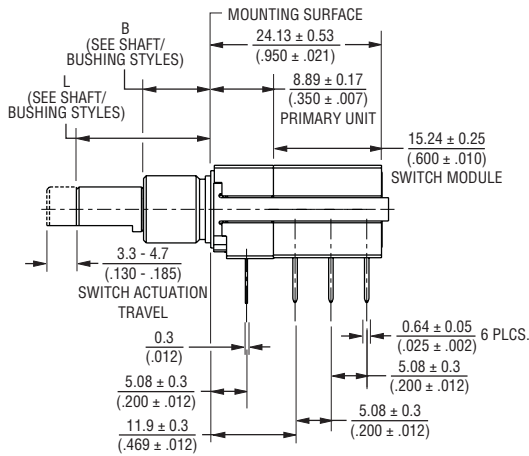
Switch Configurations (Shown in Pulled Position)



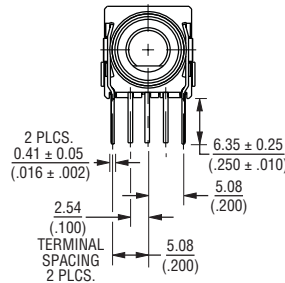
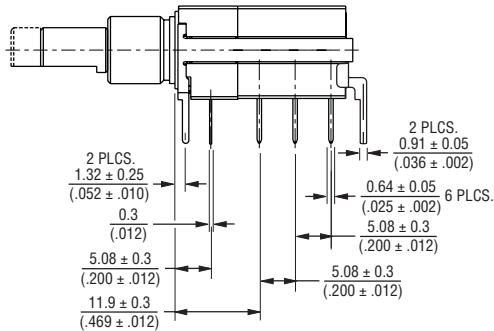
54 - 1/2" (12.5 mm) Panel Control w/Push-Pull Switch



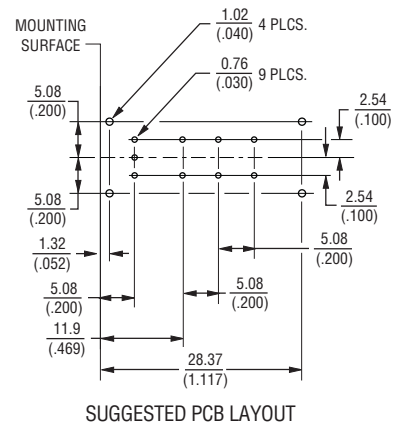
Product Dimensions



PACKAGE DIMENSIONS WITH FRONT AND REAR PCB MOUNTING BRACKET

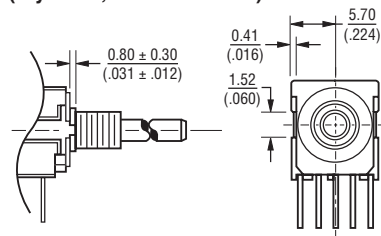


DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$



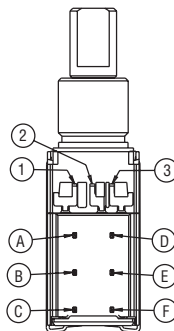
Anti-Rotation Lug

(Style "A", 90° CW Shown)

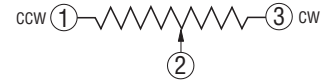


FOR TOLERANCES SHOWN: .XX ± $\frac{.25}{.010}$
 .XXX ± $\frac{.13}{.005}$
 SHAFT DIMENSIONS ± $\frac{.80}{(1/32)}$

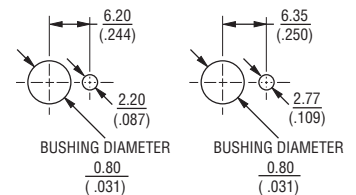
Terminal Layout



Electrical Schematic



Suggested Panel Layouts

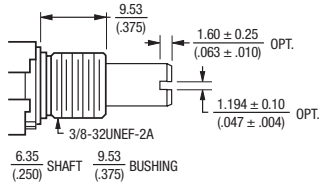


The Model 54 can be used with either of the two panel layouts shown below.

54 - 1/2" (12.5 mm) Panel Control w/Push-Pull Switch

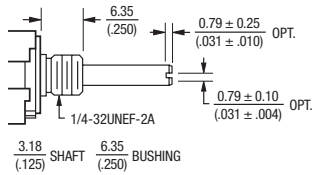
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Shaft/Bushing Styles



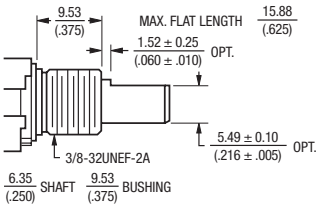
A Style Bushing

| STD. LENGTH 'L' | |
|-----------------|---------|
| .750 | (19.05) |
| .875 | (22.23) |



C Style Bushing

| STD. LENGTH 'L' | |
|-----------------|---------|
| .750 | (19.05) |
| .875 | (22.23) |



A Style Bushing - Flatted Shaft

| STD. LENGTH 'L' | |
|-----------------|---------|
| .750 | (19.05) |
| .875 | (22.23) |

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

How To Order

54 A A D - C 28 - B 15 / P50 L

ANTI-ROTATION LUG / BRACKET OPTION

| Code | Description |
|------|------------------------|
| A | AR Lug 90° CW |
| D | No AR Lug or Bracket |
| L | Front Bracket |
| N | Front and Rear Bracket |

RoHS IDENTIFIER

| Code | Description |
|------|-------------|
| L | Compliant |

SWITCH OPTION

| Code | Description |
|------|-------------|
| P50 | DPDT |

NO. OF SECTIONS

| Code | Description |
|------|--------------------|
| A | Single plus Switch |

RESISTANCE CODES

| Code | Value in Ohms |
|------|---------------|
| 10 | 1K |
| 13 | 5K |
| 15 | 10K |
| 18 | 50K |
| 20 | 100K |
| 22 | 250K |
| 23 | 500K |

BUSHING DESIGNATOR

| Code | Description |
|------|--------------------------|
| A | 3/8" D x 3/8" L Threaded |
| C | 1/4" D x 1/4" L Threaded |

MODEL

| Code | Description |
|------|---------------------------------|
| 54 | PC Terminals w/Push-Pull Switch |

ELEMENT TAPER TYPE/TOLERANCE

| Code | Description |
|------|-------------------|
| B | Linear CP ±20 % |
| E | Linear CP ±10 % |
| D | CW Audio CP ±20 % |
| S | CW Audio CP ±10 % |

SHAFT LENGTH DESIGNATOR

| Code | Description |
|------|---------------|
| 24 | 3/4" FMS Long |
| 28 | 7/8" FMS Long |

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

| SHAFT STYLE | | AVAILABLE ONLY WITH BUSHING |
|-------------|--------------------|-----------------------------|
| Code | Description | Code |
| B | 1/4" D Slotted End | A |
| C | 1/4" D Flatted End | A |
| E | 1/8" D Slotted End | C |

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