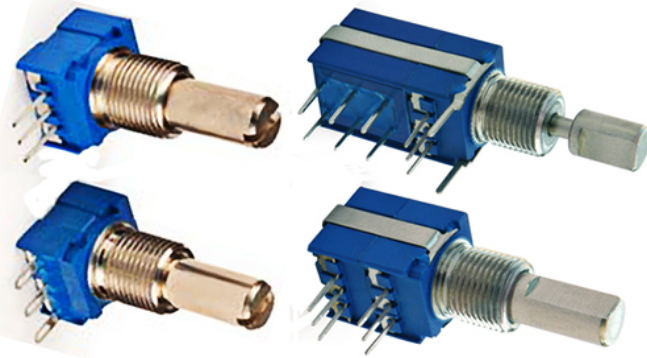


Series S127B Potentiometer

1/2" (12.7mm) Square,
Single or Dual Module



Description:

The Series S127B modules are 1/2" square (12.7mm), with metal shaft and bushing.

Combine up to 2 modules: One or two potentiometer modules, or a single potentiometer module with a rotary SPDT Switch or a DPDT Push-Pull switch module.

For more information about this product, visit our website at: www.potentiometers.com

Electrical Specifications

Resistance Range

Linear Taper: 150 ohms to 1 megohm
Audio Taper: 1 K ohms to 1 megohm

Total Resistance Tolerance

±10% Standard (±5% or ±20% Optional)

Independent Linearity: ±5 %

Absolute Minimum Resistance: 2 ohms maximum

Effective Electrical Angle: 270° ±5° (Rotary switch unit is 240° ±5°)

Contact Resistance Variation: 2 %

Dielectric Withstanding Voltage

(MIL-STD-202 - Method 301)

Sea Level: 1,500 VAC minimum
70,000 feet: 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)

Conductive Plastic Linear Taper - 0.5 watt
Cermet Linear Taper - 1.0 watt
Conductive Plastic Audio Taper - 0.25 watt
Cermet Audio Taper - 0.5 watt

Theoretical Resolution: Essentially infinite



Features:

- **Stackable** - up to 2 modules
- **Conductive Plastic or Cermet Resistance Element**
- **Linear, CW or CCW audio Taper**
- **Metal Shaft and Bushing**
- **PCB or Solder Lug Terminals**
- **Rotary Switch module** - SPDT, 0.5A @ 30Vdc
- **Push-Pull Switch module** - DPDT, 0.25A @ 30Vdc
- **Detents** - Center Detent option
- **Entire Unit: IP64; Shaft & Bushing: IP65**
- **RoHS Compliant**

Mechanical Specifications

Total Mechanical Travel: 290° ±5°

Stop Strength:

Potentiometer, Rotary Module: 56 N-cm (5 lb.-in.)
Push-Pull Module: 39.5 N-cm (3.5 lb.-in.)

Starting Torque, Maximum:

Dual Section: 0.35 N-cm (0.5 oz.-in.)
Push-Pull: 0.2 to 1.3 N-cm (0.25 to 2.0 oz.-in.)
Rotary: 0.2 to 1.3 N-cm (0.25 to 2.0 oz.-in.)

Running Torque, Maximum:

Single Section: 0.15 to 1.4 N-cm (0.2 to 2.0 oz.-in.)
Dual Section: +0.35 N-cm (+0.5 oz.-in.)

Detent (Single Section): 1.94 N-cm (2.75 oz.-in.) min.

Mounting (Torque on Bushing):

1.7 to 2.0 N-m (15 to 18 lb.-in.) maximum

Weight:

Single Section: 5.5 grams
Additional Section: 3.0 grams
Push-Pull: 10 grams
Rotary: 8.5 grams

Terminals:

Pot only or Push-Pull: PC pin or solder lug
Rotary: PC pin

Soldering Condition:

Recommended hand soldering using Sn95/Ag5
no clean solder, 0.025 " wire diameter.

Series S127B Potentiometer - 1/2" (12.7mm) Square

Mechanical Specifications (continued)

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 Potentiometer Sections):

2 sections maximum

(Additional sections available on special request with higher minimum order quantities)

Multiple Potentiometer sections plus switch: Inquire for availability, minimum order quantity and price.

Hardware:

One lockwasher and one mounting nut is shipped with each potentiometer, except where noted in the part number.

Environmental Specifications

Operating Temperature Range: +1 °C to +125 °C

Storage Temperature Range: -55 °C to +125 °C

Temperature Coefficient over -55 °C to +125 °C Range:

Conductive Plastic: $\pm 1,000$ ppm/°C;

Cermet: ± 150 ppm/°C

Vibration (Single Section) 15 G

Total Resistance Shift: $\pm 2\%$ maximum

Voltage Ratio Shift: $\pm 5\%$ maximum

Shock (Single Section) 30 G

Total Resistance Shift: $\pm 2\%$ maximum

Voltage Ratio Shift: $\pm 5\%$ maximum

Load Life: 1,000 hours

Total Resistance Shift:

Conductive Plastic: $\pm 10\%$ TRS maximum

Cermet: $\pm 5\%$ TRS maximum

Rotational Life (No Load)

Conductive Plastic: 50,000 cycles

Cermet: 25,000 cycles

Total Resistance Shift: $\pm 10\%$ TRS maximum

Contact Resistance Variation @ 25,000 Cycles:

Conductive Plastic - $\pm 2\%$

Cermet - $\pm 4\%$

Moisture Resistance (MIL-STD-202, Method 103, Condition B)

Total Resistance Shift:

Conductive Plastic - $\pm 10\%$ TRS

Cermet - $\pm 5\%$ TRS

Switch Units (B & E Taper): $\pm 10\%$ TRS

Switch Units (D & S Taper): $\pm 20\%$ TRS

IP Rating:

Entire Unit: IP64

Shaft/Bushing: IP65

Series S127B Potentiometer - 1/2" (12.7mm) Square

Switch Module Electrical Specifications

Switch Type

Rotary: SPDT (Break before make)
Push-Pull: DPDT (Break before make)

Power Rating (Resistive Load)

Rotary: 0.5 A @ 30 VDC
Push-Pull: 0.25 A @ 30 VDC

Dielectric Withstanding Voltage

Sea Level: 1000 VAC minimum
(MIL-STD-202, Method 301)

Insulation Resistance

Rotary: 1000 megohms minimum
Push-Pull: 1500 megohms minimum

Contact Resistance

Rotary: 30 milliohms maximum
Push-Pull: 100 milliohms maximum

Rotary Switch

Contact Bounce: 5 milliseconds maximum
Actuation Angle: 35° maximum
Switch Travel: 25° maximum
Detent Torque: 1.3 N-cm (2.0 oz.-in) nominal

Push-Pull Switch

Actuating Stroke: 0.41 cm (0.16 in.) maximum

Switch Module Environmental Specifications

Vibration

8 G
Rotary Contact Resistance: 30 milliohms max
Push-Pull Contact Resistance: 100 milliohms max

Contact Bounce

0.1 milliseconds maximum

Shock

20 G
Rotary Contact Resistance: 30 milliohms max
Push-Pull Contact Resistance: 100 milliohms max

Contact Bounce:

0.1 milliseconds maximum

Rotary Rotational Life @ Rated Power

50,000 cycles

Push-Pull Life @ Rated Power

15,000 actuations

Contact Resistance

100 milliohms maximum

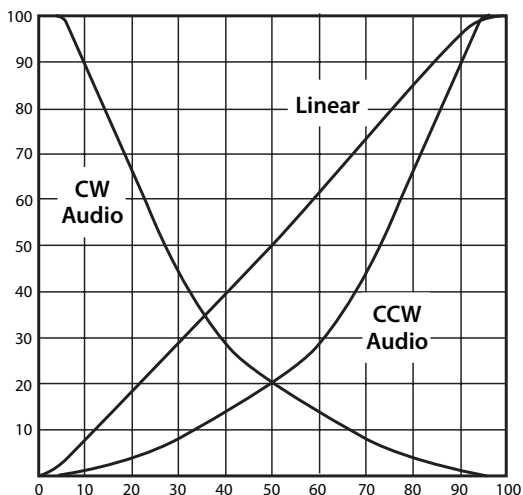
Moisture Resistance

Rotary Contact Resistance: 30 milliohms max
Push-Pull Contact Resistance: 100 milliohms max
(MIL-STD-202, Method 103, Condition B)

Insulation Resistance

100 megohms minimum after 24 Hours @ Room Temperature and 500 VDC

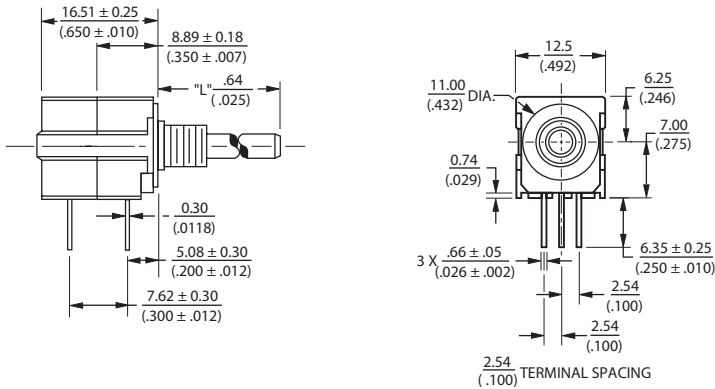
S127B Resistance Taper



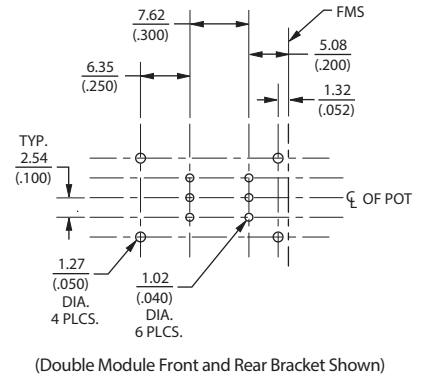
Series S127B Potentiometer - 1/2" (12.7mm) Square

S127B Dimensions - Single Potentiometer with Rotary Switch Module

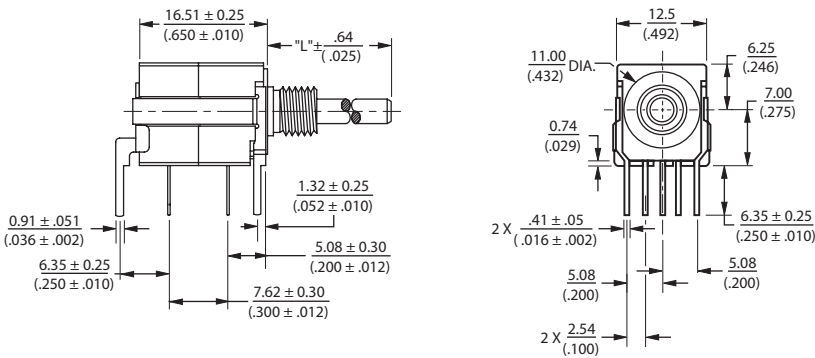
Product Dimensions



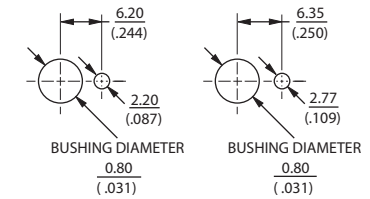
Recommended PCB Layout



PACKAGE DIMENSIONS W/PCB MOUNTING BRACKET

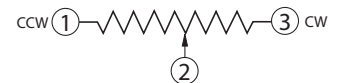


Suggested Panel Layouts

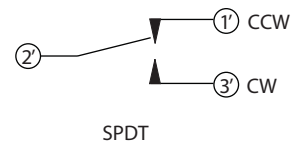


Rotary Switch Style "BR" can be used with either of the two panel layouts shown.

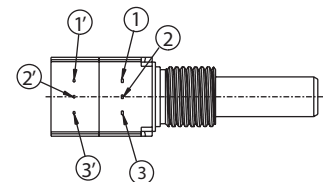
Electrical Schematic



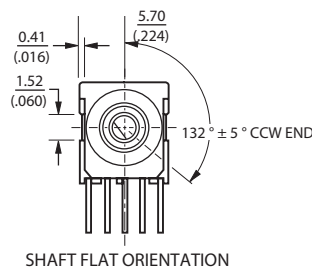
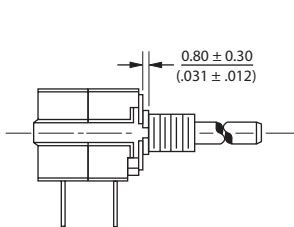
Switch Configuration



Terminal Layout



ANTI-ROTATION LUG (Style "A", 90° CW Shown)



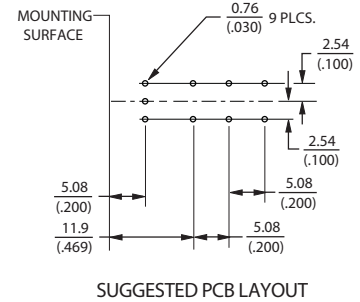
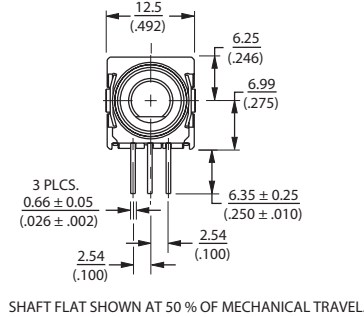
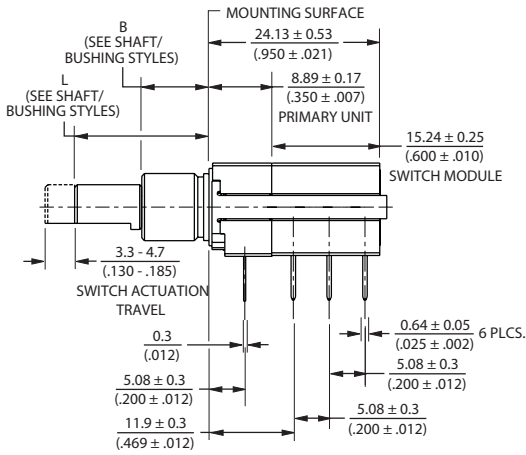
FOR TOLERANCES SHOWN: .XX = ± $\frac{.25}{.010}$
 .XXX = ± $\frac{.13}{.005}$
 SHAFT DIMENSIONS ± $\frac{.80}{(1/32)}$

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

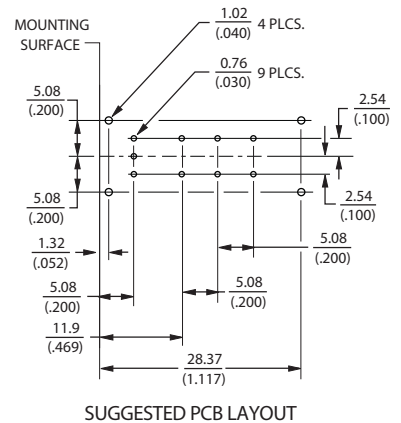
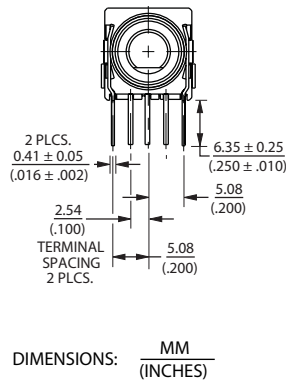
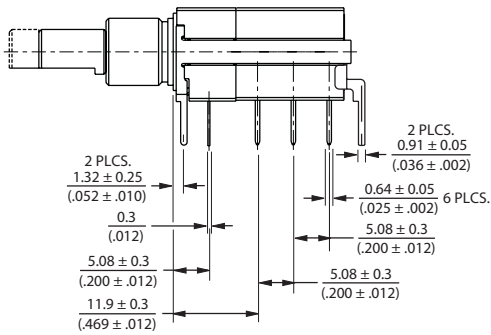
Series S127B Potentiometer - 1/2" (12.7mm) Square

S127B Dimensions - Single Potentiometer with Push-Pull Switch Module

Product Dimensions

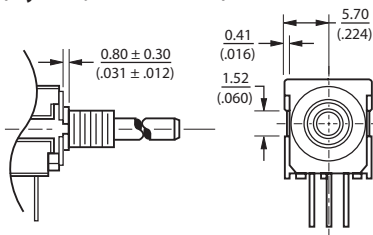


PACKAGE DIMENSIONS WITH FRONT AND REAR PCB MOUNTING BRACKET

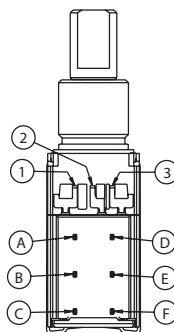


Anti-Rotation Lug

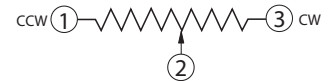
(Style "A", 90° CW Shown)



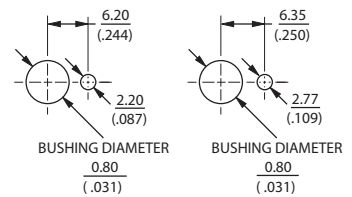
Terminal Layout



Electrical Schematic



Suggested Panel Layouts

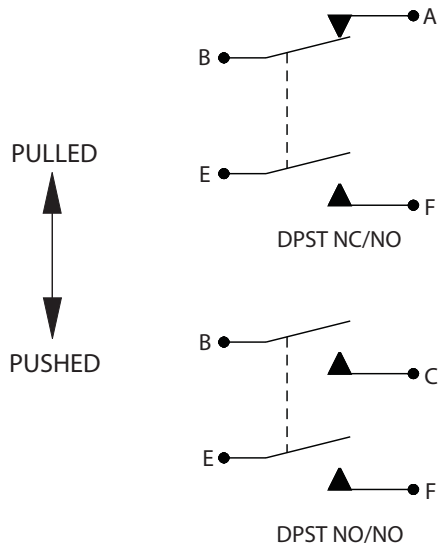


Push-Pull Switch Style "BP" can be used with either of the two panel layouts shown.

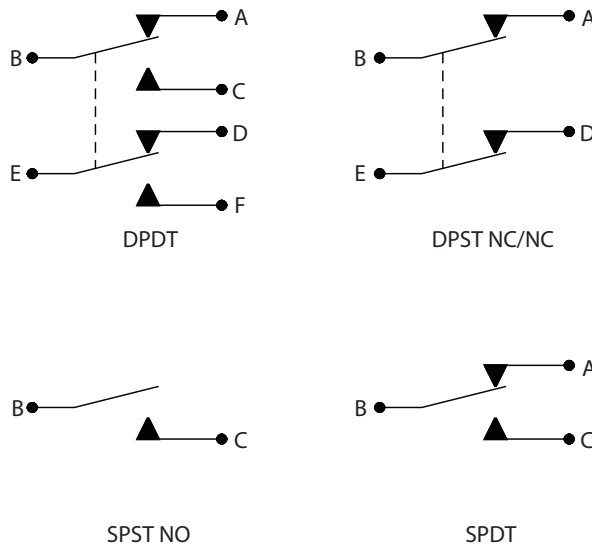
Series S127B Potentiometer - 1/2" (12.7mm) Square

S127B Switch Diagrams

Push-Pull Circuit (Shown in Pulled Position)



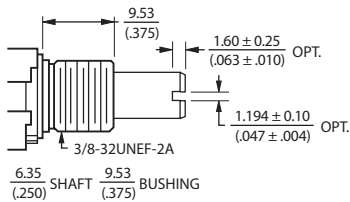
Rotary Circuit



S127B Shaft / Bushing Combinations

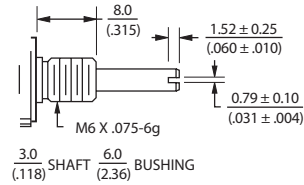
A Style Bushing

STD. LENGTH 'L'	
.500	(12.7)
.625	(15.88)
.750	(19.05)
.875	(22.23)
1.000	(25.4)



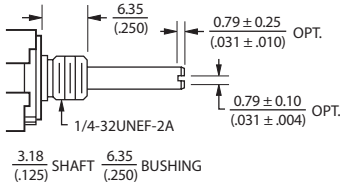
S Style Bushing

STD. LENGTH 'L'	
.630	(16.0)
.866	(22.0)
.984	(25.0)



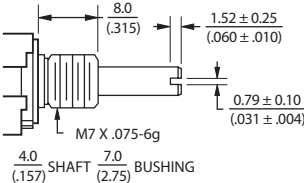
C Style Bushing

STD. LENGTH 'L'	
.375	(9.53)
.500	(12.7)
.625	(15.88)
.750	(19.05)
.875	(22.23)
1.000	(25.4)



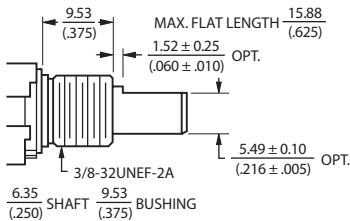
U Style Bushing

STD. LENGTH 'L'	
.630	(16.0)
.866	(22.0)
.984	(25.0)



A Style Bushing - Flatted Shaft

STD. LENGTH 'L'	
.625	(15.88)
.750	(19.05)
.875	(22.23)
1.000	(25.4)



R Style Bushing

STD. LENGTH 'L'	
.630	(16.0)
.866	(22.0)
.984	(25.0)

