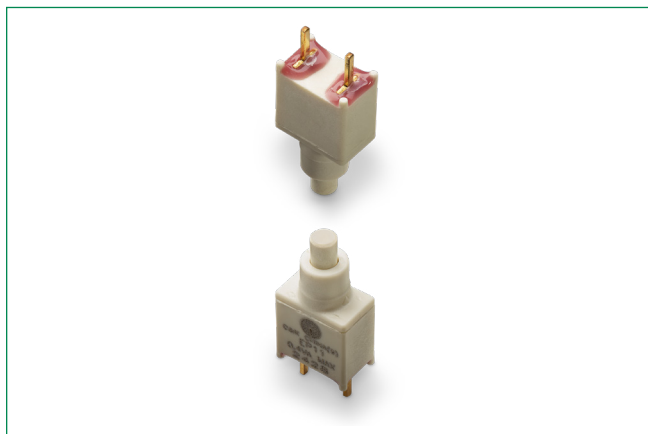


EP Series

Sealed Tiny Pushbutton Switches



Agency Approvals

Agency	Agency File Number
US	E42363

Specifications

Contact Rating²	B contact material: 0.4 VA max. @ 20 V AC or DC max.
Electrical Life	EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.
Contact Resistance	Below 20mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
Insulation Resistance	10 ⁹ Ω min.
Dielectric Strength	1000 Vrms min. @ sea level.
Operating Temperature	-30°C to 85°C ²
Solderability	Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).
Degree of Protection	IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.
Packaging	Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page 8 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

Notes:

1. UL Recognized for a maximum of 65°C

2. See Contact Material table for additional ratings

Description

The EP series of sealed tiny pushbutton switches are selected to power applications in the telecommunications and networking industry. The EP's snap-fitting actuator accepts standard caps, and is sealed to protect against solder and cleaning processes – helping ensure it can withstand any harsh environment. Available in thru-hole and surface mount models, EP switches are also RoHS compliant.

Features & Benefits

- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available

Applications

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls

Materials

Case & Bushing	High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94 V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.
Plunger	Thermoplastic polyester or glass filled nylon (UL 94 V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94 V-0).
Switch Support	Brass, matte-tin plated.
Contacts & Terminals	B contact material: Copper alloy, with gold plate over nickel plate. See page 7 for additional contact materials.
Terminal Seal	Epoxy

Notes:

Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant. Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Caution:

PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

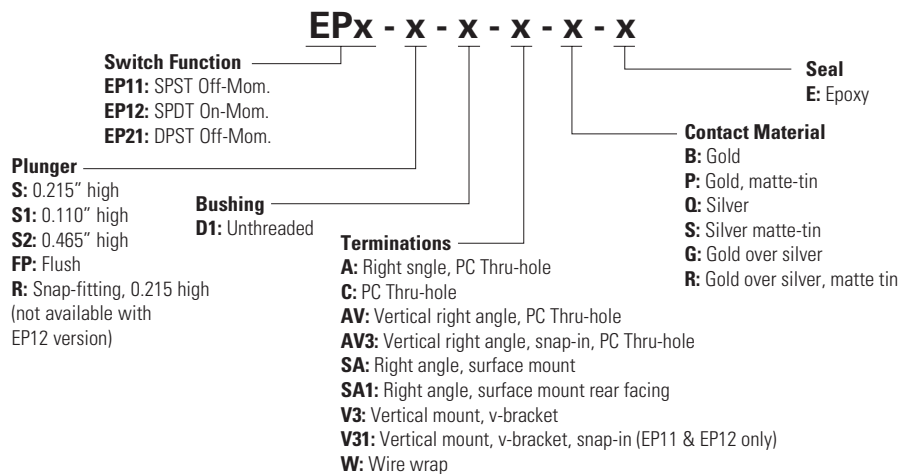
EP Series

Sealed Tiny Pushbutton Switches



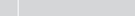
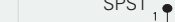
Ordering Number

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

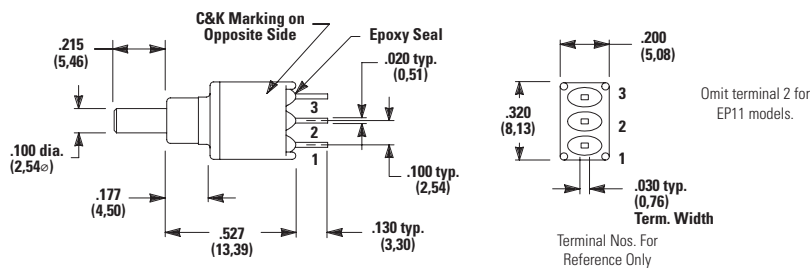


Switch Function

SPDT

No. Poles	Model No.	Switch Function		Connected Terminals		Schematic
		POS. 1 	POS. 2 	POS. 1 	POS. 2 	
		C&K marking on opposite side				
SP	EP11	OFF	MOM.	OPEN	1-3	
	EP12	ON		2-1	2-3	

Dimensions inches (mm)



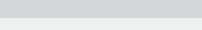
Part Number Shown: EP12SD1CBE

EP Series

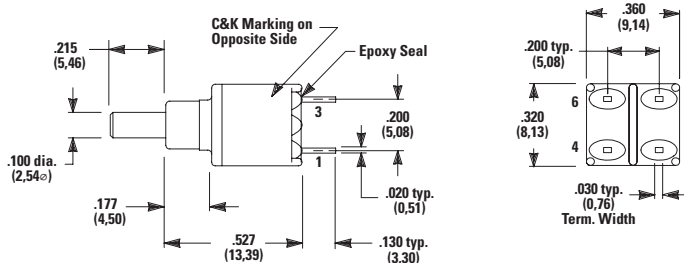
Sealed Tiny Pushbutton Switches



DPST

No. Poles	Model No.	Switch Function		Connected Terminals		Schematic
		POS. 1 	POS. 2 	POS. 1 	POS. 2 	
		C&K marking on opposite side				
DP	EP21	OFF	MOM.	OPEN	1-3, 4-6	

Dimensions inches (mm)



Terminal Nos. For
Reference Only

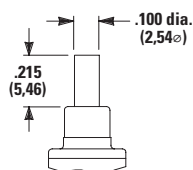
Part Number Shown: EP21SD1CBE

MOM. = Momentary

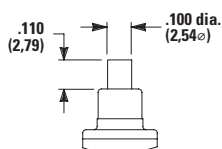
All models can be ordered with all options when ordered with G, Q, R or S contact material.

Plunger Dimensions inches (mm)

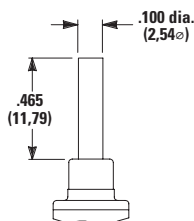
S 0.215" High



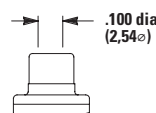
S1 0.110" High



S2 0.465" High

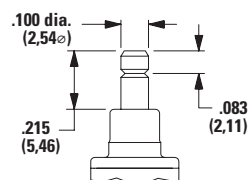


Flush Plunger



FP & R actuators are not available with EP21 model.
R actuators are not available with EP12 model.

R Snap-Fitting

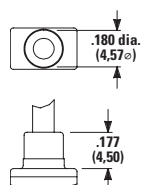


Notes:

Caps available for plunger options, see page 7.

S1 & S2 actuators are not available with EP12 & EP21 models.

Bushing Dimensions inches (mm) D1 Unthreaded



Notes:

Internal actuator o-ring standard.

EP Series

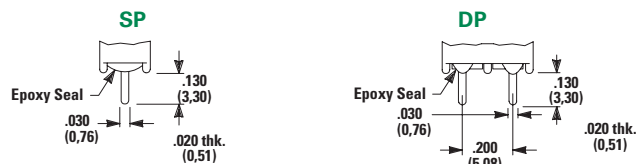
Sealed Tiny Pushbutton Switches



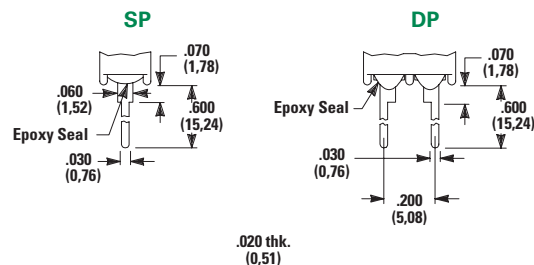
Terminations

Dimensions inches (mm)

C PCThru-hole



W Wire Wrap



PC Mounting

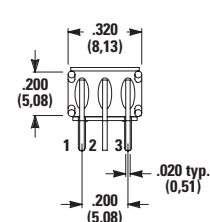
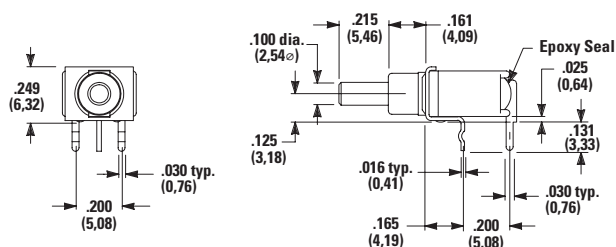


SP and DP

SP and DP

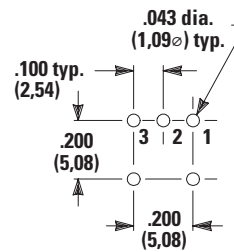
A Right Angle, PCThru-hole

EP12SD1ABE SPDT Dimensions inches (mm)



EP11 Models: omit terminal 2.

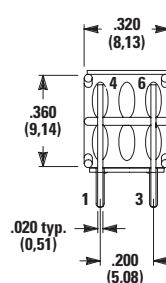
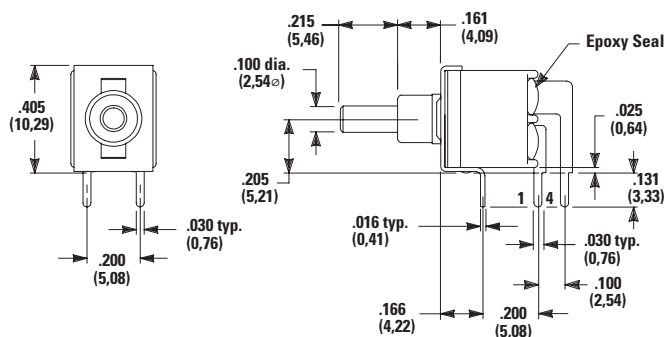
PC Mounting



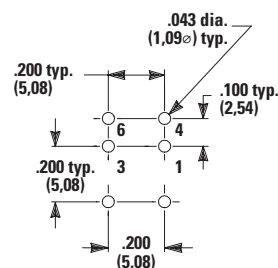
EP11 Models: omit thru-hole 2.

A Right Angle, PCThru-hole

EP21SD1ABE DPST Dimensions inches (mm)



PC Mounting



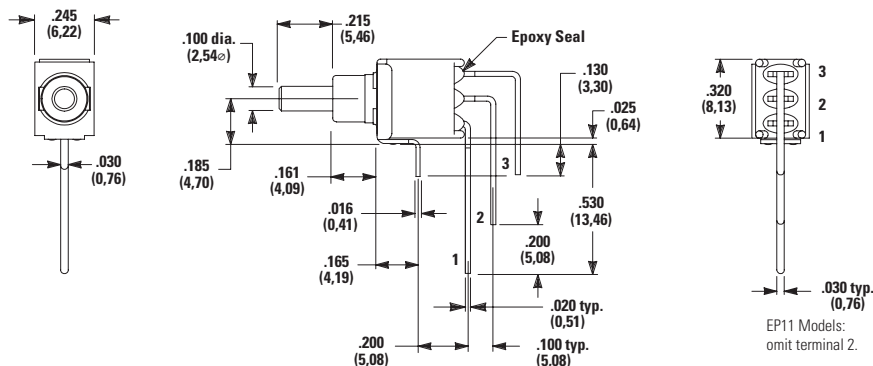
EP Series

Sealed Tiny Pushbutton Switches



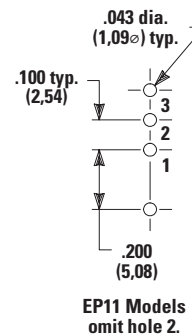
AV Vertical Right Angle, PCThru-hole

EP12SD1AVBE SPDT Dimensions inches (mm)



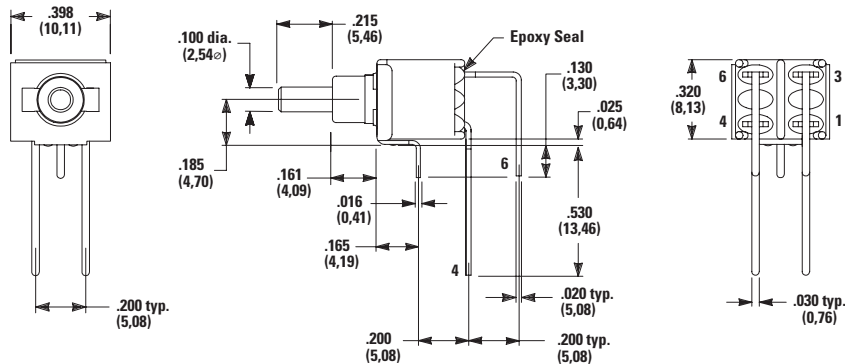
Note: Terminal bend radii and lead-in manufacturing option.

PC Mounting



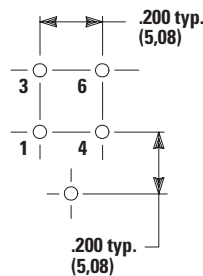
AV Vertical Right Angle, PCThru-hole

EP21SD1AVBE DPST Dimensions inches (mm)



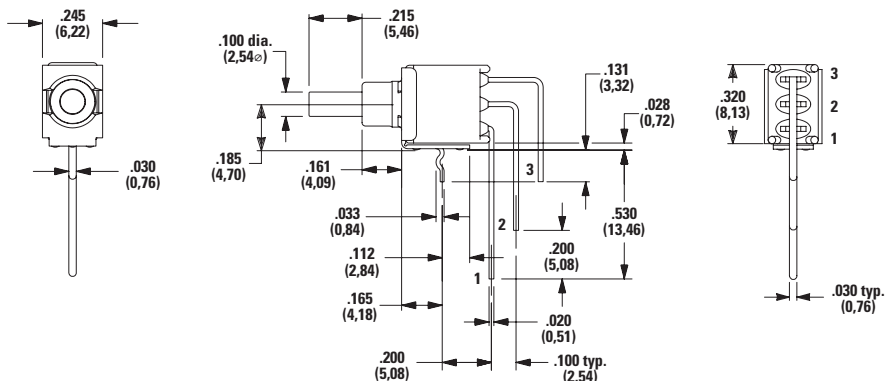
Note: Terminal bend radii and lead-in manufacturing option.

PC Mounting

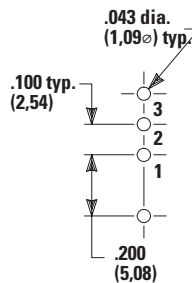


AV3 Vertical Right Angle, Snap-in, PCThru-hole

EP12SD1AV3BE SPST Dimensions inches (mm)



PC Mounting



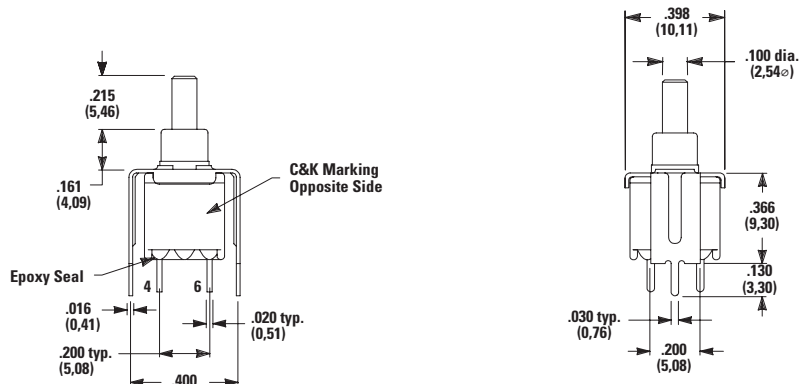
EP Series

Sealed Tiny Pushbutton Switches

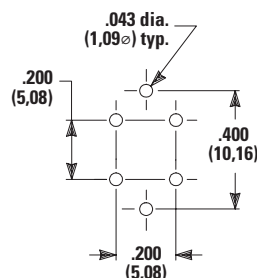


V3 Vertical Mount, V-Bracket

EP21SD1V3BE DPST Dimensions inches (mm)



PC Mounting



Contact Material

Option Code	Contact Material	Terminal Plating	Ratings	
B	Gold ¹	Gold ¹	Low Level/Dry Circuit	0.4 VA max. @ 20 V AC or DC max.
P		Matte-Tin ⁶		
Q	Silver ^{4,5}	Silver ⁵	Power	1 amp @ 120 V AC or 28 V DC
S		Matte-Tin ⁶		
G	Gold over Silver ^{2,3}	Gold ³	Low Level/Dry Circuit or Power	0.4 VA max. @ 20 V AC or DC max. or 28 V DC
R		Matte-Tin ⁶		

Notes:

See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

1. Contacts & Terminals: Copper alloy, with gold plate over nickel plate.

2. End Contacts: Coin silver, with gold plate over nickel plate.

3. Center Contacts & All Terminals: Copper alloy, with gold plate over nickel plate.

4. End Contacts: Coin silver, silver plated.

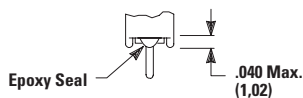
5. Center Contact & All Terminals: Copper alloy, silver plated.

6. Terminals: Copper alloy, with matte tin over nickel plate.

Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant. All models are UL listed for 1 amp @ 120 VAC only.

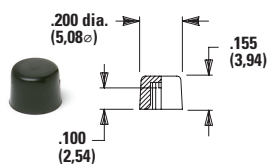
Seal

E Epoxy Seal



Available Hardware

Cap



Part No.

508101000 White

508102000 Black

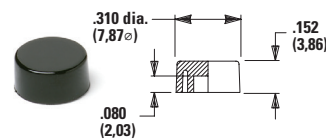
508103000 Red

Material: Nylon

Finish: Gloss

Not for use on S1 plunger

Cap



Part No.

465801000 White

465802000 Black

465803000 Red

Material: Nylon

Finish: Gloss

Not for use on S1 plunger

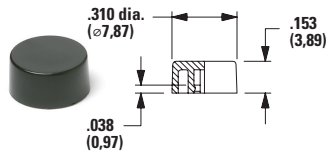
EP Series

Sealed Tiny Pushbutton Switches



Cap

Compatible with snap-fitting plungers EP11 & EP12 Models. R option only.

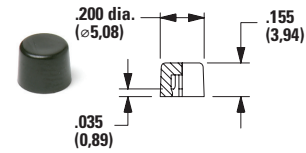


Part No.

585A01000 White
585A02000 Black
585A03000 Red
Material: Nylon
Finish: Gloss

Cap

Compatible with snap-fitting plungers EP11 & EP12 Models. R option only.



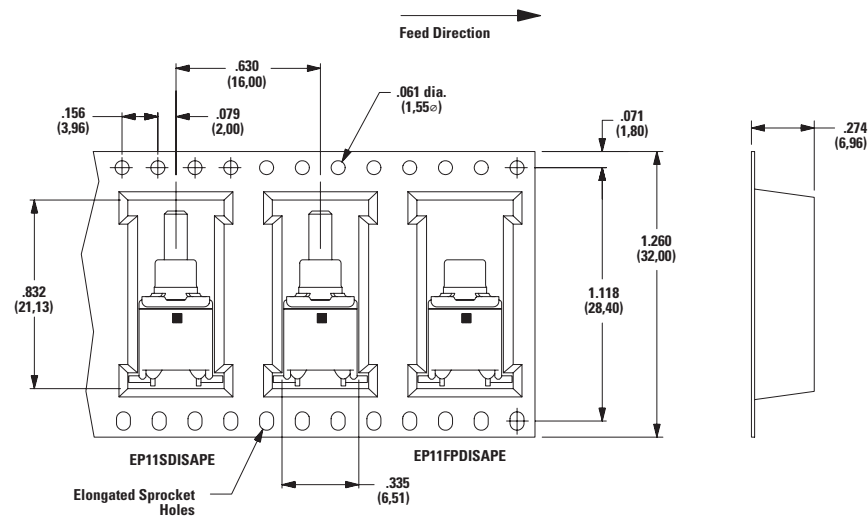
Part No.

785A01000 White
785A02000 Black
785A03000 Red
Material: Nylon
Finish: Gloss

Note: Other colors available, consult Customer Service Center.

Tape & Reel

For part number EPXX-SA/SA1



Reel Information

Outside Diameter	13.00 (330.0)
Pilot Hole	0.512 (13.0)
Quantity per Reel	600

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <http://www.littelfuse.com/disclaimer-electronics>.