

EP Series Sealed Tiny Pushbutton Switches



A

Pushbutton

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



Models Available

Typical Applications

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



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-13 for additional ratings.

ELECTRICAL LIFE: EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: $10^9 \Omega$ min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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 A-14 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

Materials

CASE & BUSHING: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.

PLUNGER: Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94V-0).

SWITCH SUPPORT: Brass, matte-tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-13 for additional contact materials.

TERMINAL SEAL: Epoxy.

NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

NOTE: 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.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-10 thru A-14. 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 EP11 SPST Off-Mom. EP12 SPDT On-Mom. EP21 DPST Off-Mom.	Plunger S .215" high S1 .110" high S2 .465" high FP Flush R Snap-fitting, .215 high	Bushing D1 Unthreaded	Terminations A Right angle, PC thru-hole C PC Thru-hole AV Vertical right angle, PC thru-hole AV3 Vertical right angle, snap-in, PC thru-hole SA Right angle, surface mount SA1 Right angle, surface mount rear facing V3 Vertical mount, v-bracket V31 Vertical mount, v-bracket, snap-in (EP11 & EP12 only) W Wire wrap	Contact Material B Gold P Gold, matte-tin Q Silver S Silver, matte-tin G Gold over silver R Gold over silver, matte tin	Seal E Epoxy
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Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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SWITCH FUNCTION



NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
		C&K marking on opposite side		C&K marking on opposite side		
SP	EP11	OFF	MOM.	OPEN	1-3	SPST
	EP12	ON	MOM.	2-1	2-3	SPDT
SPDT						
 Part number shown: EP12SD1CBE						
DP	EP21	OFF	MOM.	OPEN	1-3,4-6	DPST
DPST						
 Part number shown: EP21SD1CBE						

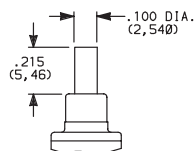
MOM. = Momentary

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

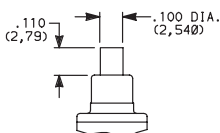
PLUNGER



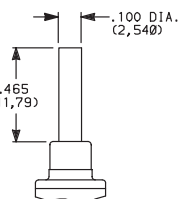
S .215" HIGH



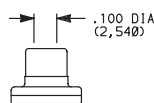
S1 .110" HIGH



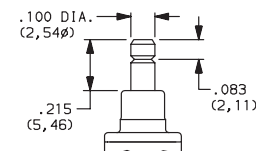
S2 .465" HIGH



FP FLUSH PLUNGER



R SNAP-FITTING



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

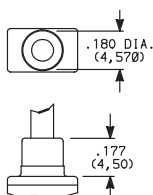
FP & R actuators are not available with EP21 model.

NOTE: Caps available for plunger options, see page A-14.

BUSHING



D1 UNTHREADED



NOTE: Internal actuator o-ring standard.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K

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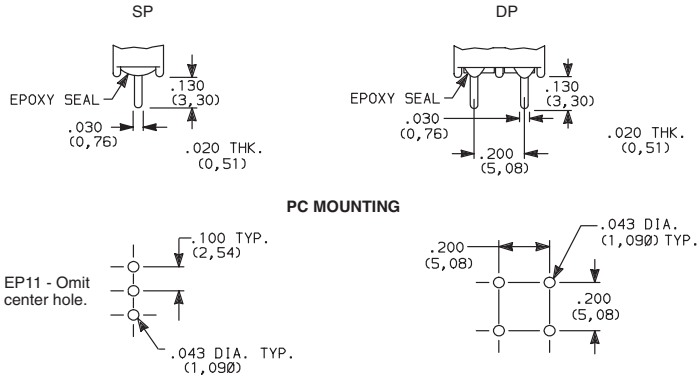
A

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TERMINATIONS

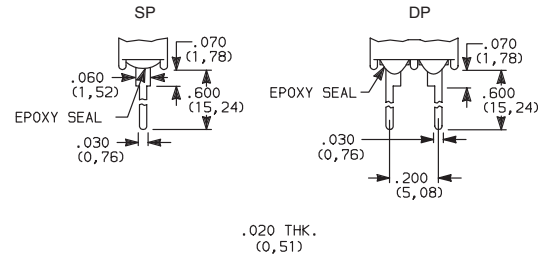


C PC THRU-HOLE



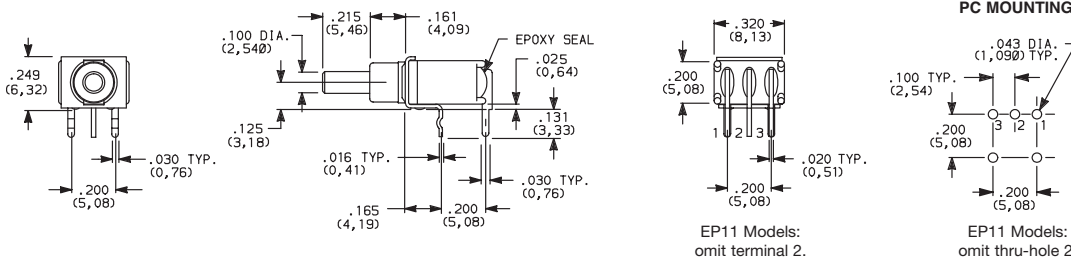
SP and DP

W WIRE WRAP



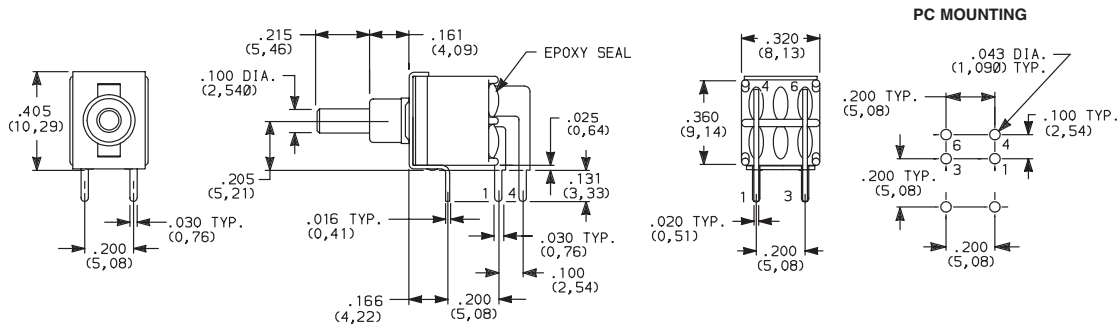
SP and DP

A RIGHT ANGLE, PC THRU-HOLE



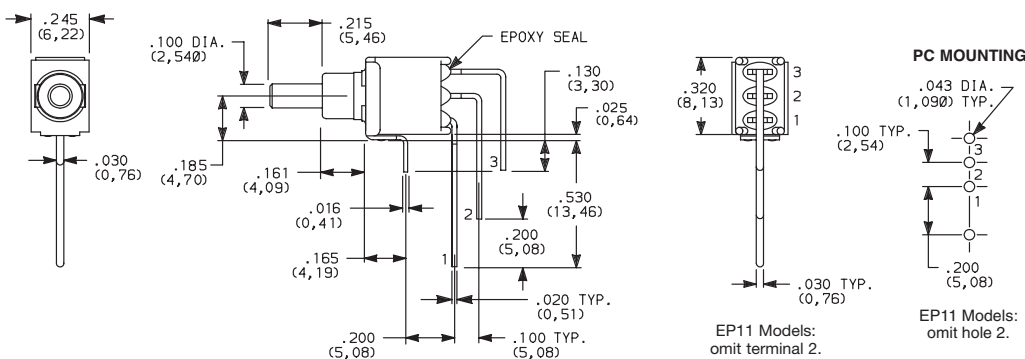
EP12SD1ABE
SPDT

A RIGHT ANGLE, PC THRU-HOLE



EP21SD1ABE
DPST

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



EP12SD1AVBE
SPDT

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

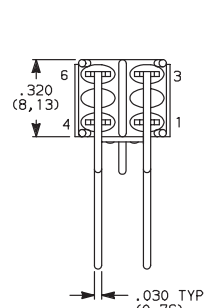
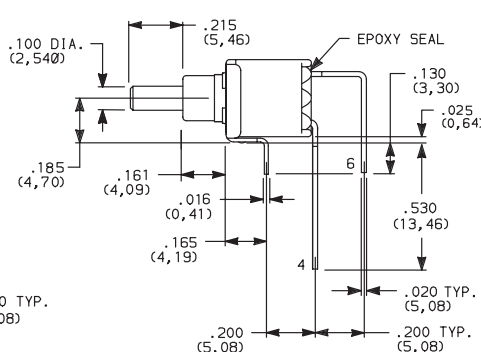


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

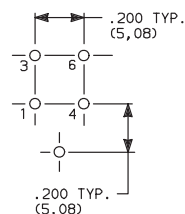
C&K



Pushbutton



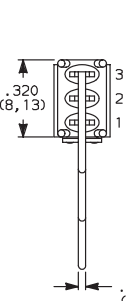
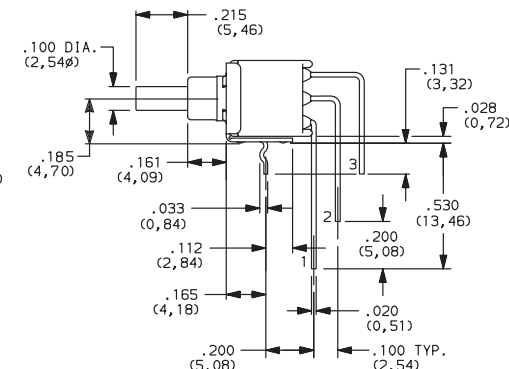
PC MOUNTING



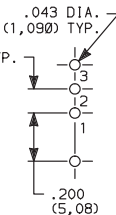
NOTE: Terminal bend radii and lead-in manufacturing option.

Technical drawing of a cable connector. The drawing shows a cross-section of the connector with two dimensions indicated by arrows and text:

- A horizontal dimension at the top indicates a width of $.245$ (6, 22).
- A horizontal dimension at the bottom indicates a width of $.030$ (0, 76).

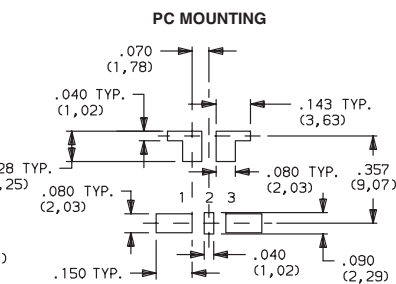
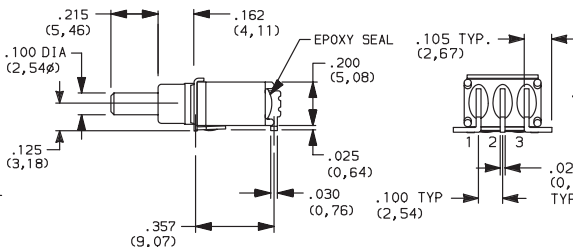


PC MOUNTING



EP11 Models:
omit hole 2

Technical drawing of a bearing housing showing dimensions: .320 (8,13) and .410 MAX (10,41).

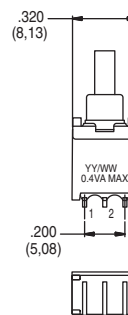
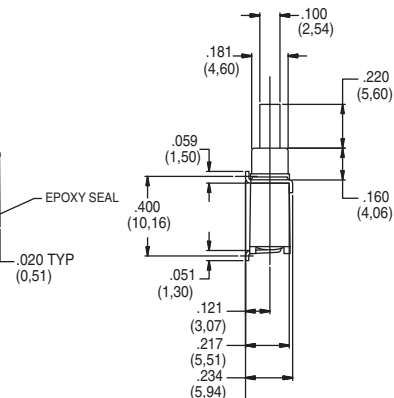


EP11 Models:
omit pad 2.

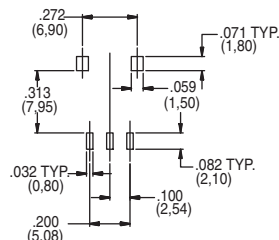
Available with P contact material only.
Not Available on DPST models.

EP11 Models:
omit terminal 2

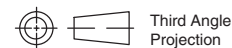
Technical drawing of a vertical component. The drawing shows a central rectangular block with a smaller rectangular feature on top. The overall height is dimensioned as .276 (7,0). The width of the central block is dimensioned as .041 (1,04). The drawing is a side view, showing the profile of the component.



PC MOUNTING



SA1 is only available with B and P contact materials.
Not Available on DPST models.



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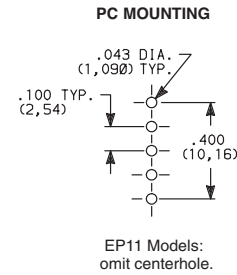
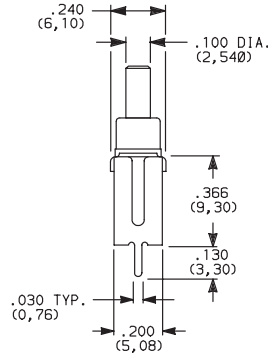
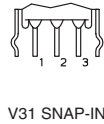
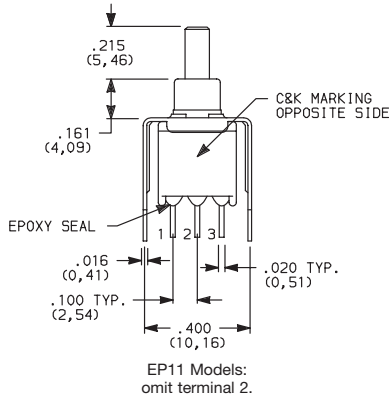
A

Pushbutton

TERMINATIONS



- V3** VERTICAL MOUNT, V-BRACKET
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN

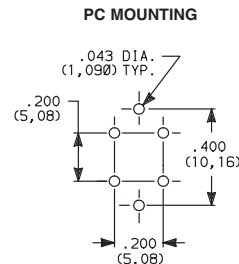
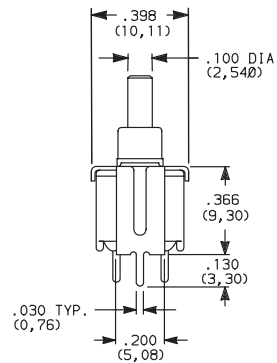
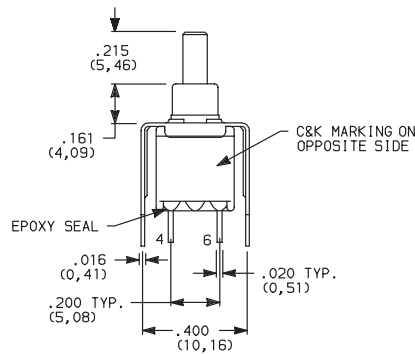


EP11 Models:
omit centerhole.



EP12SD1V3BE
SPDT

- V3** VERTICAL MOUNT, V-BRACKET



EP21SD1V3BE
DPST

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 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁶		

* Note: 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.

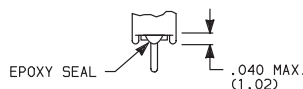
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

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

SEAL



- E** EPOXY SEAL



Third Angle
Projection



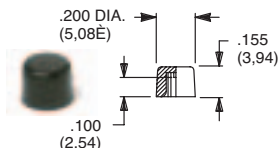
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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AVAILABLE HARDWARE

Cap



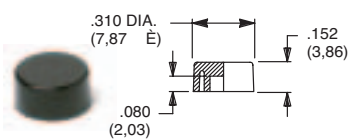
PART NO.

508101000 WHITE
508102000 BLACK
508103000 RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap



PART NO.

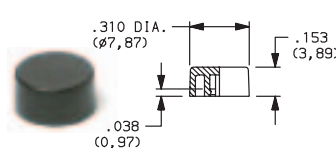
465801000 WHITE
465802000 BLACK
465803000 RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap

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



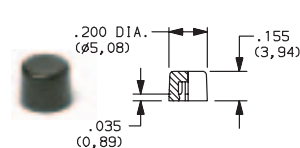
PART NO.

585A01000 WHITE
585A02000 BLACK
585A03000 RED

Material: Nylon
Finish: Gloss

Cap

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



PART NO.

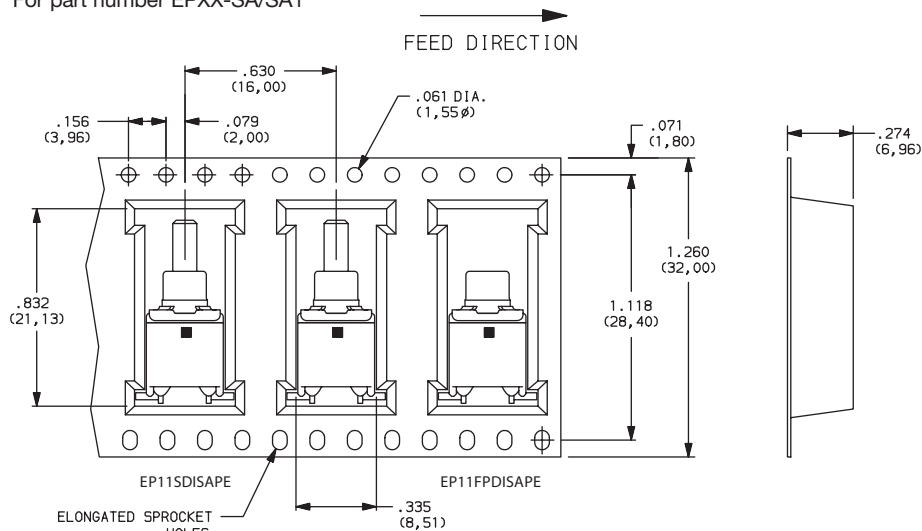
785A01000 WHITE
785A02000 BLACK
785A03000 RED

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	.512 (13,0)
QUANTITY PER REEL	600