EP Series
Sealed Tiny Pushbutton Switches

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***

c UL us
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 Ω 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.

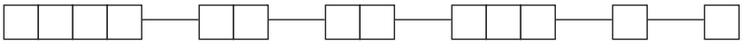
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

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

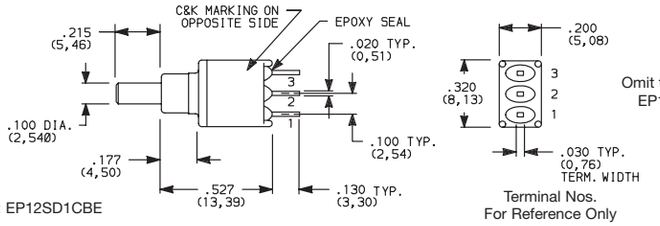
Seal
E Epoxy

EP Series
Sealed Tiny Pushbutton Switches

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION POS. 1 (C&K marking on opposite side)	SWITCH FUNCTION POS. 2 (C&K marking on opposite side)	CONNECTED TERMINALS POS. 1 (C&K marking on opposite side)	CONNECTED TERMINALS POS. 2 (C&K marking on opposite side)	SCHEMATIC
SP	EP11	OFF	MOM.	OPEN	1-3	SPST 1 3
	EP12	ON	MOM.	2-1	2-3	SPDT NC 1 2 (COMM) 3 NO

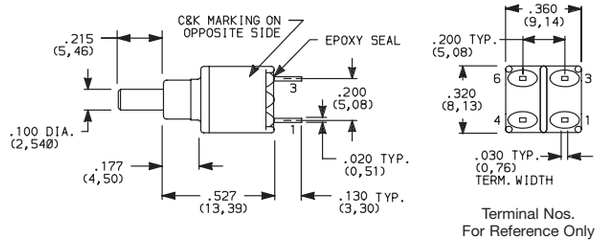
SPDT



Part number shown: EP12SD1CBE

DP	EP21	OFF	MOM.	OPEN	1-3,4-6	DPST 1 3 4 6

DPST



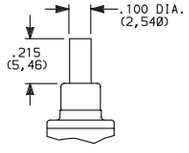
Part number shown: EP21SD1CBE

MOM. = Momentary

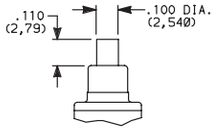
All models cULus with all options when ordered with G, Q, R or S contact material.

PLUNGER

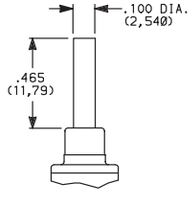
S .215" HIGH



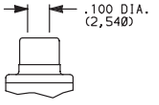
S1 .110" HIGH



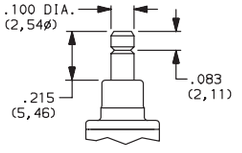
S2 .465" HIGH



FP FLUSH PLUNGER



R SNAP-FITTING



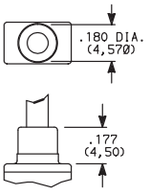
S1& S2 actuators are not available with EP12 & EP21 models.

FP & R actuators are not available with EP21 model.

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

BUSHING

D1 UNTHREADED



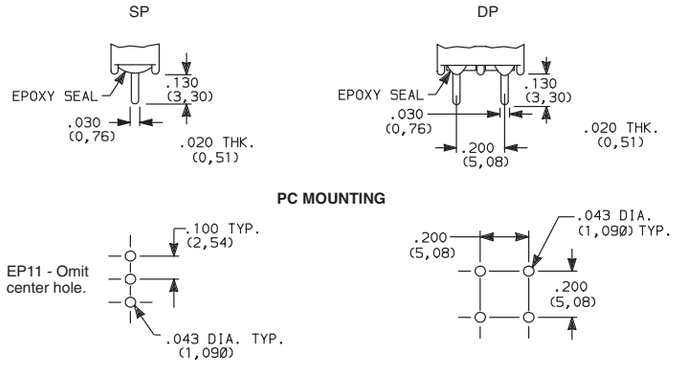
NOTE: Internal actuator o-ring standard.

Third Angle Projection

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

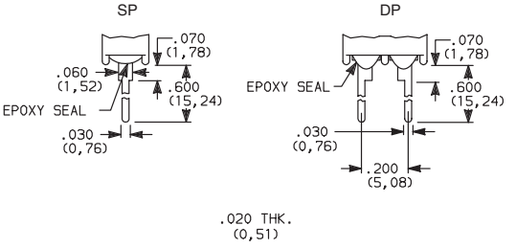
TERMINATIONS

C PC THRU-HOLE



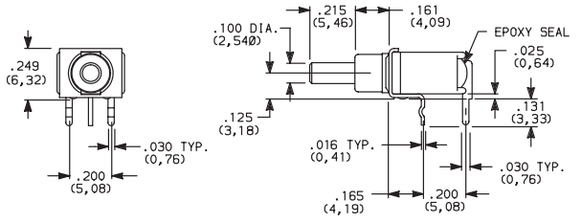
SP and DP

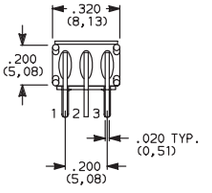
W WIRE WRAP



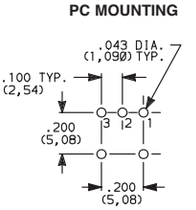
SP and DP

A RIGHT ANGLE, PC THRU-HOLE





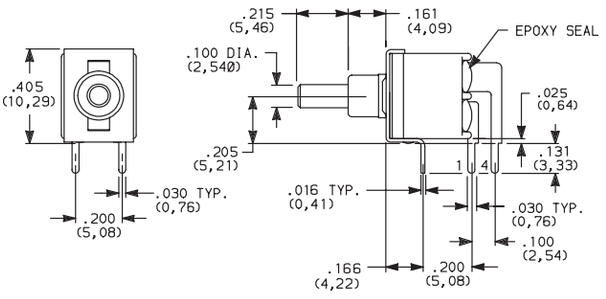
EP11 Models:
omit terminal 2.

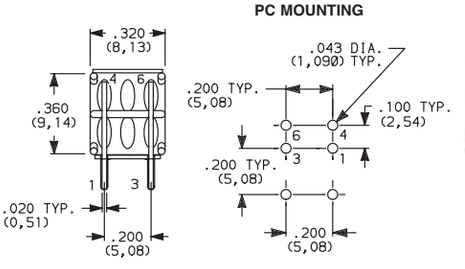


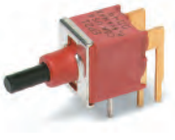
EP11 Models:
omit thru-hole 2.

EP12SD1ABE
SPDT

A RIGHT ANGLE, PC THRU-HOLE

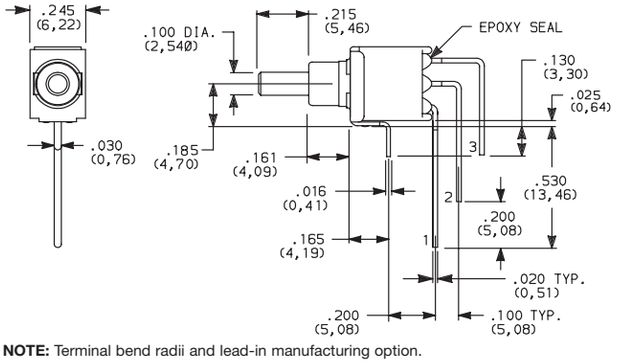


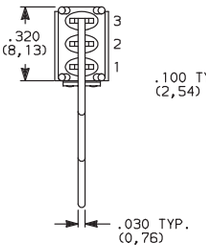




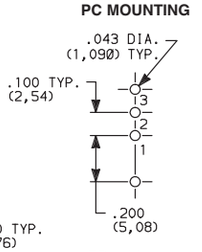
EP21SD1ABE
DPST

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE





EP11 Models:
omit terminal 2.



EP11 Models:
omit hole 2.



EP12SD1AVBE
SPDT

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

Third Angle
Projection

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

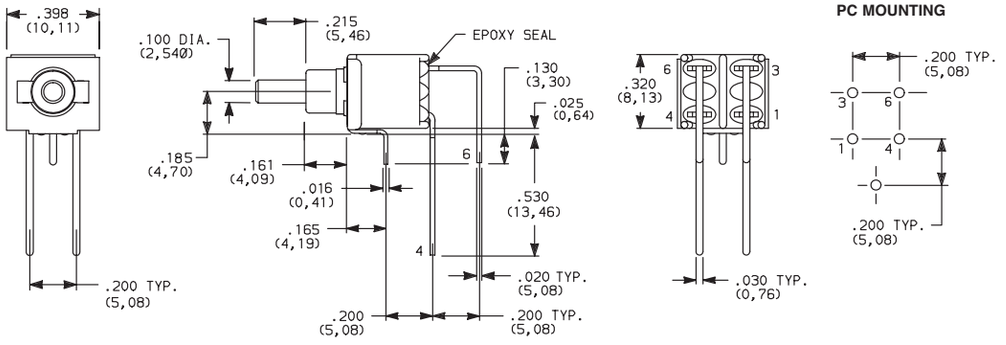
EP Series
Sealed Tiny Pushbutton Switches

TERMINATIONS

AV VERTICAL RIGHT ANGLE, THRU-HOLE



EP21SD1AVBE
DPST

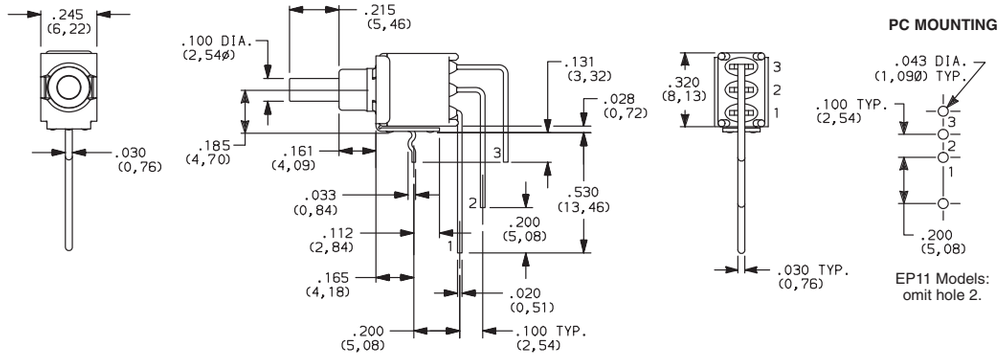


NOTE: Terminal bend radii and lead-in manufacturing option.

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



EP12SD1AV3BE
SPST

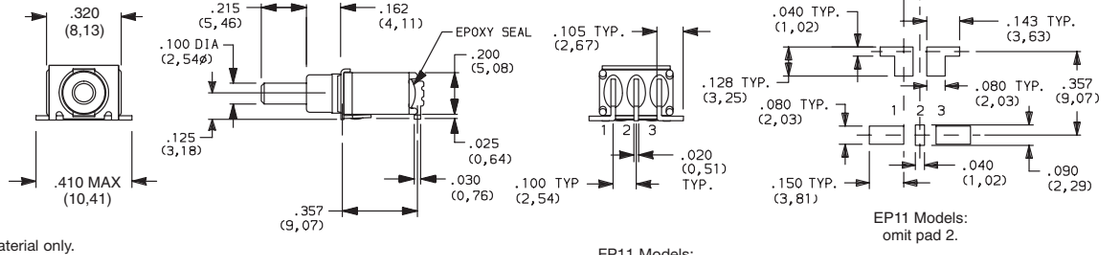


SA RIGHT ANGLE, SURFACE MOUNT



EP12SD1SAPE
SPDT

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

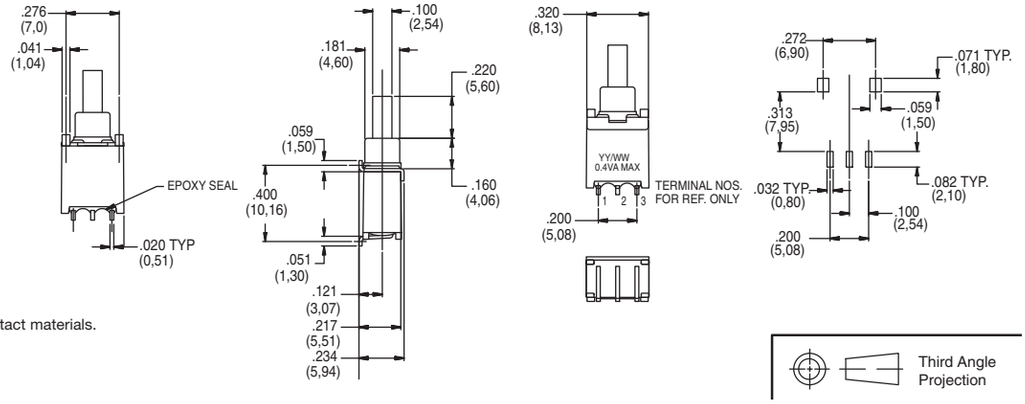


SA1 RIGHT ANGLE, SURFACE MOUNT



EP12SD1SA1BE
SPDT

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



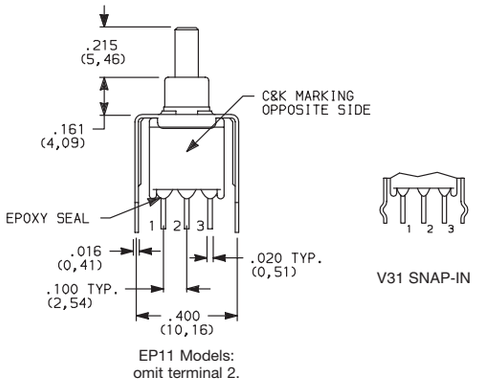
Third Angle Projection

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

TERMINATIONS

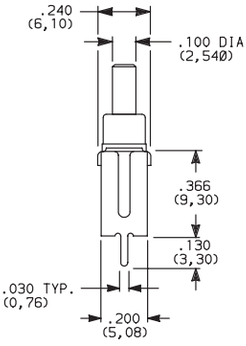
V3 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN

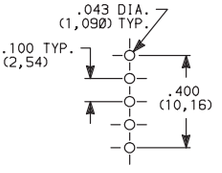


EP11 Models:
omit terminal 2.

V31 SNAP-IN



PC MOUNTING

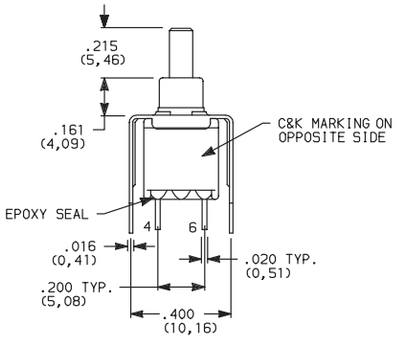


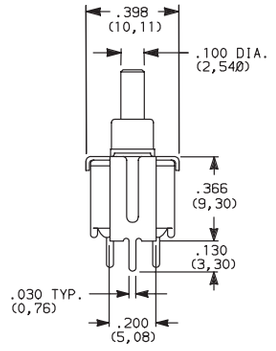
EP11 Models:
omit centerhole.



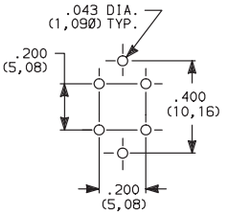
EP12SD1V3BE
SPDT

V3 VERTICAL MOUNT, V-BRACKET





PC MOUNTING





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.

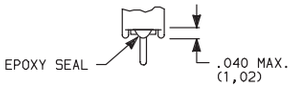
[6] TERMINALS: Copper alloy, with matte tin over nickel plate.

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

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

SEAL

E EPOXY SEAL



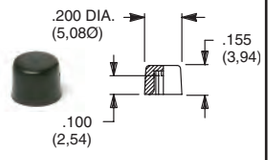
Third Angle Projection

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

EP Series
Sealed Tiny Pushbutton Switches

AVAILABLE HARDWARE

Cap



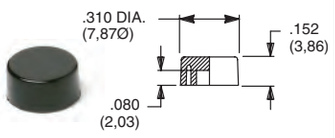
PART NO.

508101000	WHITE
508102000	BLACK
508103000	RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap



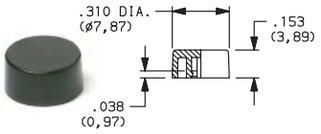
PART NO.

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.

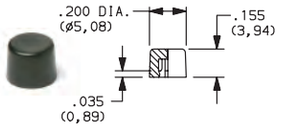


PART NO.

585A01000	WHITE
585A02000	BLACK
585A03000	RED

Material: Nylon
Finish: Gloss

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



PART NO.

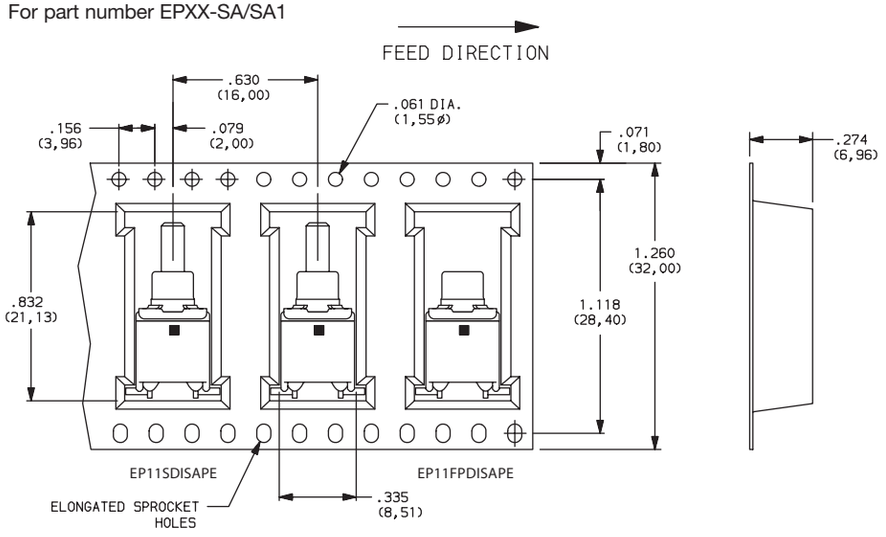
785A01000	WHITE
785A02000	BLACK
785A03000	RED

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

Third Angle Projection

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