

# EP Series Sealed Tiny Pushbutton Switches



A  
Pushbutton

## Features/Benefits

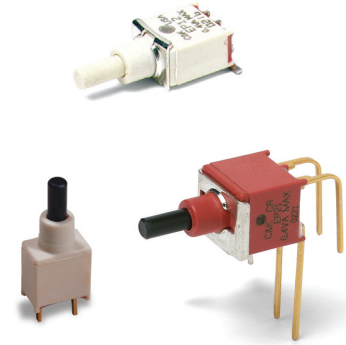
- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available



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<sup>9</sup> 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.

|                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                           |                                          |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <p><b>Switch Function</b></p> <p><b>EP11</b> SPST Off-Mom.</p> <p><b>EP12</b> SPDT On-Mom.</p> <p><b>EP21</b> DPST Off-Mom.</p> | <p><b>Plunger</b></p> <p><b>S</b> .215" high</p> <p><b>S1</b> .110" high</p> <p><b>S2</b> .465" high</p> <p><b>FP</b> Flush</p> <p><b>R</b> Snap-fitting, .215 high (not available with <b>EP12</b> version)</p> <p><b>Bushing</b></p> <p><b>D1</b> Unthreaded</p> <p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole</p> <p><b>C</b> PC Thru-hole</p> <p><b>AV</b> Vertical right angle, PC thru-hole</p> <p><b>AV3</b> Vertical right angle, snap-in, PC thru-hole</p> <p><b>SA</b> Right angle, surface mount</p> <p><b>SA1</b> Right angle, surface mount rear facing</p> <p><b>V3</b> Vertical mount, v-bracket</p> <p><b>V31</b> Vertical mount, v-bracket, snap-in (EP11 &amp; EP12 only)</p> <p><b>W</b> Wire wrap</p> | <p><b>Contact Material</b></p> <p><b>B</b> Gold</p> <p><b>P</b> Gold, matte-tin</p> <p><b>Q</b> Silver</p> <p><b>S</b> Silver, matte-tin</p> <p><b>G</b> Gold over silver</p> <p><b>R</b> Gold over silver, matte tin</p> | <p><b>Seal</b></p> <p><b>E</b> Epoxy</p> |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|



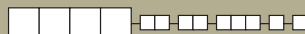
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Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# EP Series Sealed Tiny Pushbutton Switches

## 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      |
| <b>SPDT</b><br><br>Part number shown: EP12SD1CBE<br>Terminal Nos. For Reference Only |           |                              |        |                              |         |           |
| DP                                                                                   | EP21      | OFF                          | MOM.   | OPEN                         | 1-3,4-6 | DPST      |
|                                                                                      |           |                              |        |                              |         | DPST      |

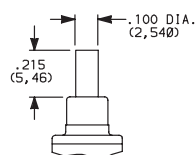
MOM. = Momentary

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

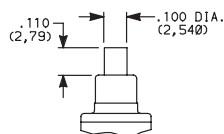
## PLUNGER



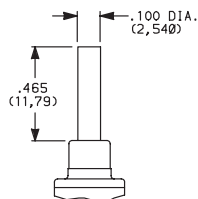
**S** .215" HIGH



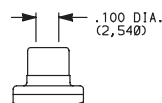
**S1** .110" HIGH



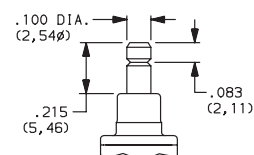
**S2** .465" HIGH



**FP** FLUSH PLUNGER



**R** SNAP-FITTING



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

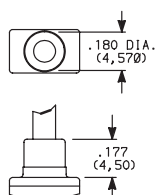
FP & R actuators are not available with EP21 model.  
R actuators are not available with EP12 model.

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

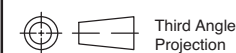
## BUSHING



**D1** UNTHREADED



NOTE: Internal actuator o-ring standard.



**C&K**

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

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# EP Series Sealed Tiny Pushbutton Switches

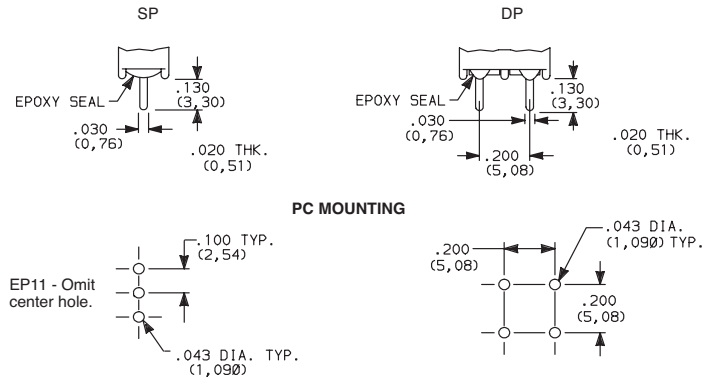


A  
Pushbutton

## TERMINATIONS

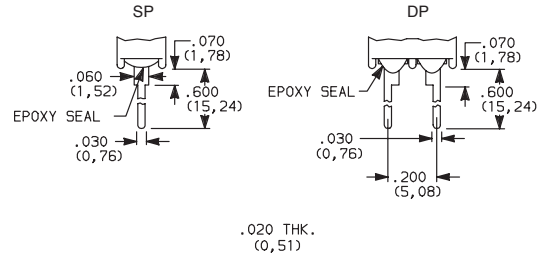


### C PC THRU-HOLE



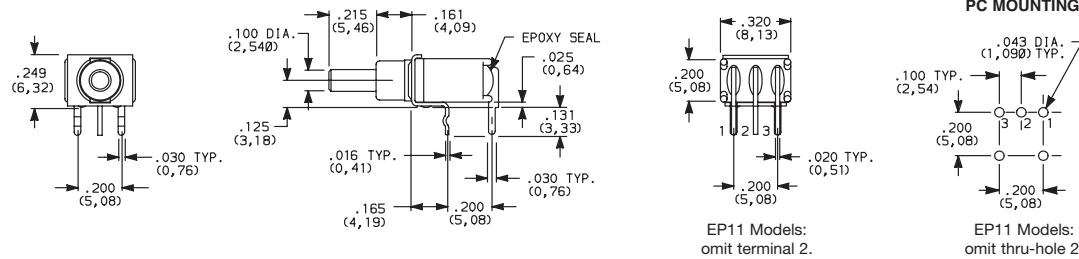
SP and DP

### W WIRE WRAP

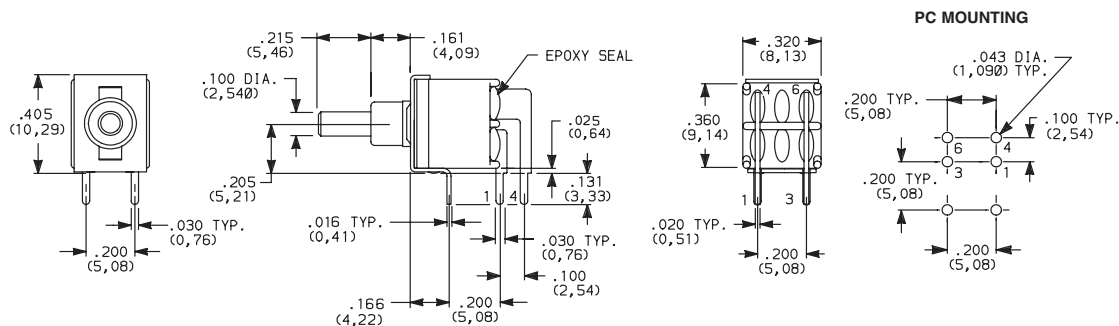


SP and DP

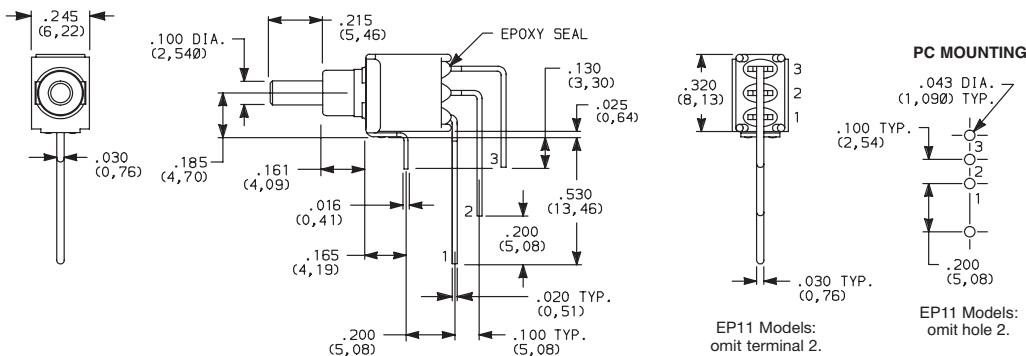
### A RIGHT ANGLE, PC THRU-HOLE



### A RIGHT ANGLE, PC THRU-HOLE



### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



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



Third Angle  
Projection

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

**C&K**

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A-11

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# EP Series Sealed Tiny Pushbutton Switches

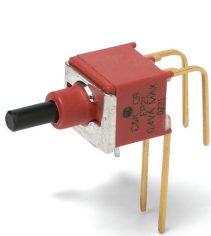
## TERMINATIONS



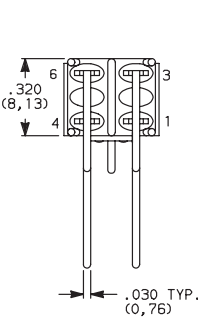
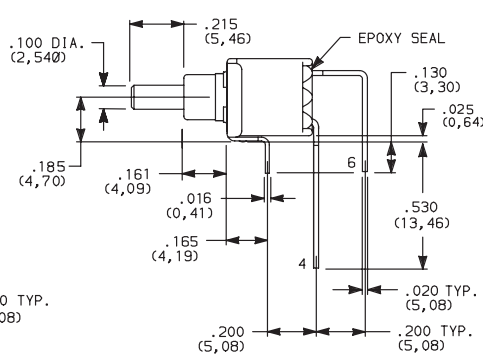
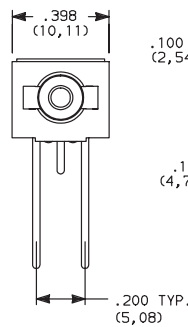
Pushbutton

A

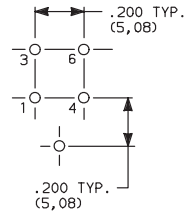
### AV VERTICAL RIGHT ANGLE, THRU-HOLE



**EP21SD1AVBE  
DPST**

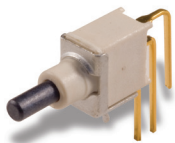


#### PC MOUNTING

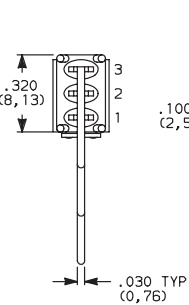
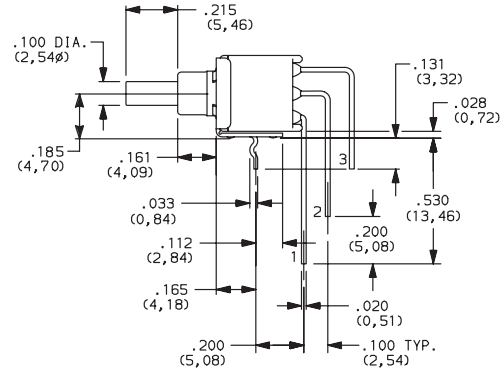
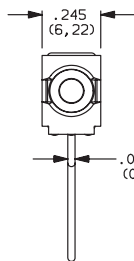


NOTE: Terminal bend radii and lead-in manufacturing option.

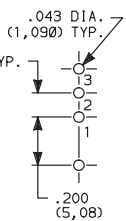
### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



**EP12SD1AV3BE  
SPST**

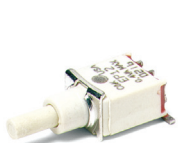


#### PC MOUNTING

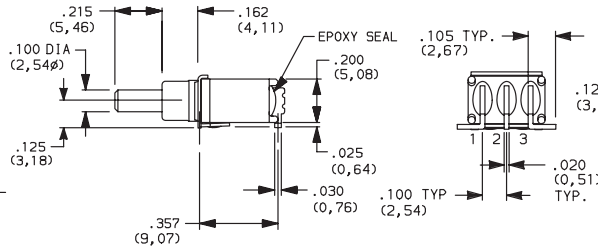
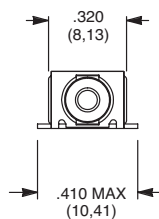


EP11 Models:  
omit hole 2.

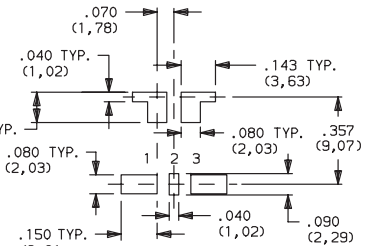
### SA RIGHT ANGLE, SURFACE MOUNT



**EP12SD1SAPE  
SPDT**



#### PC MOUNTING



EP11 Models:  
omit pad 2.

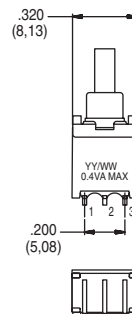
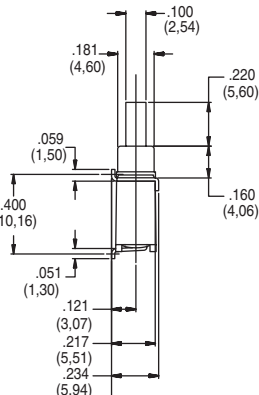
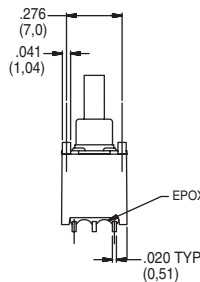
Available with P contact material only.  
Not Available on DPST models.

EP11 Models:  
omit terminal 2.

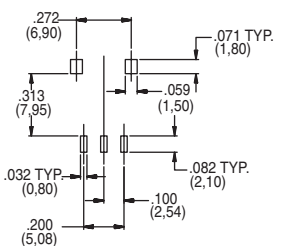
### SA1 RIGHT ANGLE, SURFACE MOUNT



**EP12SD1SA1BE  
SPDT**



#### PC MOUNTING



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



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

# EP Series Sealed Tiny Pushbutton Switches



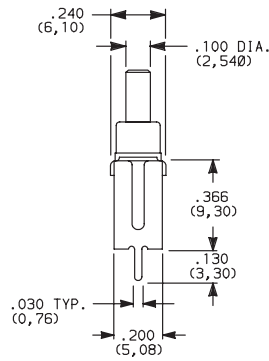
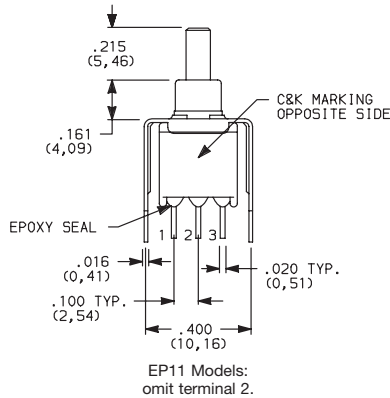
A  
Pushbutton

## TERMINATIONS

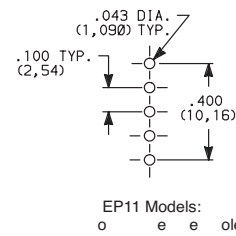


**V3** VERTICAL MOUNT, V-BRACKET

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

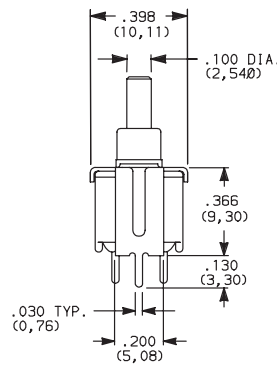
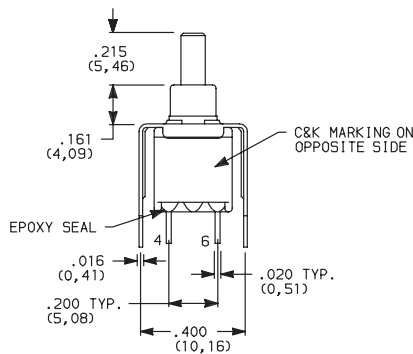


### PC MOUNTING

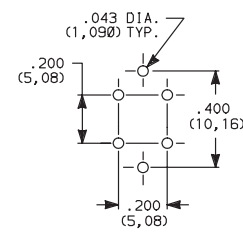


**EP12SD1V3BE  
SPDT**

**V3** VERTICAL MOUNT, V-BRACKET



### PC MOUNTING



**EP21SD1V3BE  
DPST**

## CONTACT MATERIAL



| OPTION CODE | CONTACT MATERIAL                | TERMINAL PLATING       | RATINGS                        |                                                                    |
|-------------|---------------------------------|------------------------|--------------------------------|--------------------------------------------------------------------|
| <b>B</b>    | GOLD <sup>1</sup>               | GOLD <sup>1</sup>      | LOW LEVEL/DRY CIRCUIT          | 0.4 VA MAX. @ 20 V AC OR DC MAX.                                   |
| <b>P</b>    |                                 | MATTE-TIN <sup>6</sup> |                                |                                                                    |
| <b>Q</b>    | SILVER <sup>4,5</sup>           | SILVER <sup>5</sup>    | POWER                          | 1 AMP @ 120 V AC OR 28 V DC.                                       |
| <b>S</b>    |                                 | MATTE-TIN <sup>6</sup> |                                |                                                                    |
| <b>G</b>    | GOLD OVER SILVER <sup>2,3</sup> | GOLD <sup>3</sup>      | LOW LEVEL/DRY CIRCUIT OR POWER | 0.4 VA MAX @ 20 V AC OR DC MAX. OR<br>1 AMP @ 120 V AC OR 28 V DC. |
| <b>R</b>    |                                 | MATTE-TIN <sup>6</sup> |                                |                                                                    |

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

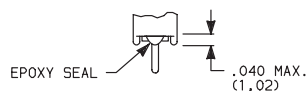
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

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

## SEAL



**E** EPOXY SEAL



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

**C&K**

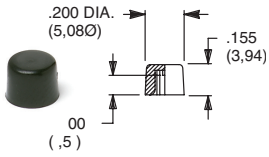
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# EP Series Sealed Tiny Pushbutton Switches

## AVAILABLE HARDWARE

### Cap



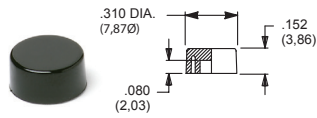
#### PART NO.

**508101000** WHITE  
**508102000** BLACK  
**508103000** RED

Material: Nylon  
Finish: Gloss

Not for use on S1 plunger

### Cap



#### PART NO.

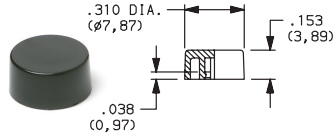
**465801000** WHITE  
**465802000** BLACK  
**465803000** RED

Material: Nylon  
Finish: Gloss

Not for use on S1 plunger

### Cap

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



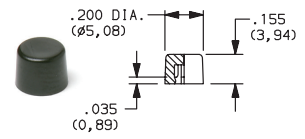
#### PART NO.

**585A01000** WHITE  
**585A02000** BLACK  
**585A03000** RED

Material: Nylon  
Finish: Gloss

### Cap

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



#### PART NO.

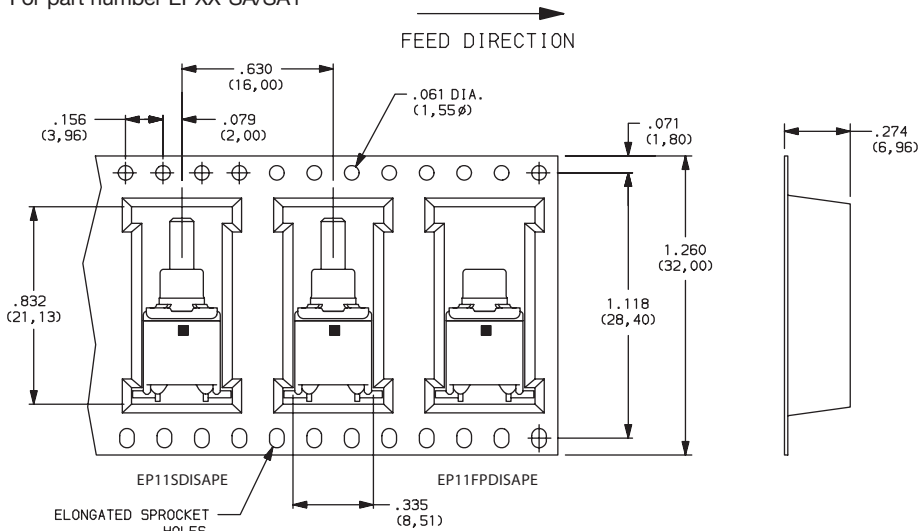
**785A01000** WHITE  
**785A02000** BLACK  
**785A03000** RED

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           |

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9