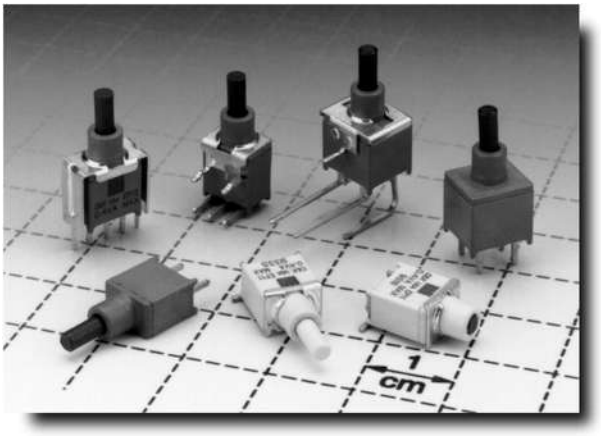
Models Available

## Features/Benefits

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

## Typical Applications

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






### Build-A-Switch

Our easy Build-A-Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box. Switches with standard options are shown on pages B-4 and B-5. Available options are shown and described on pages B-5 thru B-9. 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.

Typical Example: E P 1 1 — S — D 1 — C — B — E

**Switch Function**
**EP11 (STD.) SPST Off-Mom.**
**EP12 (STD.) SPDT On-Mom.**
EP21 DPST Off-Mom.

**Plunger**
**S (STD.) .215" high**
S1 .110" high
S2 .465" high
FP Flush
R Snap-fitting, .215" high

**Bushing**
**D1 (STD.) Unthreaded**

**Terminations**
**A (STD.) Right angle, PC thru-hole**
**C (STD.) PC Thru-hole**
**AV (STD.) Vertical right angle, PC thru-hole**
AV2 Vertical right angle, PC thru-hole
AV3 Vertical right angle, snap-in, PC thru-hole
SA Right angle, surface mount
V3 Vertical mount, v-bracket
V31 Vertical mount, v-bracket, snap-in (EP11 & EP12 only)
W Wire wrap

**Contact Material**
**B (STD.) Gold**
G Gold
K Silver
L Silver
M Gold over silver
Q Gold over silver

**Seal**
**E (STD.) Epoxy**

# C&K EP Series
# Sealed Tiny Pushbutton Switches



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page B-9 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 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: $10^9$ ohms min.

DIELECTRIC STRENGTH: 1000 V RMS 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 available in anti-static tape and reel packaging per EIA 481-3, see page L-35 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). SA surface mount: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).

PLUNGER: Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).

SWITCH SUPPORT: Brass, tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page B-9 for additional contact materials.

TERMINAL SEAL: Epoxy.

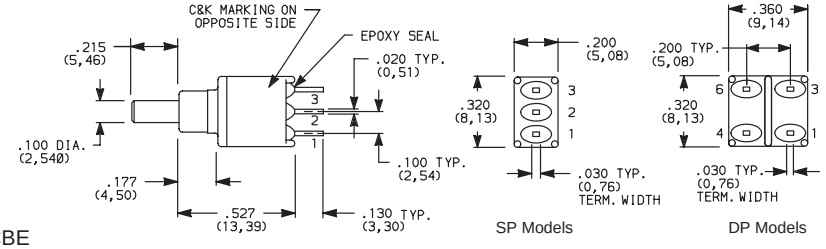
**NOTE**: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

**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.

## SWITCHES WITH STANDARD OPTIONS



EP12SD1CBE
**SPDT**




Omit terminal 2 for SPST & DPST models.

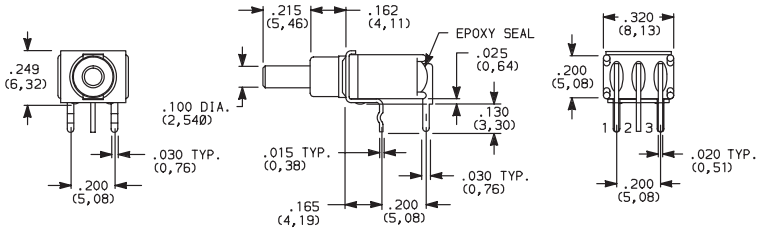
| PART NUMBER | FUNCTION | POS. 1 | POS. 2 |
|---|---|---|---|
| EP11SD1CBE | SPST | OFF | MOM. |
| EP12SD1CBE | SPDT | ON | MOM. |
| EP21SD1CBE | DPST | OFF | MOM. |

MOM. = Momentary

**NOTE**: For PC mounting information, see page B-6.



EP12SD1ABE
**SPDT**




Omit terminal 2 for SPST models.

| PART NUMBER | FUNCTION | POS. 1 | POS. 2 |
|---|---|---|---|
| EP11SD1ABE | SPST | OFF | MOM. |
| EP12SD1ABE | SPDT | ON | MOM. |

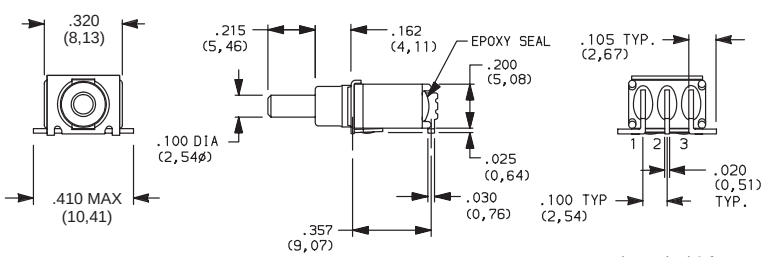
MOM. = Momentary

**NOTE**: For PC mounting information, see page B-6.

SMT



EP12SD1SAKE
**SPDT**




omit terminal 2 for SPST models.

| PART NUMBER | FUNCTION | POS. 1 | POS. 2 |
|---|---|---|---|
| EP11SD1SAKE | SPST | OFF | MOM. |
| EP12SD1SAKE | SPDT | ON | MOM. |

MOM. = Momentary

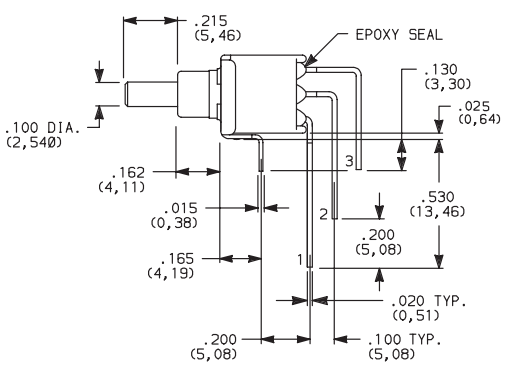
**NOTE**: For PC mounting information, see page B-8.

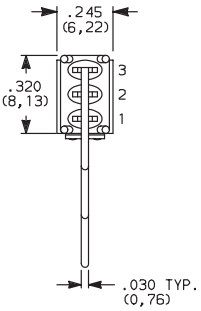
## SWITCHES WITH STANDARD OPTIONS

| PART NUMBER | FUNCTION | POS. 1 | POS. 2 |
|---|---|---|---|
| EP11SD1AVBE | SPST | OFF | MOM. |
| EP12SD1AVBE | SPDT | ON | MOM. |

MOM. = Momentary

**NOTE**: For PC mounting information, see page B-7.




omit terminal 2 for SPST models.



EP12SD1AVBE
**SPDT**



## SWITCH FUNCTION

| NO. POLES | MODEL NO. | SWITCH FUNCTION POS. 1 | SWITCH FUNCTION POS. 2 | CONNECTED TERMINALS POS. 1 | CONNECTED TERMINALS POS. 2 | SCHEMATIC |
|---|---|---|---|---|---|---|
| SP | EP11 (STD.) | OFF | MOM. | OPEN | 1-3 | SPST 1 3 |
| | EP12 (STD.) | ON | MOM. | 2-1 | 2-3 | SPDT 2 (COMM) NC 1 3 NO |
| DP | EP21 | OFF | MOM. | OPEN | 1-3,4-6 | DPST 1 3 4 6 |

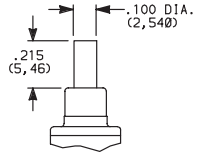
MOM. = Momentary

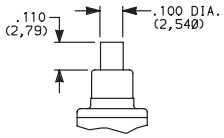
All models with all options when ordered with G, L, M or Q contact material. EP12 model not CSA.

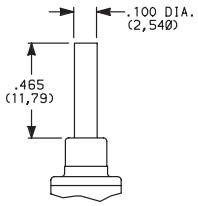
EP21 model not available with FP plunger option.

## ACTUATOR

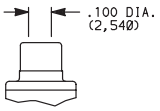
**S** (STD.) .215" HIGH **S1** .110" HIGH **S2** .465" HIGH **FP** FLUSH PLUNGER **R** SNAP-FITTING

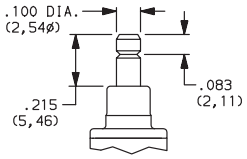



S1 & S2 actuators are not available with EP12 & EP21 models.

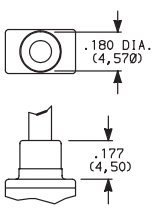



FP & R actuators are not available with EP21 model.

## BUSHING

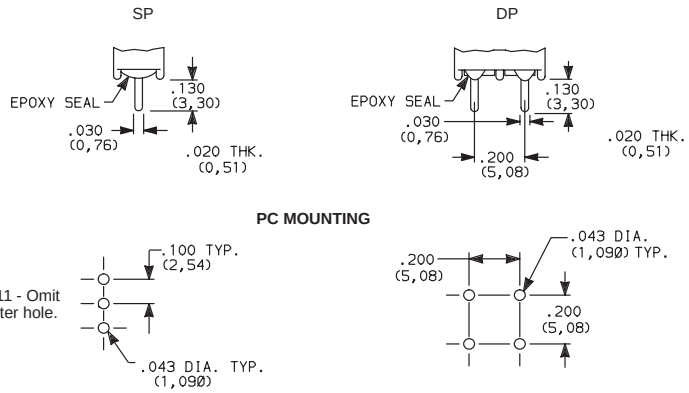
**D1** (STD.) UNTHREADED




**NOTE**: Internal actuator o-ring standard.

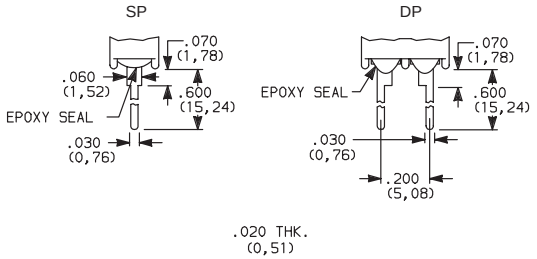
## TERMINATIONS

### C (STD.) PC THRU-HOLE




**SP and DP**

### W WIRE WRAP

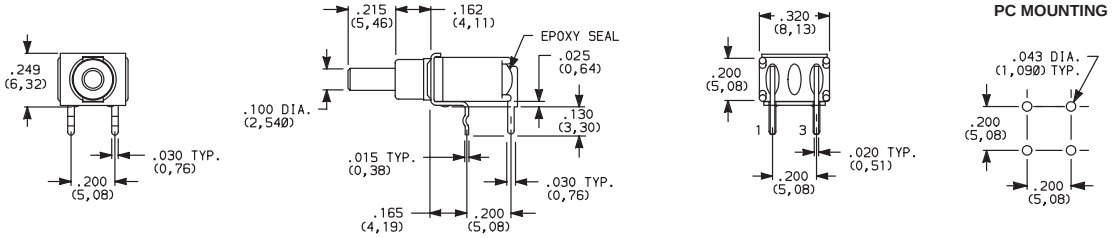



**SP and DP**

### A (STD.) RIGHT ANGLE, PC THRU-HOLE



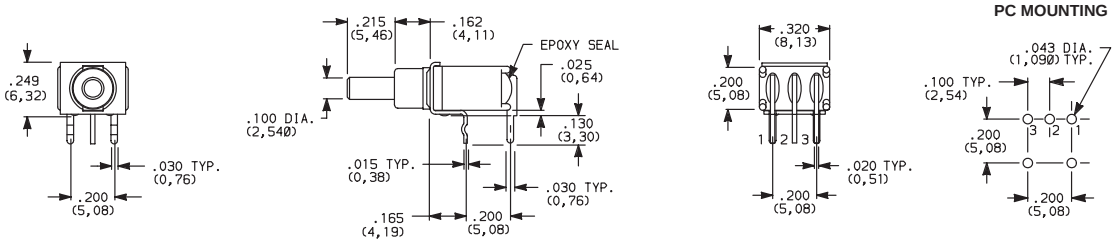
EP11SD1ABE
**SPST**




### A (STD.) RIGHT ANGLE, PC THRU-HOLE



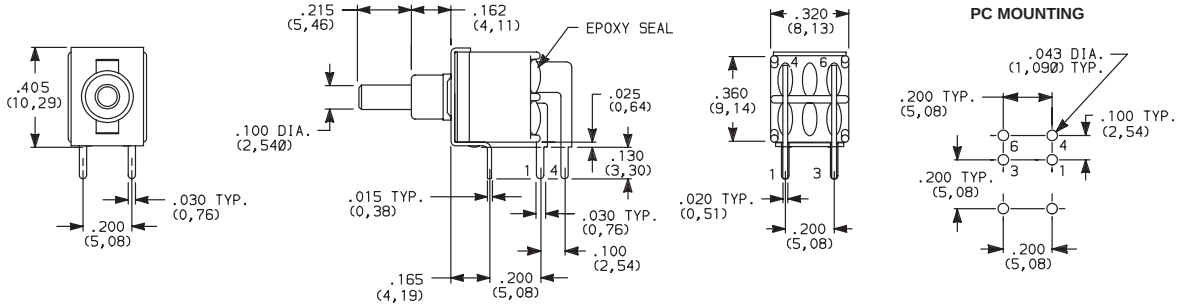
EP12SD1ABE
**SPDT**




### A (STD.) RIGHT ANGLE, PC THRU-HOLE

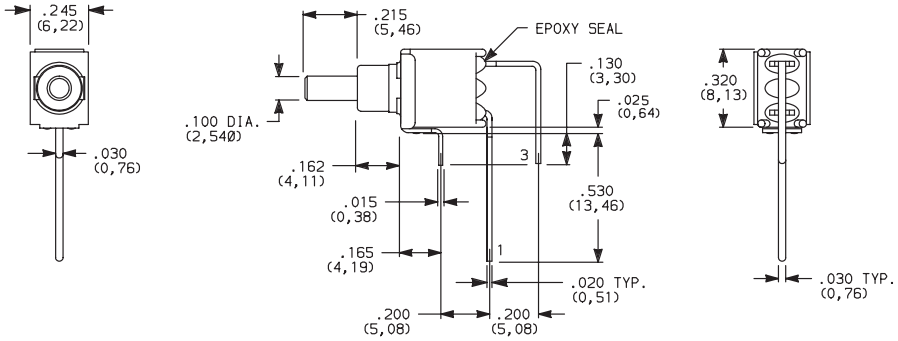


EP21SD1ABE
**DPST**



## TERMINATIONS

### AV (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE

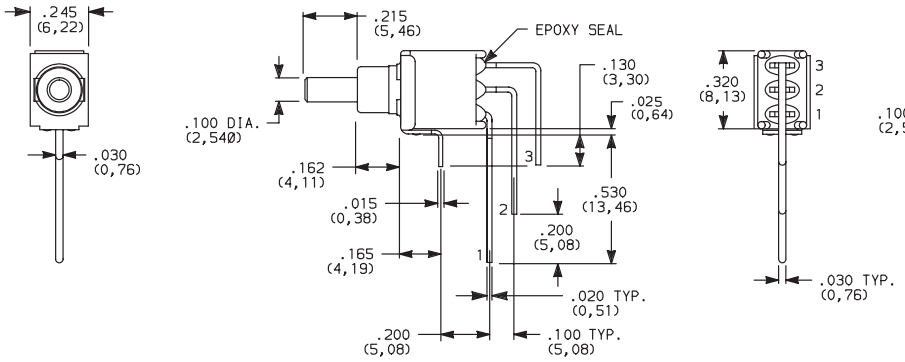





EP11SD1AVBE
**SPST**

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

### AV (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE

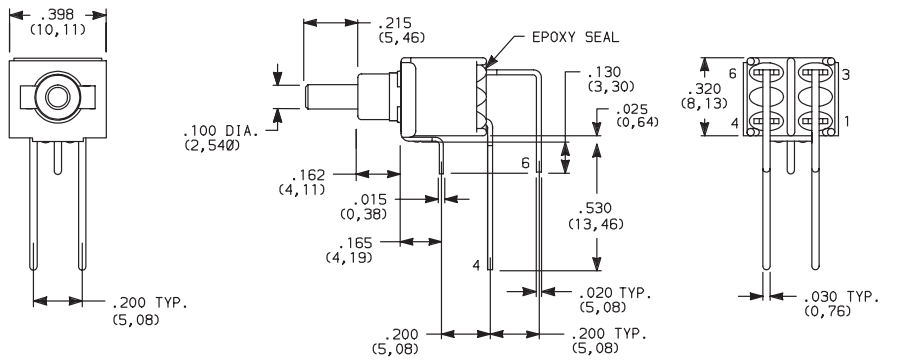





EP12SD1AVBE
**SPDT**

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

### AV (STD.) VERTICAL RIGHT ANGLE, THRU-HOLE






EP21SD1AVBE
**DPST**

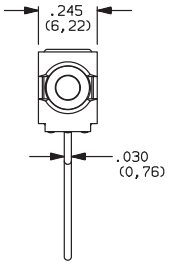
**NOTE**: Terminal bend radii and lead-in manufacturing option.

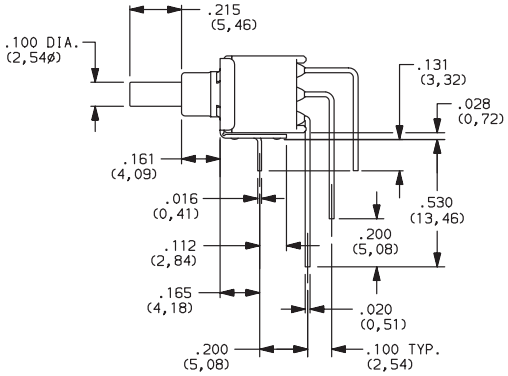
## TERMINATIONS

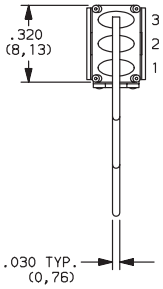
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE



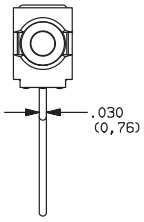
EP11SD1AV2BE
**SPST**

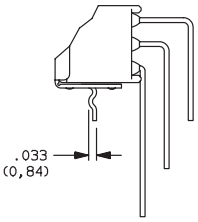


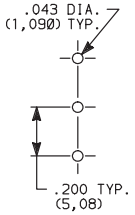




### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE




**PC MOUNTING**

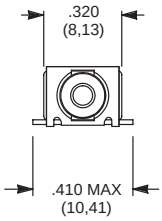


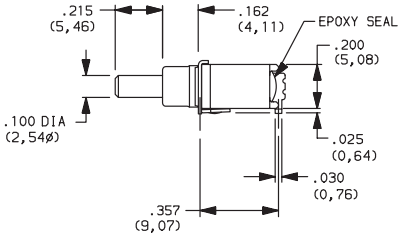

### SA RIGHT ANGLE, SURFACE MOUNT

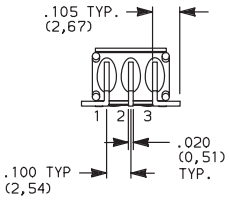
SMT



EP12SD1SAKE
**SPDT**

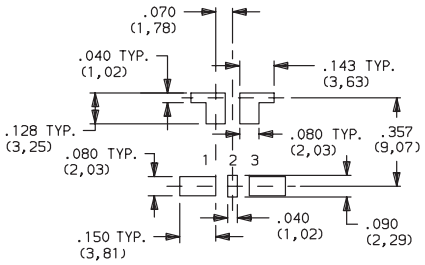



EP11 Models:
omit terminal 2.

**PC MOUNTING**




EP11 Models:
omit pad 2.

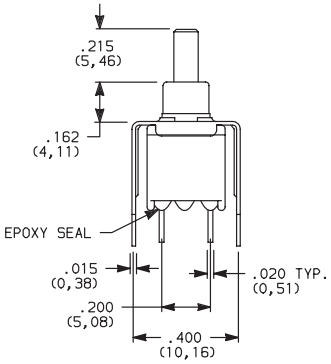
Not available on DPST models.

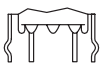
### V3 VERTICAL MOUNT, V-BRACKET

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

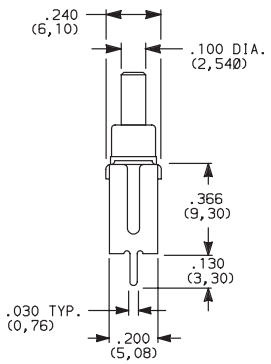


EP11SD1V3BE
**SPST**

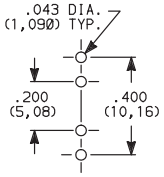


V31 SNAP-IN




**PC MOUNTING**

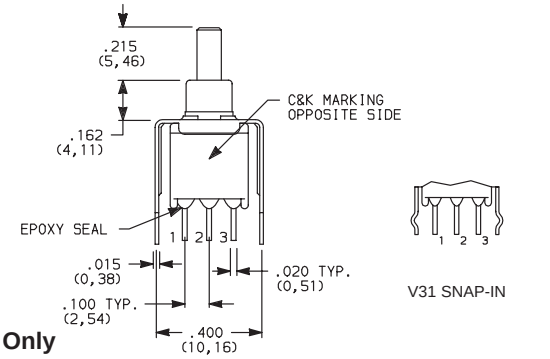



**EP11 Only**

## TERMINATIONS

**V3** VERTICAL MOUNT, V-BRACKET

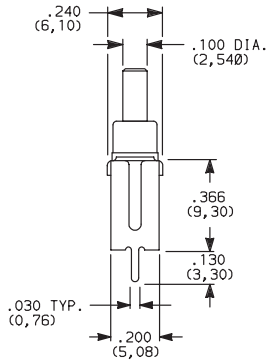
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



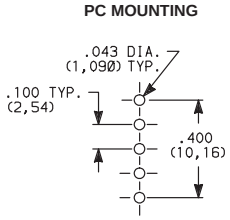

EP12 Only




V31 SNAP-IN



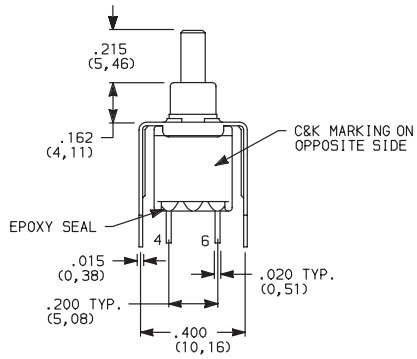

PC MOUNTING

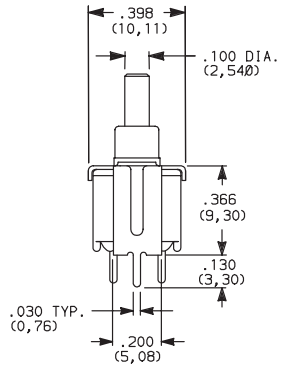




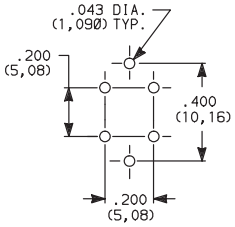

EP12SD1V3BE
**SPDT**

**V3** VERTICAL MOUNT, V-BRACKET




PC MOUNTING






EP21SD1V3BE
**DPST**

## CONTACT MATERIAL

| OPTION CODE | CONTACT MATERIAL | TERMINAL PLATING | RATINGS | |
|---|---|---|---|---|
| B (STD.) | GOLD [1] | GOLD [1] | LOW LEVEL/ DRY CIRCUIT | 0.4 VA MAX. @ 20 V AC OR DC MAX. |
| K | | TIN-LEAD [6] | | |
| Q | SILVER [4,5] | SILVER [5] | POWER | 1 AMP @ 120 V AC OR 28 V DC. |
| M | | TIN-LEAD [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. |
| L | | TIN-LEAD [6] | | |

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS–SEE CHART, PAGE L-31.

[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 CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

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

All models with all options when ordered with G, L, M or Q contact material.

EP21 model not CSA.

## SEAL

**E** **(STD.) EPOXY SEAL**

