

# C&K TP Series Tiny Pushbutton Switches



A

Pushbutton

## Features/Benefits

- **Subminiature size**—capable of switching 1 AMP
- **Vertical & right angle terminations**
- **PC & panel mount models**
- **Snap-in front panel mounting available**

## Typical Applications

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



Models Available

## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-13 for additional ratings.

**ELECTRICAL LIFE:** TP11, TP21 MODELS: 60,000 make-and-break cycles at full load. TP12 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).

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

## Materials

**CASE:** Glass filled nylon 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0).

**PLUNGER:** Thermoplastic polyester (UL 94V-0).

**CAP & FRAME:** Nylon, black standard.

**BUSHING:** Brass, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass, tin plated.

**END CONTACTS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page A-13 for additional contact materials.

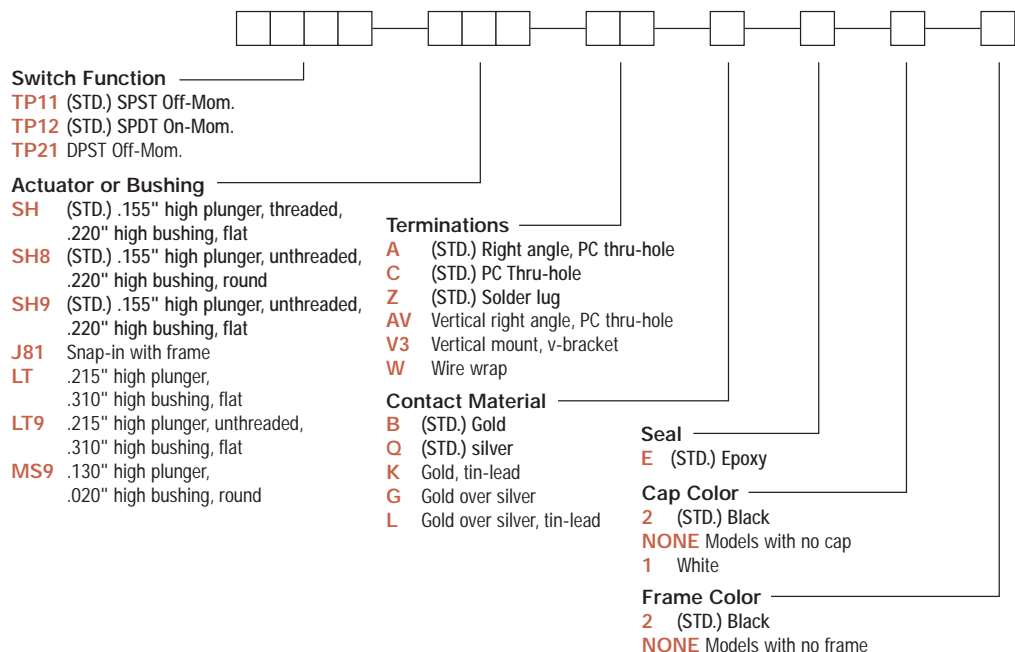
**CENTER CONTACT & ALL TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page A-13 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

**HARDWARE:** Nut & Locking Ring: Brass nickel plated. Lockwasher: Steel, nickel plated.

## 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-13. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



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## SWITCH FUNCTION

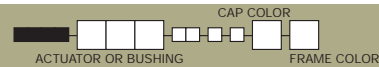


NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>TP11 (STD.)</b>	OFF	MOM.	OPEN	1-3	SPST 
	<b>TP12 (STD.)</b>	ON	MOM.	2-1	2-3	SPDT 
<b>SPDT</b>  Part number shown: TP12SHZQE Terminal Nos. For Reference Only						
DP	<b>TP21</b>	OFF	MOM.	OPEN	1-3,4-6	DPST 
<b>DPST</b>  Part number shown: TP21SHZQE Terminal Nos. For Reference Only						

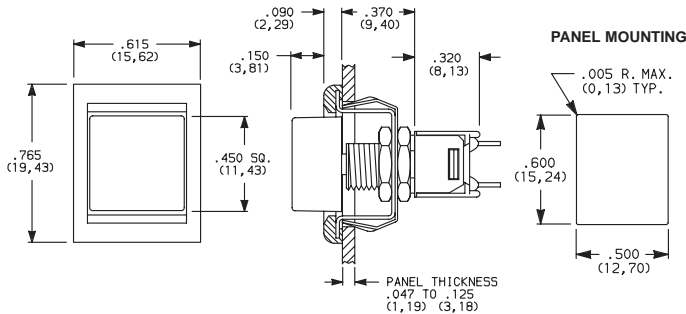
MOM. = Momentary

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

## ACTUATOR—SNAP-IN FRONT MOUNT



### J81 SNAP-IN WITH FRAME



OPTION CODE	CAP COLOR
<b>2</b>	(STD.) BLACK
<b>1</b>	WHITE

OPTION CODE	FRAME COLOR
<b>2</b>	(STD.) BLACK
<b>NONE</b>	No Frame Color (J80 option)

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.

**NOTE:** Available with Z, C, or W terminations.

**NOTE:** Caps & frames available separately, see page A-14.



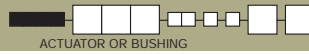
Cannon



Third Angle Projection  
Dimensions are shown: IN (mm)  
Dimensions subject to change

# C&K TP Series Tiny Pushbutton Switches

## BUSHING



A

Pushbutton

**SH** (STD.) .155" HIGH PLUNGER, .220" HIGH BUSHING, THREADED, FLAT

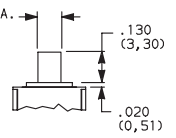
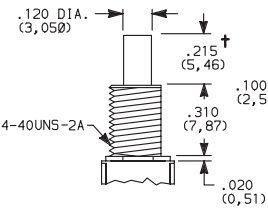
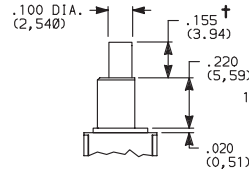
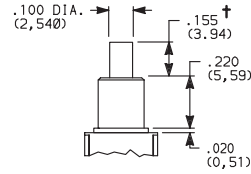
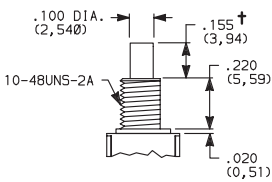
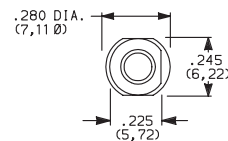
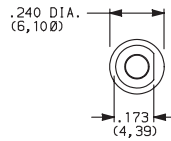
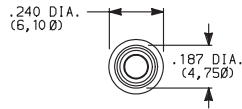
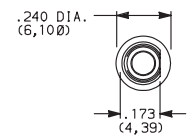
**SH8** (STD.) .155" HIGH PLUNGER, .220" HIGH BUSHING, UNTHREADED

**SH9** (STD.) .155" HIGH PLUNGER, .220" HIGH BUSHING, UNTHREADED, FLAT

**LT** .215" HIGH PLUNGER, .310" HIGH BUSHING, THREADED

**MS9** .130" HIGH PLUNGER

**LT9** .215" HIGH PLUNGER, .310" HIGH BUSHING, UNTHREADED



Standard with Z, C, W terminations.

Standard with A, AV, V3 terminations.

Not available with Z terminations.

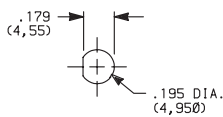
† Subtract .016 (0,41) for models with A, AV or V3 terminations.

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

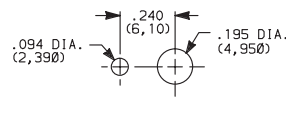
## PANEL MOUNTING

10-48 BUSHING

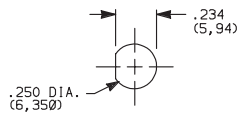
1/4 IN. BUSHING



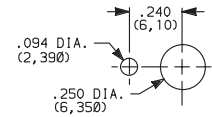
Without locking ring



With standard locking ring



Without locking ring



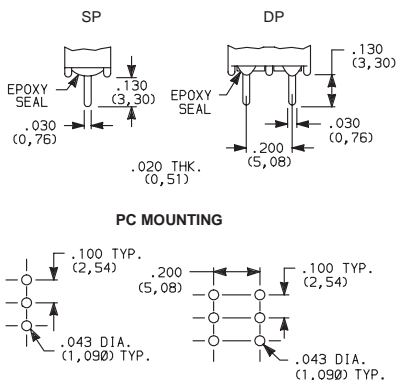
With standard locking ring

NOTE: One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings). Optional mounting nut and locking ring styles and finishes available separately, see section N.

## TERMINATIONS

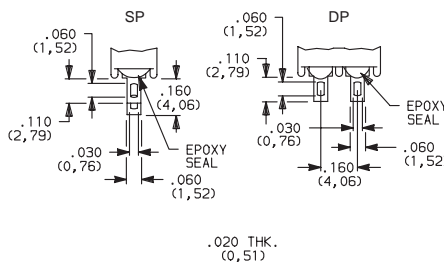


**C** (STD.) PC THRU-HOLE



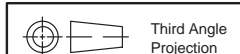
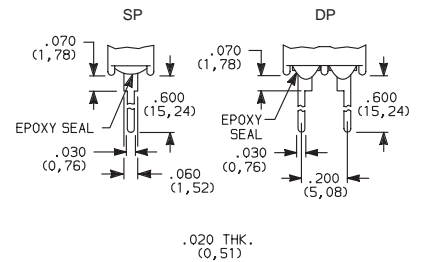
Omit center holes for TP11 models

**Z** (STD.) SOLDER LUG



Not available with MS9 bushing or K, L or M contact material.

**W** WIRE WRAP



Dimensions are shown: IN (mm)  
Dimensions subject to change

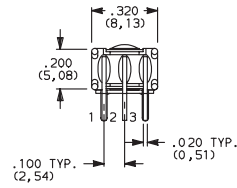
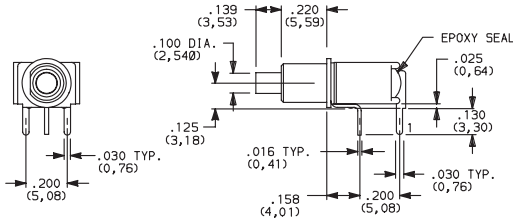
# C&K TP Series Tiny Pushbutton Switches

## TERMINATIONS

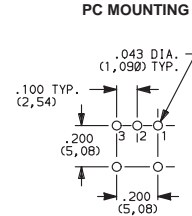
### A (STD.) RIGHT ANGLE, PC THRU-HOLE



TP12SH9ABE  
SPDT

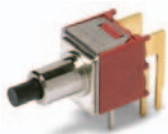


TP11 Models:  
omit terminal 2.

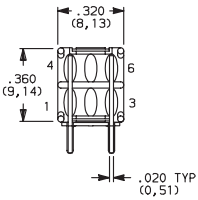
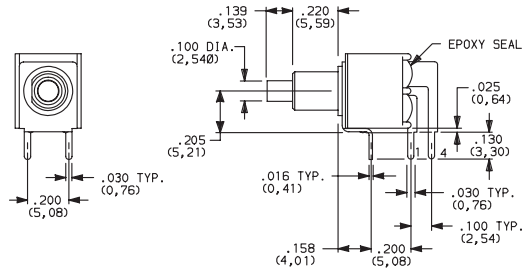


TP11 Models:  
omit hole 2.

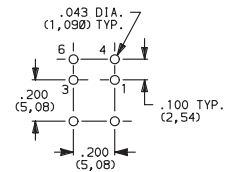
### A (STD.) RIGHT ANGLE, PC THRU-HOLE



TP21SH9ABE  
DPST



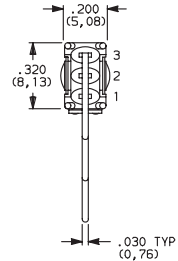
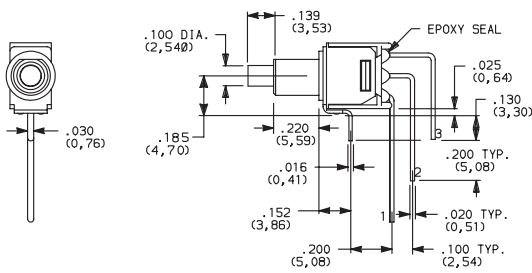
### PC MOUNTING



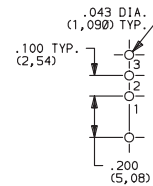
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



TP12SH9AVBE  
SPDT



### PC MOUNTING



TP11 Models:  
omit hole 2.

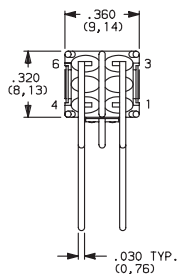
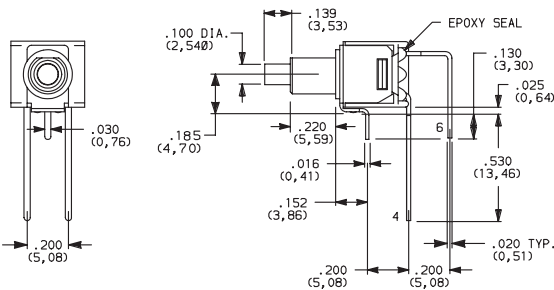
TP11 Models:  
omit terminal 2.

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

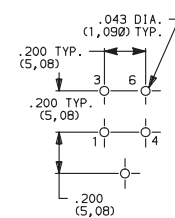
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



TP21SH9AVBE  
DPST



### PC MOUNTING



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



Dimensions are shown: IN (mm)  
Dimensions subject to change

# C&K TP Series Tiny Pushbutton Switches

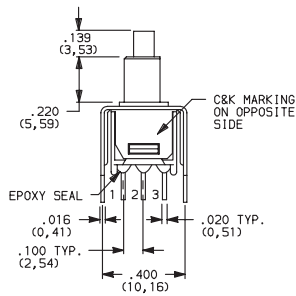


A

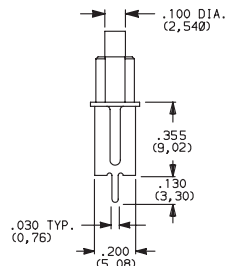
Pushbutton

## TERMINATIONS

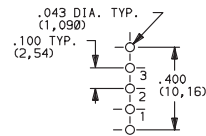
### V3 VERTICAL MOUNT, V-BRACKET



TP11 Models:  
omit terminal 2.



#### PC MOUNTING

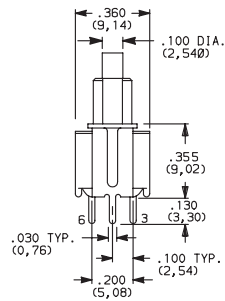
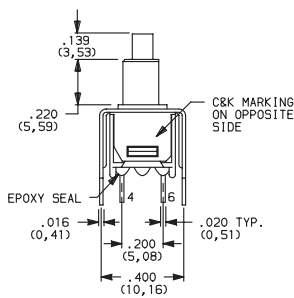


TP11 Models:  
omit hole 2.

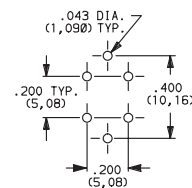


TP12SH9V3BE  
SPDT

### V3 VERTICAL MOUNT, V-BRACKET



#### PC MOUNTING



TP21SH9V3BE  
DPST

## CONTACT MATERIAL

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

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS-SEE SECTION N.

<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 tin-lead alloy over nickel plate.

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

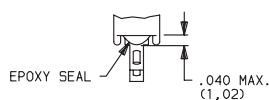
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations

K, L contact materials not available with Z terminations.

## SEAL

### E (STD.) EPOXY SEAL



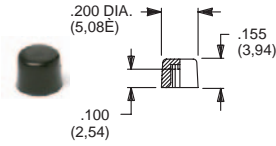
Third Angle  
Projection  
Dimensions are shown: IN (mm)  
Dimensions subject to change

# C&K TP Series Tiny Pushbutton Switches

Pushbutton  
A

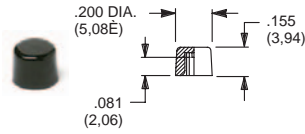
## AVAILABLE HARDWARE

Cap, .100" DIA. Plungers



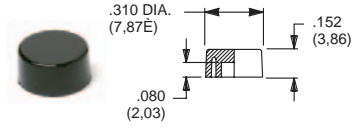
**PART NO.**  
**508101000** WHITE  
**508102000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .100" DIA. Plungers  
(Recommended for S9 plunger)



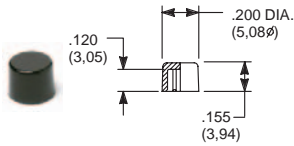
**PART NO.**  
**538701000** WHITE  
**538702000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .100" DIA. Plungers



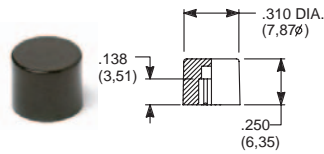
**PART NO.**  
**465801000** WHITE  
**465802000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .120" DIA. Plungers



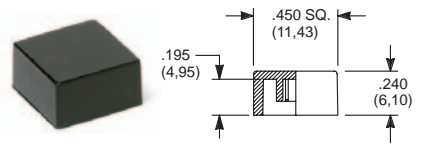
**PART NO.**  
**708901000** WHITE  
**708902000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .120" DIA. Plungers



**PART NO.**  
**801801000** WHITE  
**801802000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, J81 option only



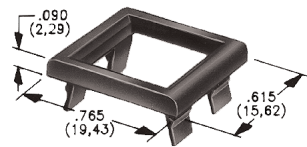
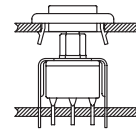
**PART NO.**  
**484601000** WHITE  
**484602000** BLACK  
 Material: Nylon  
 Finish: Gloss

**PART NO.**  
**798201000** WHITE  
**798202263** BLACK  
 Material: Nylon  
 Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section N.  
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

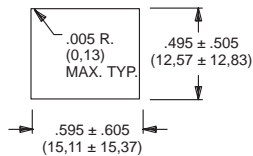
### TYPICAL APPLICATION



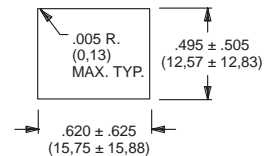
.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
<b>PART NO.</b> <b>432502263</b>	<b>PART NO.</b> <b>432602263</b>	<b>PART NO.</b> <b>432702263</b>	<b>PART NO.</b> <b>432802263</b> BLACK

### PANEL MOUNTING

For part numbers  
432502263, 432602263

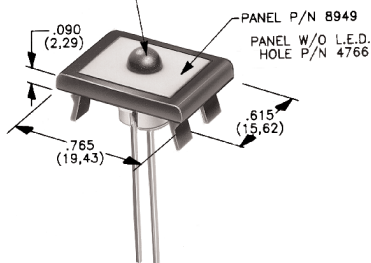


For part numbers  
432702263, 432802263



### Panel Inserts

L.E.D. (.200 DIA. (5,08E)) SNAPS  
SECURELY INTO INSERT (P/N 8949).  
HEIGHT DEPENDS ON L.E.D. USED.



Above frames (part nos. 432XXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT  
WITH HOLE FOR LED

**PART NO.**  
**894902000**

BLANK PANEL INSERT  
WITHOUT HOLE FOR LED

**PART NO.**  
**476602000** BLACK