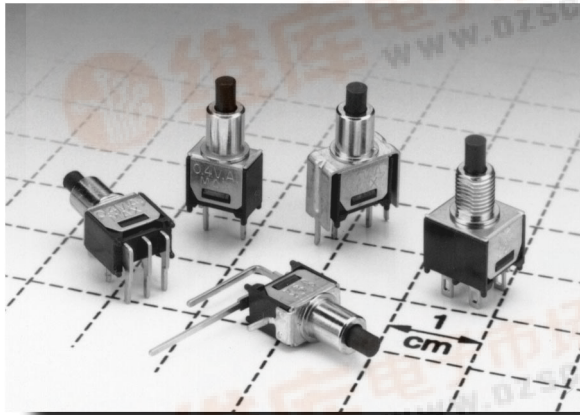


# TP Series 查询TP11MS9CBE1供应商 Tiny Pushbutton Switches

捷多邦, 专业PCB打样工厂, 24小时加急出货



Models Available



## 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**

## 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-11 and B-12. Available options are shown and described on pages B-12 thru B-16. 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.

Typical Example: **T P 1 1** — **S H 8** — **A** — **B** — **E** — **2** — **2**

### Switch Function

- TP11** (STD.) SPST Off-Mom.
- TP12** (STD.) SPDT On-Mom.
- TP21** DPST Off-Mom.

### Actuator or Bushing

- SH** (STD.) .155" high plunger, unthreaded, .220" high bushing, round
- SH8** (STD.) .155" high plunger, unthreaded, .220" high bushing, flat
- SH9** (STD.) .155" high plunger, .220" high bushing
- J80** Snap-in
- J81** Snap-in with frame
- LT** .215" high plunger, .310" high bushing, flat
- LT9** .215" high plunger, unthreaded, .310" high bushing, flat
- MS9** .130" high plunger, .020" high bushing, round

### Terminations

- A** (STD.) Right angle, PC thru-hole
- C** (STD.) PC Thru-hole
- Z** (STD.) Solder lug
- AV** Vertical right angle, PC thru-hole
- V3** Vertical mount, v-bracket
- W** Wire wrap

### Contact Material

- B** (STD.) Gold
- Q** (STD.) silver
- K** Gold
- M** silver
- G** Gold over silver
- L** Gold over silver

### Seal

- E** (STD.) Epoxy

### Cap Color

- 2** (STD.) Black
- NONE** Models with no cap
- 1** White
- 3** Red

### Frame Color

- 2** (STD.) Black
- NONE** Models with no frame



Pushbutton





# TP Series Tiny Pushbutton Switches

## 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 B-16 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 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> 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).

**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 B-16 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 B-16 for additional contact materials.

TERMINAL SEAL: Epoxy.

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



B

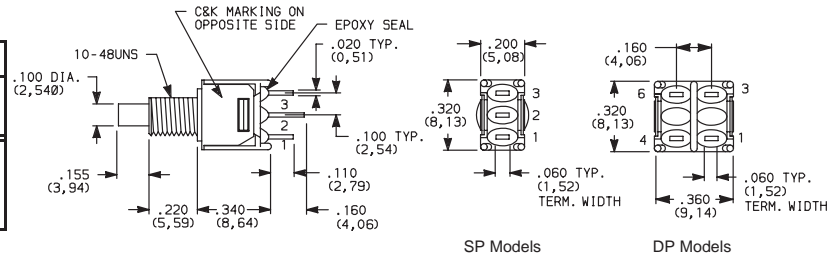
Pushbutton

## SWITCHES WITH STANDARD OPTIONS

PART NUMBER	FUNCTION	POS. 1	POS. 2
<b>TP11SHZQE</b>	SPST	OFF	MOM.
<b>TP12SHZQE</b>	SPDT	ON	MOM.
<b>TP21SHZQE</b>	DPST	OFF	MOM.

MOM. = Momentary

**NOTE:** For PC termination, replace 'Z' with 'C'.  
For panel & PC mounting information, see page B-13.



SP Models

DP Models



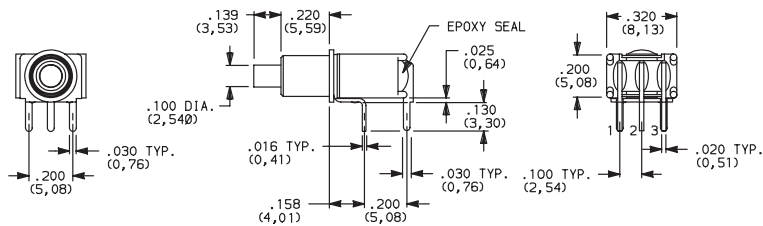
TP12SHZQE  
SPDT

Omit center terminals for SPST & DPST models.

PART NUMBER	FUNCTION	POS. 1	POS. 2
<b>TP11SH8ABE</b>	SPST	OFF	MOM.
<b>TP12SH8ABE</b>	SPDT	ON	MOM.

MOM. = Momentary

**NOTE:** For PC mounting information, see page B-14.



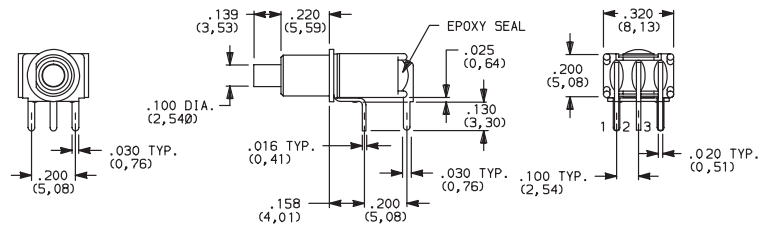
TP12SH8ABE  
SPDT

Omit center terminal for SPST models.

PART NUMBER	FUNCTION	POS. 1	POS. 2
<b>TP11SH9ABE</b>	SPST	OFF	MOM.
<b>TP12SH9ABE</b>	SPDT	ON	MOM.

MOM. = Momentary

**NOTE:** For PC mounting information, see page B-14.



TP12SH9ABE  
SPDT

Omit center terminal for SPST models.

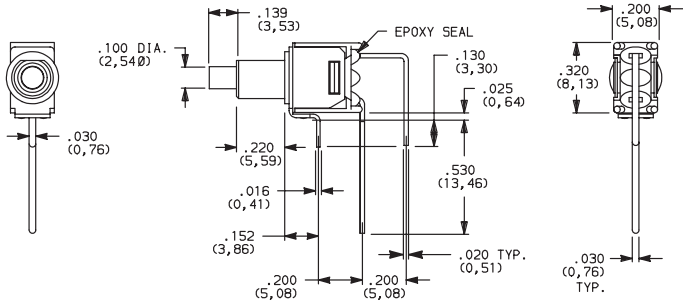
# TP Series Tiny Pushbutton Switches



## SWITCHES WITH STANDARD OPTIONS



TP11SH9AVBE  
SPST



PART NUMBER	FUNCTION	POS. 1	POS. 2
		<b>TP11SH9AVBE</b>	SPST

MOM. = Momentary

NOTE: For PC mounting information, see page B-14.

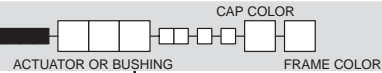
## SWITCH FUNCTION

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
<b>TP12 (STD.)</b>	ON	MOM.	2-1	2-3	SPDT	NC 1 ● 2 (COMMON) ● 3 NO	
DP	<b>TP21</b>	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.

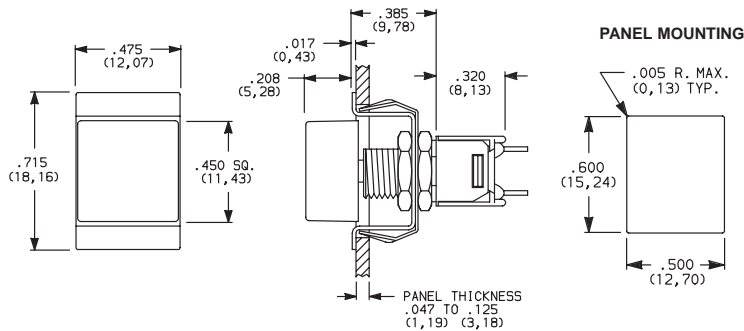
## ACTUATOR—SNAP-IN FRONT MOUNT



### J80 SNAP-IN



TP11J80ZQE  
SPST



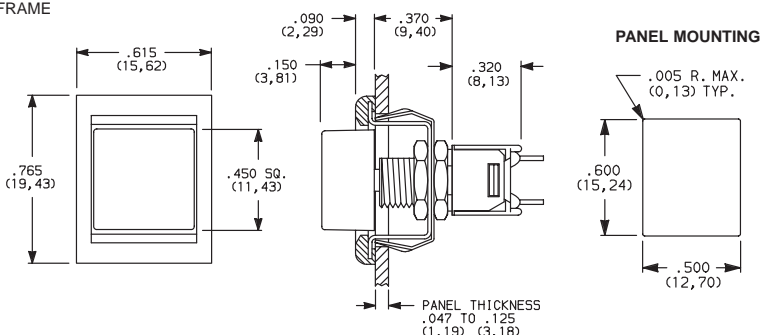
NOTE: No frame color choice required.

OPTION CODE	CAP COLOR
<b>2</b>	(STD.) BLACK
<b>1</b>	WHITE
<b>3</b>	RED

### J81 SNAP-IN WITH FRAME



TP11J81ZQE  
SPST



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.



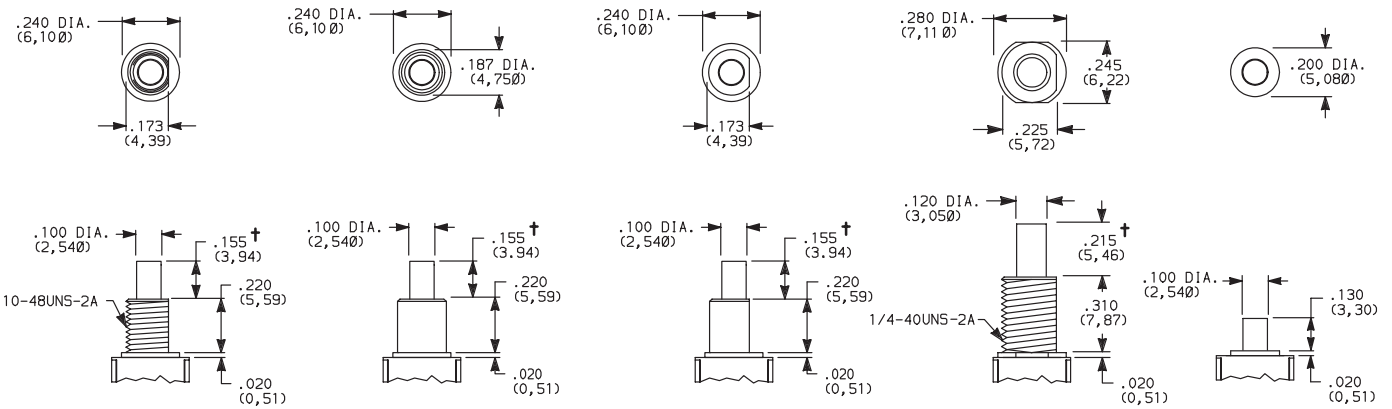
Pushbutton



# TP Series Tiny Pushbutton Switches

## BUSHING

- 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.

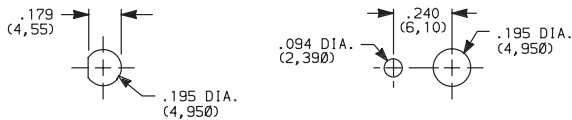


**B**

Pushbutton

## PANEL MOUNTING

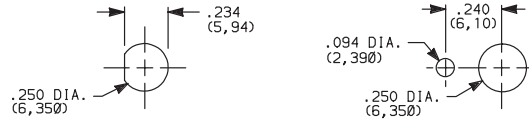
### 10-48 BUSHING



Without locking ring

With standard locking ring

### 1/4 IN. BUSHING



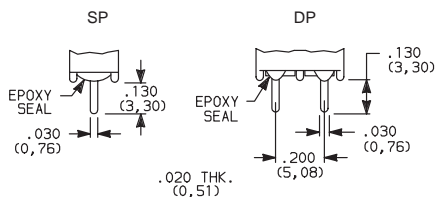
Without locking ring

With standard locking ring

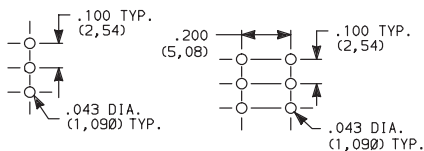
**NOTE:** One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings). Optional mounting nut and locking ring styles and finishes available separately, see section L.

## TERMINATIONS

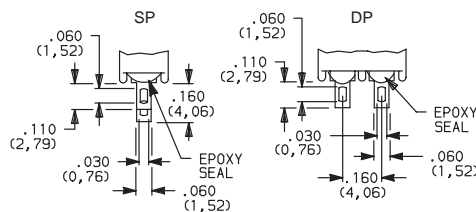
### C (STD.) PC THRU-HOLE



#### PC MOUNTING



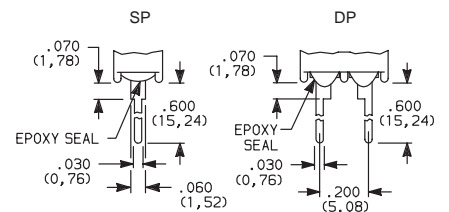
### Z (STD.) SOLDER LUG



.020 THK. (0,51)

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

### W WIRE WRAP



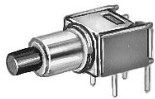
.020 THK. (0,51)

# TP Series Tiny Pushbutton Switches

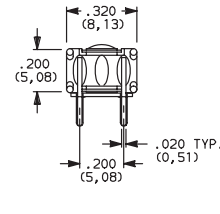
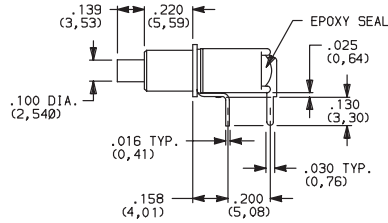
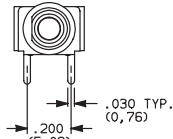


## TERMINATIONS

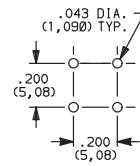
**A** (STD.) RIGHT ANGLE, PC THRU-HOLE



TP11SH9ABE  
SPST



PC MOUNTING

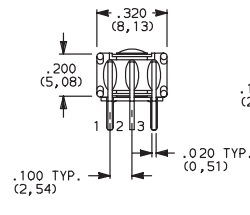
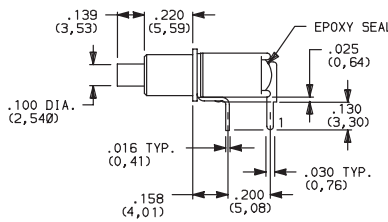
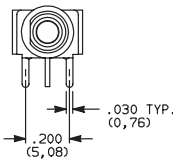


TP11 Only

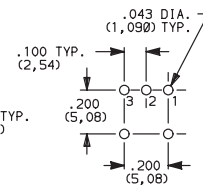
**A** (STD.) RIGHT ANGLE, PC THRU-HOLE



TP12SH9ABE  
SPDT

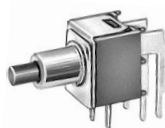


PC MOUNTING

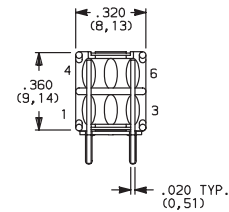
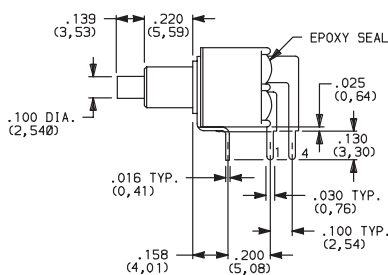
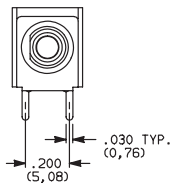


TP12 Only

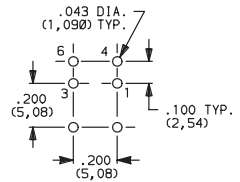
**A** (STD.) RIGHT ANGLE, PC THRU-HOLE



TP21SH9ABE  
DPST



PC MOUNTING

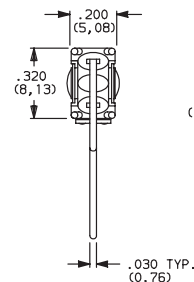
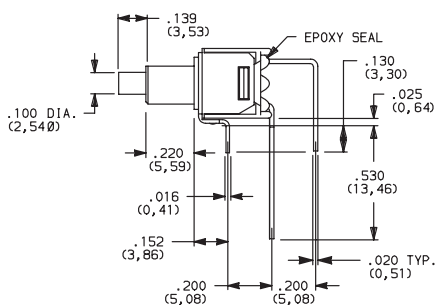
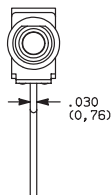


TP21 Only

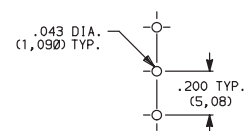
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



TP11SH9AVBE  
SPST



PC MOUNTING



TP11 Only

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



**B**

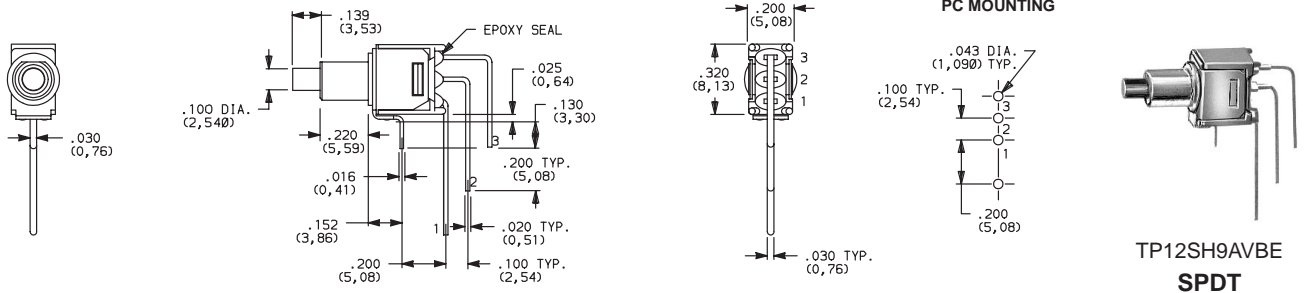
Pushbutton



# TP Series Tiny Pushbutton Switches

## TERMINATIONS

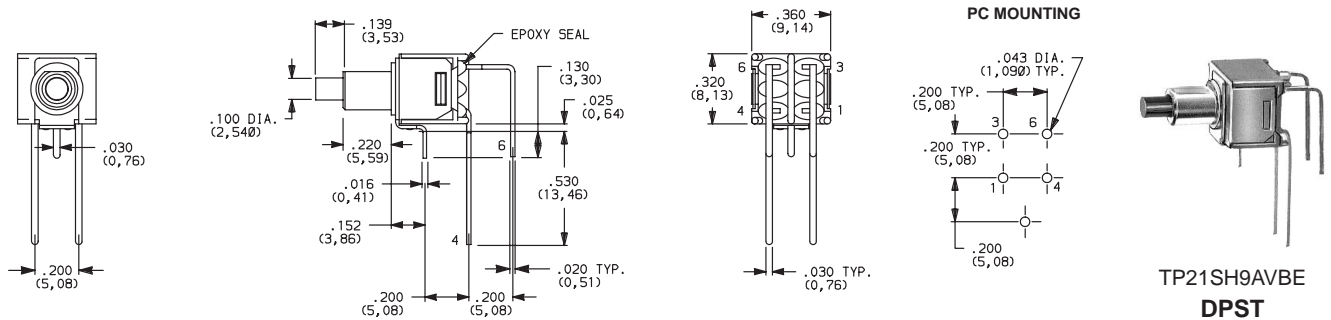
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**TP12 Only**

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

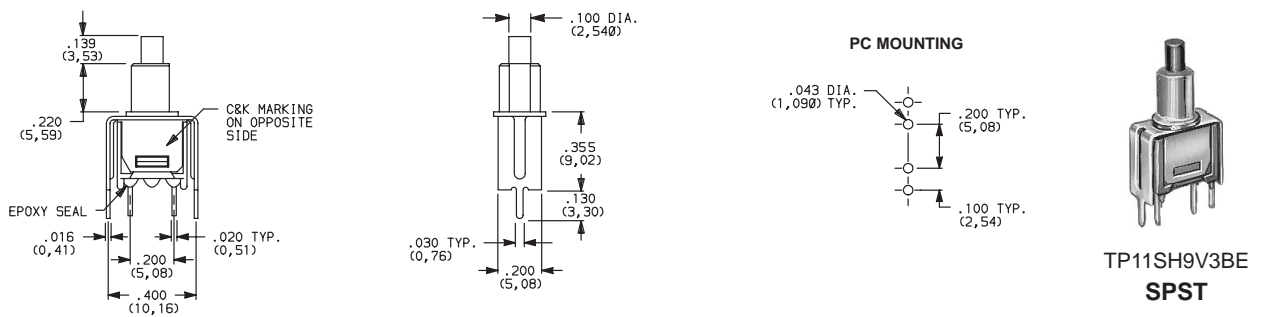
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**TP21 Only**

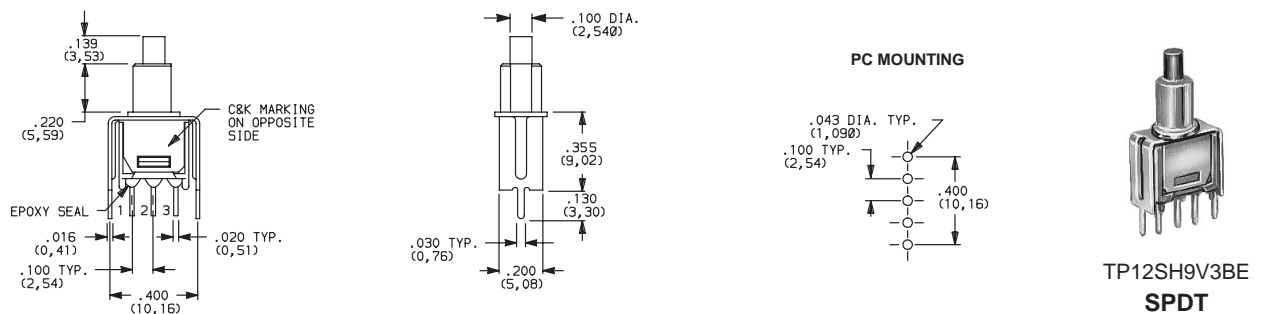
**NOTE:** Terminal bend radii and lead-in manufacturing option.

**V3** VERTICAL MOUNT, V-BRACKET



**TP11 Only**

**V3** VERTICAL MOUNT, V-BRACKET



**TP12 Only**



Pushbutton

# TP Series Tiny Pushbutton Switches

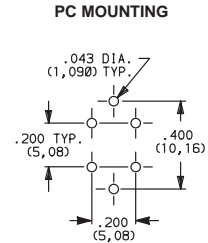
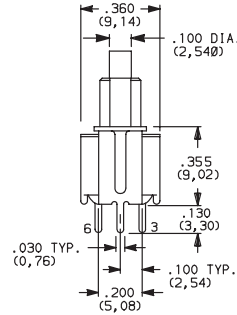
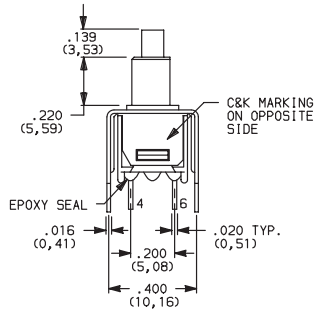


## TERMINATIONS

**V3** VERTICAL MOUNT, V-BRACKET



TP21SH9V3BE  
DPST



Pushbutton

TP21 Only

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b> (STD.)	GOLD 1	GOLD 1	LOW LEVEL / DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>K</b>		TIN-LEAD 6		
<b>Q</b> (STD.)	SILVER 4,5	SILVER 5	POWER	1 AMP @ 120 V AC OR 28 V DC.
<b>M</b>		TIN-LEAD 6		
<b>G</b>	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.
<b>L</b>		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.  
 B contact material standard with A, AV, V3 & W terminations.  
 Q contact material standard with C & Z terminations.  
**K, L & M contact materials not available with Z terminations.**

## SEAL

**E** (STD.) EPOXY SEAL

