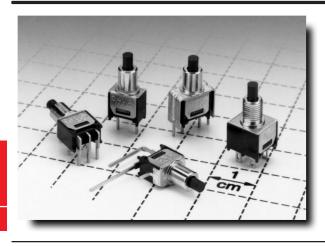


Models Available



Features/Benefits

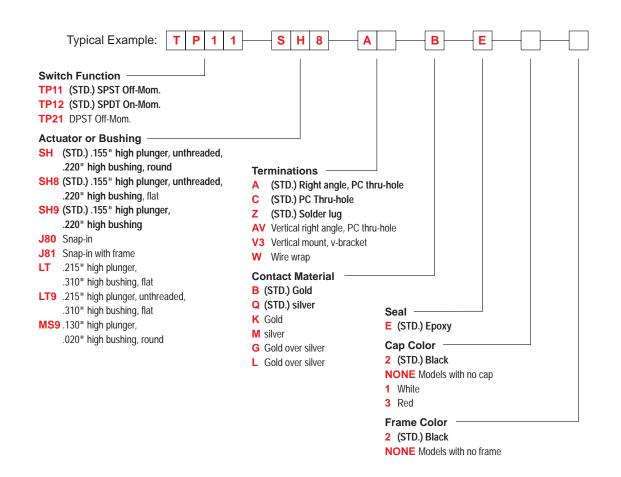
- Subminiature size—capable of switching 1 AMP
- Vertical & right angle terminations
- PC & panel mount models
- Snap-in front panel mounting available

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.





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: 109 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.

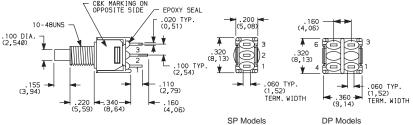
Lockwasher: Steel, nickel plated.

SWITCHES WITH STANDARD OPTIONS

		POS. 1	POS. 2
PART NUMBER	FUNCTION	1	1
TP11SHZQE	SPST	OFF	мом.
TP12SHZQE TP21SHZQE	SPDT	ON	MOM.
TP215HZQE	DPST	OFF	MOM.

MOM. = Momentary

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



Omit center terminals for SPST & DPST models.

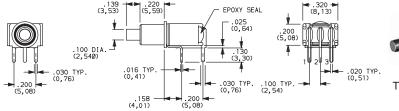


TP12SHZQE **SPDT**

		POS. 1	POS. 2
PART NUMBER	FUNCTION	1	4
TP11SH8ABE TP12SH8ABE	SPST SPDT	OFF ON	MOM.

MOM. = Momentary

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



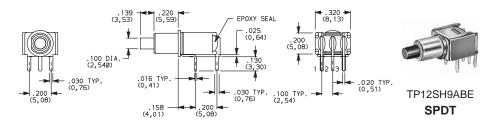
Omit center terminal for SPST models

/P.	TP12SH8ABE	
	CDDT	

POS. 1 POS. 2 PART NUMBER FUNCTION TP11SH9ABE SPST OFF MOM TP12SH9ABE SPDT ON MOM

MOM. = Momentary

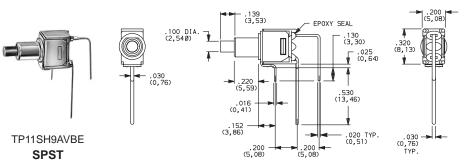
NOTE: For PC mounting information, see page B-14.



Omit center terminal for



SWITCHES WITH STANDARD OPTIONS



		POS. 1	POS. 2
PART NUMBER	FUNCTION	1	4
TP11SH9AVBE	SPST	OFF	MOM.

MOM. = Momentary

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

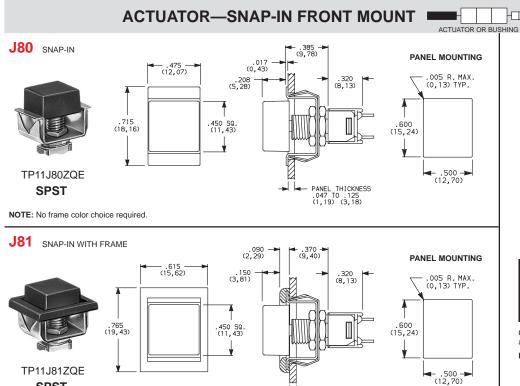
CAP COLOR

SWITCH FUNCTION

		SWITCH FUNCTION		CONNECTED TERMINALS			
		POS. 1	POS. 2	POS. 1	POS. 2		
NO. POLES	MODEL NO.	1	4	1	•	SCHEMATIC	
SP	TP11 (STD.)	OFF	МОМ.	OPEN	1-3	SPST 1 9 3	
	TP12 (STD.)	ON	МОМ.	2-1	2-3	SPDT NC 1 • 3 NO	
DP	TP21	OFF	МОМ.	OPEN	1-3,4-6	DPST 1 3 4 6	

MOM. = Momentary

All models $_{\scriptscriptstyle{\circledcirc}}$ ${\color{red}\boldsymbol{\mathsf{N}}}$ with all options when ordered with G, L, M or Q contact material.



OPTION CODE	CAP COLOR	
2	(STD.) BLACK	
1	WHITE	
3	RED	

FRAME COLOR

OPTION CODE	FRAME COLOR	
2	(STD.) BLACK	
NONE	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.

PANEL THICKNESS .047 TO .125 (1,19) (3,18)

SPST



TP Series Tiny Pushbutton Switches



SH (STD.) .155" HIGH PLUNGER, SH8 .220" HIGH BUSHING, THREADED, FLAT

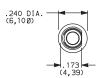
(STD.) .155" HIGH PLUNGER, SH9 .220" HIGH BUSHING, UNTHREADED

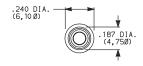
(STD.) .155" HIGH PLUNGER, LT .220" HIGH BUSHING, UNTHREADED, FLAT

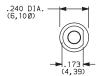
.215" HIGH PLUNGER, .310" HIGH BUSHING, THREADED

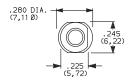
.130" HIGH PLUNGER

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

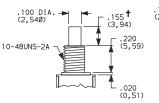


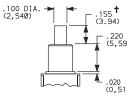


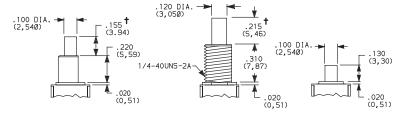












1/4 IN. BUSHING

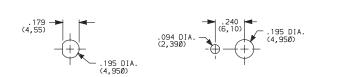
Standard with Z, C, W terminations.

Standard with A, AV, V3 terminations.

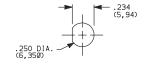
Not available with Z terminations.

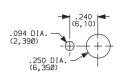
† Subtract .016 (0,41) for models with A, AV or V3 terminations.

PANEL MOUNTING



10-48 BUSHING





Without locking ring

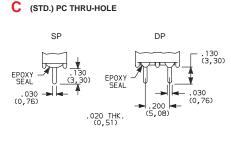
With standard locking ring

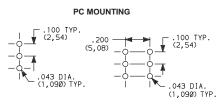
Without locking ring

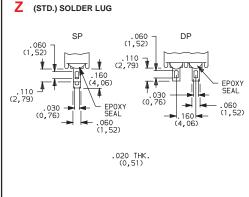
With standard locking ring

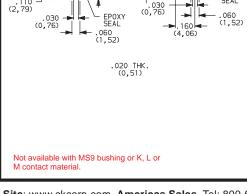
NOTE: One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings). Optional mounting nut and locking ring styles and finishes available separately, see section L.

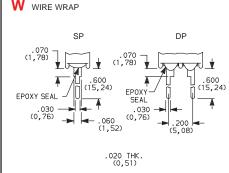
TERMINATIONS -D-D-**--**--











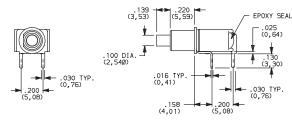
Pushbutton

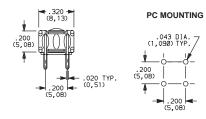
TERMINATIONS -

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



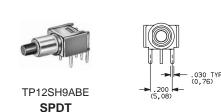
TP11SH9ABE **SPST**

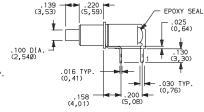


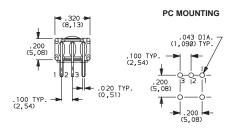


TP11 Only

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





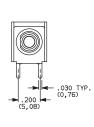


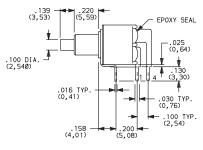
TP12 Only

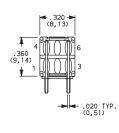
(STD.) RIGHT ANGLE, PC THRU-HOLE

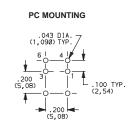


TP21SH9ABE **DPST**





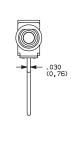


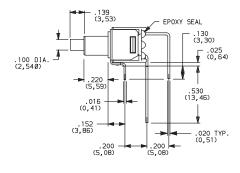


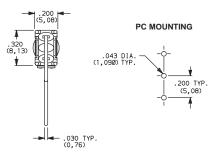
TP21 Only

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE









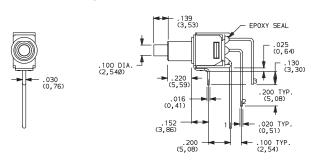
TP11 Only

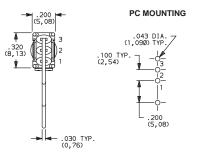
NOTE: Terminal bend radii and lead-in manufacturing option.



TERMINATIONS ----

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE





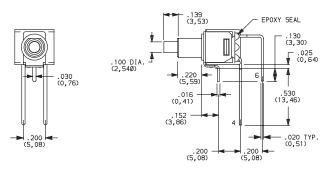


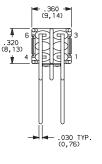
SPDT

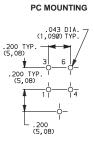
TP12 Only

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

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE







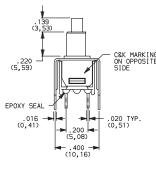


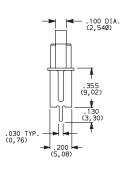
DPST

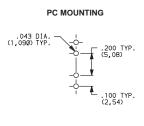
TP21 Only

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

V3 VERTICAL MOUNT, V-BRACKET





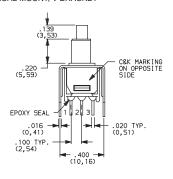


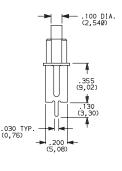


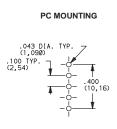
TP11SH9V3BE **SPST**

TP11 Only

V3 VERTICAL MOUNT, V-BRACKET









TP12SH9V3BE **SPDT**

TP12 Only

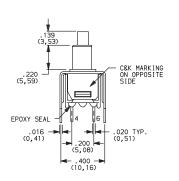


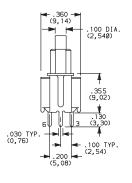
TERMINATIONS ----

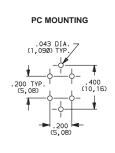
V3 VERTICAL MOUNT, V-BRACKET



DPST







TP21 Only

CONTACT MATERIAL ---

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS		
B (STD.)	2012.1	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.	
K	GOLD ¹	TIN-LEAD ⁶			
Q (STD.)	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	GOLD OVER SILVER -5	TIN-LEAD ⁶			

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

All models $_{\odot}$ with all options when ordered with G, L, M or Q contact material.

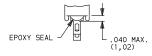
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations.

K, L & M contact materials not available with Z terminations.



E (STD.) EPOXY SEAL



 $^{^{\}rm 1}$ 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.

 $^{^{\}rm 5}$ CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

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