Features/Benefits

- Subminiature size—capable of switching 1 AMP
- Vertical & right angle terminations
- PC & panel mount models
- Snap-in front panel mounting available
- Epoxy terminal seal-compatible with bottom wash cleaning
- RoHS compliant 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. Q contact material: 1AMP @ 120 V AC or 28 V DC. See page A-19 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: 109Ω min. 15min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: –30ºC to 85ºC.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with Q, B, P, 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.

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-16 thru A-20. 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.

Switch Function

TP11 SPST Off-Mom.
TP12 SPDT On-Mom.
TP21 DPST Off-Mom.

Actuator or Bushing

SH .155” high plunger, threaded, .220” high bushing, flat
SH8 .155” high plunger, unthreaded, .220” high bushing, round
SH9 .155” high plunger, unthreaded, .220” high bushing, flat
J81 Snap-in with frame
LT .215” high plunger, threaded, .310” high bushing, flat
LT9 .215” high plunger, unthreaded, .310” high bushing, flat
MS9 .130” high plunger, .200” high bushing, round

Terminations

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

Contact Material

B Gold
P Gold, matte-tin
Q Silver
G Gold over silver
R Gold over silver, matte-tin

Seal

E Epoxy

Cap Color

2 Black
NONE Models with no cap
1 White

Frame Color

2 Black
NONE Models with no frame
## TP Series
### Tiny Pushbutton Switches

### SWITCH FUNCTION

<table>
<thead>
<tr>
<th>NO. POLES</th>
<th>MODEL NO.</th>
<th>SWITCH FUNCTION</th>
<th>CONNECTED TERMINALS</th>
<th>TERMINAL NOS.</th>
<th>SCHMATIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>TP11</td>
<td>OFF MOM.</td>
<td>OPEN 1-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP</td>
<td>TP12</td>
<td>ON MOM.</td>
<td>2-1 2-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SPDT

- C&K marking on opposite side
- EPOXY SEAL: TYP. (0.5, 1)

Part number shown: TP21SHZQE

### DP

- DP21
- OFF MOM.
- OPEN 1-3-4-6

### DPST

- C&K marking on opposite side
- EPOXY SEAL: TYP. (0.5, 1)

Part number shown: TP21SHZQE

### ACTUATOR—SNAP-IN FRONT MOUNT

#### J81 SNAP-IN WITH FRAME

<table>
<thead>
<tr>
<th>OPTION CODE</th>
<th>CAP COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>BLACK</td>
</tr>
<tr>
<td>1</td>
<td>WHITE</td>
</tr>
</tbody>
</table>


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

### Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change
TP Series
Tiny Pushbutton Switches

BUSHING

SH .150” HIGH PLUNGER, .220” HIGH BUSHING, THREADED, FLAT
SH8 .150” HIGH PLUNGER, .220” HIGH BUSHING, UNTHREADED
SH9 .150” HIGH PLUNGER, .220” HIGH BUSHING, UNTHREADED, FLAT
LT .215/17” HIGH PLUNGER, .310” HIGH BUSHING, THREADED
LT9 .215/17” HIGH PLUNGER, .310” HIGH BUSHING, UNTHREADED

TERMINATIONS

C PC THRU-HOLE

Z SOLDER LUG

W WIRE WRAP

NOTE: Caps available for plunger options, see page A-20.

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change
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TP Series
Tiny Pushbutton Switches

TERMINATIONS

A  RIGHT ANGLE, PC THRU-HOLE

TP12SH9ABE
SPDT

TP21SH9ABE
DPST

A  RIGHT ANGLE, PC THRU-HOLE

TP11 Models: omit terminal 2.
TP11 Models: omit hole 2.

AV  VERTICAL RIGHT ANGLE, PC THRU-HOLE

TP12SH9AVBE
SPDT

AV  VERTICAL RIGHT ANGLE, PC THRU-HOLE

TP21SH9AVBE
DPST

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

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

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

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TP Series
Tiny Pushbutton Switches

TERMINATIONS

V3 VERTICAL MOUNT, V-BRACKET

TP11 Models: omit terminal 2.

PC MOUNTING

TP12SH9V3BE SPDT

TP21SH9V3BE DPST

CONTACT MATERIAL

<table>
<thead>
<tr>
<th>OPTION CODE</th>
<th>CONTACT MATERIAL</th>
<th>TERMINAL PLATING</th>
<th>RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>GOLD 1</td>
<td>LOW LEVEL/DRY CIRCUIT</td>
<td>0.4 VA MAX @ 20 V AC OR DC MAX.</td>
</tr>
<tr>
<td>P</td>
<td>SILVER 4,5</td>
<td>POWER</td>
<td>1 AMP @ 120 V AC OR 28 V DC.</td>
</tr>
<tr>
<td>Q</td>
<td>SILVER 5</td>
<td>POWER</td>
<td>1 AMP @ 120 V AC OR 28 V DC.</td>
</tr>
<tr>
<td>G</td>
<td>GOLD OVER SILVER 2,3</td>
<td>LOW LEVEL/DRY CIRCUIT OR POWER</td>
<td>0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.</td>
</tr>
<tr>
<td>R</td>
<td>GOLD 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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 matte-tin over nickel plate.

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

All models with all options when ordered with R, G, or Q contact material.
B contact material standard with A, AV, V3 & W terminations.
Q contact material standard with C & Z terminations.
P, R contact materials not available with Z terminations.

SEAL

E EPOXY SEAL

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

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**TP Series**

**Tiny Pushbutton Switches**

### AVAILABLE HARDWARE

**Cap, .100" DIA. Plungers**

- **PART NO.**
  - 506101000 WHITE
  - 506102000 BLACK
- Material: Nylon
- Finish: Gloss

**Cap, .120" DIA. Plungers**

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

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

- **PART NO.**
  - S38701000 WHITE
  - S38702000 BLACK
- Material: Nylon
- Finish: Gloss

**Cap, .120" DIA. Plungers**

- **PART NO.**
  - 891D01000 WHITE
  - 891D02000 BLACK
- Material: Nylon
- Finish: Gloss

**Cap, J81 option only**

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

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware". 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.

For part numbers 432502263, 432602263

- **PART NO.**
  - 432702263 BLACK

**For part numbers 432702263, 432802263**

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

**Panel inserts**

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.

- **PART NO.**
  - 894902000 WHITE
  - 476602000 BLACK

**TYPICAL APPLICATION**

- **PART NO.**
  - 432702263 BLACK

- **PART NO.**
  - 432802263 BLACK

- **PART NO.**
  - 798201000 WHITE
  - 798202263 BLACK

**Dimensions are shown: Inches (mm)**

Specifications and dimensions subject to change.

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