Minature Toggle Switches

Specifications

- Mechanical Life: 40,000 make-and-break cycles
- Contact Resistance: 10mΩ max. initial @ 2-4V DC
  100mA for both silver and gold plated contacts
- Insulation Resistance: 1,000MΩ min.
- Dielectric Strength: 1,000V rms min. @ sea level
- Operating Temperature: -30°C to +85°C

Materials

- Case: Diallyl phthalate (DAP)
- Actuator: Brass, chrome plated
- Bushing: Brass, nickel plated
- Housing: Stainless steel
- Switch Support: Brass, tin plated
- Contact / Terminals: Brass, Silver or gold plated

Switch Function

<table>
<thead>
<tr>
<th>No. Poles</th>
<th>Model No.</th>
<th>Switch Function</th>
<th>Connected Terminals / Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pos.1 Pos.2 Pos.3</td>
</tr>
<tr>
<td>SP</td>
<td>1MS1</td>
<td>ON NONE ON</td>
<td>2-3 N/A 2-1</td>
</tr>
<tr>
<td></td>
<td>1MS2</td>
<td>ON NONE MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MS3</td>
<td>OFF ON MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MS4</td>
<td>MOM OFF MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MS5</td>
<td>ON OFF MOM</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>1MD1</td>
<td>ON NONE ON</td>
<td>2-3, 5-6 N/A 2-1, 5-4</td>
</tr>
<tr>
<td></td>
<td>1MD2</td>
<td>ON NONE MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MD3</td>
<td>OFF ON ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MD4</td>
<td>MOM OFF MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MD5</td>
<td>ON OFF MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MD6</td>
<td>ON ON ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1MD7</td>
<td>MOM ON MOM</td>
<td>2-3, 5-6 2-3, 5-4 2-1, 5-4</td>
</tr>
<tr>
<td></td>
<td>1MD8</td>
<td>ON ON MOM</td>
<td></td>
</tr>
<tr>
<td>3P</td>
<td>1M31</td>
<td>ON NONE ON</td>
<td>2-3, 5-6, 8-9 N/A 2-1, 5-4, 8-7</td>
</tr>
<tr>
<td></td>
<td>1M32</td>
<td>ON NONE MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1M33</td>
<td>OFF ON ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1M34</td>
<td>MOM OFF MOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1M35</td>
<td>ON OFF MOM</td>
<td></td>
</tr>
</tbody>
</table>
## Minature Toggle Switches

<table>
<thead>
<tr>
<th>No. Poles</th>
<th>Model No.</th>
<th>Switch Function</th>
<th>Connected Terminals / Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pos.1</td>
</tr>
<tr>
<td>4P</td>
<td>1M41</td>
<td>ON</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td></td>
<td>1M42</td>
<td>ON</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td></td>
<td>1M43</td>
<td>ON</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td></td>
<td>1M44</td>
<td>MOM</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td>4P</td>
<td>1M45</td>
<td>OFF</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td>4P</td>
<td>1M46</td>
<td>ON</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td>4P</td>
<td>1M47</td>
<td>MOM</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
<tr>
<td>4P</td>
<td>1M48</td>
<td>ON</td>
<td>2-3, 5-6, 8-9, 11-12</td>
</tr>
</tbody>
</table>

MOM = Momentary

### Pole Options:

**SPDT**

![SPDT Diagram](image)

Part No. Shown: 1MS1T1B1M1QE

**DPDT**

![DPDT Diagram](image)

Part No. Shown: 1MD1T1B1M1QE
Minature Toggle Switches

3PDT Part No. Shown: 1M31T1B1M1QE

4PDT Part No. Shown: 1M41T1B1M1QE

3-Way Switch:

**SINGLE POLE, 3 POSITION**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>POS 1</th>
<th>POS 2</th>
<th>POS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MD6</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

**DOUBLE POLE, 3 POSITION**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>POS 1</th>
<th>POS 2</th>
<th>POS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1M46</td>
<td>ON</td>
<td>ON</td>
<td></td>
</tr>
</tbody>
</table>

Newark.com/multicomp-pro
Farnell.com/multicomp-pro
Element14.com/multicomp-pro
Minature Toggle Switches

Actuator Options:

T1 STD  |  T2  |  T3  |  T4  |  T5

Note: T1 ~ T5 Actuator shown with standard B1 Bushing:
- Add .070 (1.78) for B3 Bushing;
- Subtract .02 (0.51) for B6 Bushing;
- Std for M1, M2 Terminal sub .016 (0.4) for M6, M7, VSX

T6  Flatted with Antirotation
T61  
T62  
T63

Note T6, T6-1, T6-2, T63 use with B11, B12, B15, B16 bushing only.

T7  
T8  
T9

Use with B13 bushing
Use with B18, B20 the lever is antirotation
and the size of lever is 13.00mm

Use with B13 bushing
Use with B18, B20 the lever is antirotation
and the size of lever is 18.00mm

B1 / B2 bushing std
with black and red color only (std.)
Minature Toggle Switches

**TA**

Plastic Black

Use with B18 bushing only

**T11**

Note: T11 Actuator shown with standard B1 Bushing:
- Add 0.07 (1.78mm) for B3 Bushing;
- Subtract 0.02 (0.51mm) for B6 Bushing.
- Std for M1.2M Terminal sub 0.016 (0.40mm) for M6.M7.VSX

**Bushing Options:**

- **B1** THD STD
- **B2** NON-THD
- **B3** THD
- **B4** NON-THD
- **B5** HIGH TORQUE

B4 is standard for M6, M7 and VS2-5 termination options.
Minature Toggle Switches

**B6 HIGH TORQUE**
- Dimensions: 0.400 x 1.02 x 0.71

**B7 THD STD**
- Dimensions: 0.225 x 5.72

**B8 METRIC THD**
- Dimensions: 0.225 x 5.72

**B9 SPLASH PROOF**
- Dimensions: 0.315 x 8.00 x 0.40 x 1.02

**B10 THD STD**
- Dimensions: 0.350 x 8.89

**B11 THD STD**
- Dimensions: 0.314 x 7.98

**B12 NON-THD**
- Dimensions: 0.314 x 7.98

**CP-1TEB**
- O-Ring supplied with B9 bushing
- Dimensions: 0.400 x 1.02 x 1.35

**B15 THD STD**
- Dimensions: 0.225 x 5.72

**B16 NON-THD**
- Dimensions: 0.225 x 5.72

**B17**
- Dimensions: 0.250 x 6.35

**B18**
- Dimensions: 0.31 x 0.79

**B13**
- Dimensions: 0.448 x 11.39 x 0.51

- Use with T7, T8 actuators only
- B13 Bear strength from top of actuator up to 10kg aside up to 15kg

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Farnell.com/multicomp-pro
Element14.com/multicomp-pro
Minature Toggle Switches

Panel Mounting:

1/4" Bushing

Without locking ring (Keyway)

With standard locking ring.

Metric Bushing

Without locking ring (Keyway)

With standard locking ring.

15/32 Bushing

Without locking ring (Keyway)

With standard locking ring.

Splash Proof Bushing

Without locking ring (Flat)
Termination Options:

**M1 Solder lug**

- Option Code: M5-1
- Dim. A: 0.736 (18.7)
- Option Code: M5-2
- Dim. A: 0.953 (24.20)
- Option Code: M5-3
- Dim. A: 0.415 (10.55)
- Option Code: M5-4
- Dim. A: 1.062 (26.97)

Other Termination Options:

- M6 Right Angle P.C. Mount
- M7 Right Angle P.C. Mount
- VS2 Vertical Bracket P.C. Mount
- VS3 Vertical Bracket P.C. Mount
- VS5 Vertical Bracket P.C. Mount

P.C. MOUNTING

SECTION A-A
TERM. NO. 5, FOR REFERENCE ONLY

SPDT

Part No. Shown: 1MS1T2B4M6QE
Minature Toggle Switches

M6

![M6 Diagram](image1)

DPDT

Part No. Shown: 1MD1T2B4M6RE

M7

![M7 Diagram](image2)

SPDT

Part No. Shown: 1MS1T2B4M7QE

DPDT

Part No. Shown: 1MD1T2B4M7QE

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31/07/20 V1.0
**Minature Toggle Switches**

**VS2 - VS3**

- **Diagram:**
  - DPDT Switch
  - Dimensions: 450 x 11.43, 280 x 7.11, 254 x 6.46
  - Snap-In Termination Options: M6N

- **Part No. Shown:** 1MD1T2B4VS3QE

**VS5**

- **Diagram:**
  - DPDT Switch
  - Dimensions: 450 x 11.43, 280 x 7.11, 254 x 6.46
  - Snap-In Termination Options: M6N

- **Part No. Shown:** 1MD1T2B4VS5QE

**Snap-In Termination Options:**

- **M6N**
- **V2N**
Hardware:
1/4 Nuts HDW2

Dress Nut HDW3

Metric Nut HDW6

Lock Washer HDW11

Supplied standard with B1, B3, B5, B6 and B9 options

Supplied standard with B8 metric bushing

Supplied standard with B1 / B3 bushing

Optional Rubber Hood Sealing

15/32 Nuts HDW4

Lock Washer HDW12

K1=Metric
E1=Inch (Std.)
for actuator T1, T2 and
B1, B3, B5, B6 Bushing only

Supplied standard with B13 bushing

Supplied standard with B13 bushing

HDW15

HDW16

HDW17

Locking ring supplied standard

Locking ring supplied with B5 bushing

Locking ring supplied with B13, B18, B20 bushing
**Miniature Toggle Switches**

**Optional Toggle Cap:**

**CAP Colour :**

<table>
<thead>
<tr>
<th>Item No</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Black (Std)</td>
</tr>
<tr>
<td>3</td>
<td>Red</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Blue</td>
</tr>
<tr>
<td>9</td>
<td>Gray</td>
</tr>
</tbody>
</table>

**Contact Material Options:**

<table>
<thead>
<tr>
<th>Contact Plating</th>
<th>Terminal Plating</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q Silver</td>
<td>Q = Silver</td>
<td>5 Amps with resistant load @ 120VAC or 28VDC</td>
</tr>
<tr>
<td>S Silver</td>
<td>S = Silver,pure - tin</td>
<td></td>
</tr>
<tr>
<td>C Gold over Silver</td>
<td>C = Gold over silver</td>
<td></td>
</tr>
<tr>
<td>K Gold over Silver</td>
<td>K = Gold over silver,pure - tin</td>
<td></td>
</tr>
<tr>
<td>R Gold</td>
<td>R = Gold</td>
<td>0.4 Volt - Amps ( VA ) max. @ 20V max. ( AC or DC )</td>
</tr>
<tr>
<td>G Gold</td>
<td>G = Gold,pure - tin</td>
<td></td>
</tr>
</tbody>
</table>

**Soldering Processes:**

Manual Soldering: Use soldering iron of 30 watts, controlled at 350°C approximately 5 seconds while applying solder.

Wave Soldering: Recommended Soldering Temperature: 260 ± 5°C Duration of Solder Immersion: Max 5 sec.

(PCB is 1.6mm in thickness)
## Part Number Explanation

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>ACTUATOR</th>
<th>BUSHING</th>
<th>TERMINATIONS</th>
<th>CONTACT MATERIAL</th>
<th>SEAL</th>
<th>RoHS SOLDERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MS1</td>
<td>SP On-None-On</td>
<td>T1</td>
<td>10.41 high</td>
<td>M1</td>
<td>Solder lug</td>
<td>E</td>
</tr>
<tr>
<td>1MS2</td>
<td>SP On-None-Mom</td>
<td>T2</td>
<td>5.08 high</td>
<td>M2</td>
<td>PC thru-hole</td>
<td>R</td>
</tr>
<tr>
<td>1MS3</td>
<td>SP Off-On-On</td>
<td>T3</td>
<td>13.97 high</td>
<td>M3</td>
<td>Quick connect</td>
<td>G</td>
</tr>
<tr>
<td>1MS4</td>
<td>SP Mom-Off-Mom</td>
<td>T4</td>
<td>16.26 high</td>
<td>M51</td>
<td>18.70 high, wire wrap</td>
<td>S</td>
</tr>
<tr>
<td>1MS5</td>
<td>SP Off-On-Mom</td>
<td>T5</td>
<td>21.34 high</td>
<td>M52</td>
<td>24.20 high, wire wrap</td>
<td>C</td>
</tr>
<tr>
<td>1MD1</td>
<td>DP On-None-On</td>
<td>T6</td>
<td>Flatted,anti-rotation</td>
<td>M53</td>
<td>10.56 high, wire wrap</td>
<td>K</td>
</tr>
<tr>
<td>1MD2</td>
<td>DP On-None-Mom</td>
<td>T61</td>
<td>Flatted,anti-rotation</td>
<td>M54</td>
<td>26.97 high, wire wrap</td>
<td></td>
</tr>
<tr>
<td>1MD3</td>
<td>DP Off-On-On</td>
<td>T62</td>
<td>Lever handle with cap</td>
<td>M6</td>
<td>Right angle, PC thru-hole</td>
<td></td>
</tr>
<tr>
<td>1MD4</td>
<td>DP Off-Mom-Mom</td>
<td>T63</td>
<td>Flatted,anti-rotation</td>
<td>M6N</td>
<td>Right angle, Snap-in, PC thru-hole</td>
<td></td>
</tr>
<tr>
<td>1MD5</td>
<td>DP Off-On-On</td>
<td>T64</td>
<td>21.0 high</td>
<td>M7</td>
<td>Vertical right angle, PC thru-hole</td>
<td></td>
</tr>
<tr>
<td>1MD6</td>
<td>DP Mom-None-Mom</td>
<td>T65</td>
<td>13.49 high</td>
<td>VS2</td>
<td>11.68 high, V-bracket</td>
<td></td>
</tr>
<tr>
<td>1MD7</td>
<td>DP Mom-On-Mom</td>
<td>T66</td>
<td>6.35 high</td>
<td>V2N</td>
<td>11.68 high, Snap-in, V-bracket</td>
<td></td>
</tr>
<tr>
<td>1MD8</td>
<td>DP On-None-Mom</td>
<td>T67</td>
<td>12.37 high, 15/32 bushing</td>
<td>V3</td>
<td>16.00 high, V-bracket</td>
<td></td>
</tr>
<tr>
<td>1MS1</td>
<td>3P On-None-On</td>
<td>T7</td>
<td>17.56 high, 15/32 bushing</td>
<td>V4</td>
<td>11.68 high, V-bracket</td>
<td></td>
</tr>
<tr>
<td>1MS2</td>
<td>3P Off-Mom-Mom</td>
<td>T8</td>
<td>Plastic, 21.3 high</td>
<td>V5</td>
<td>16.00 high, V-bracket</td>
<td></td>
</tr>
<tr>
<td>1MS3</td>
<td>3P Off-On-Mom</td>
<td>TA</td>
<td>26.30 high lever handle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1MS4</td>
<td>4P On-None-On</td>
<td>T11</td>
<td>Plastic, 12.2 high</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1MS5</td>
<td>4P Off-Mom-Mom</td>
<td>TL1</td>
<td>Locking lever 16.00 high</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1MS6</td>
<td>4P Off-On-Mom</td>
<td>TL2</td>
<td>Locking lever 16.26 high</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1MS7</td>
<td>4P Off-Mom-Mom</td>
<td>TL3</td>
<td>Locking lever 17.28 high</td>
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</tbody>
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