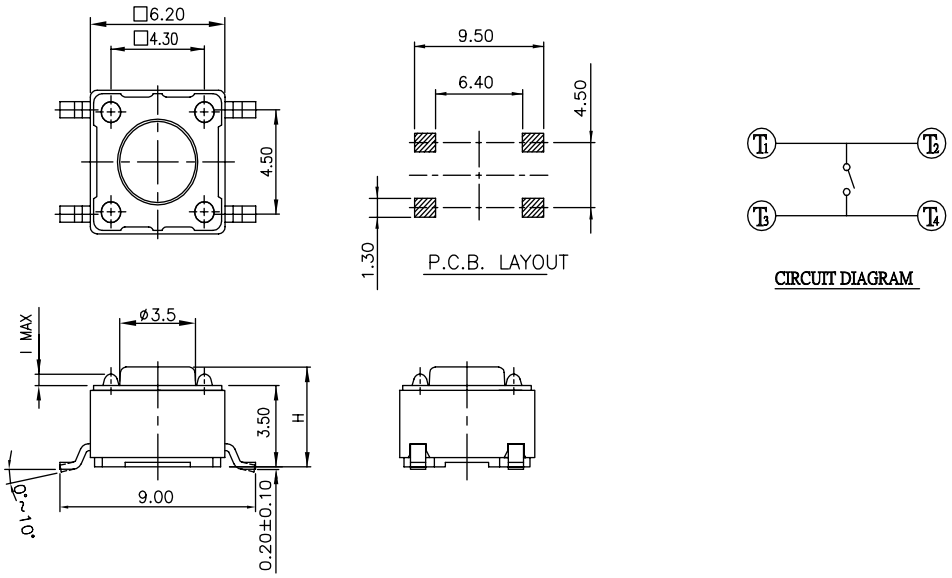
Tactile Switch

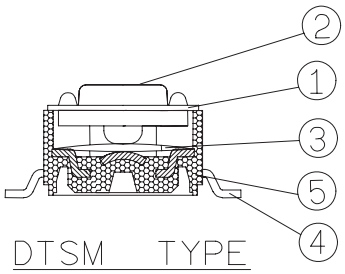
RoHS Compliant

Diagram



Dimensions : Millimetres (Inches)

Item	Description	Q'ty	Materials	Treatment
1	Cover	1	Stainless Steel	None
2	Stem		High – Temp Thermoplastic Nylon UL 94V-0	--
3	Contact		Phosphor Bronze	With Silver Plating 0.5um
4	Terminal		Brass	With Silver Plating 0.2 um
5	Base		High – Temp Thermoplastic Nylon UL 94V-0	Molderd Brown



1. **Style**

This specification describes “Tactile Switch”, mainly used as signal switch of electric devices, with the general requirements of mechanical and electrical characteristic.

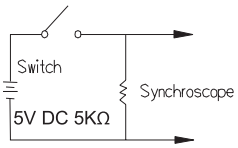
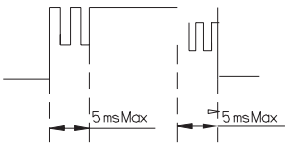
1.1 Operating Temperature Range: -25°C+70°C

1.2 Storage Temperature Range : -30°C+80°C

2. **Current Range**: 50mA, 12V DC

3. **Type of Actuation**: Tactile feedback

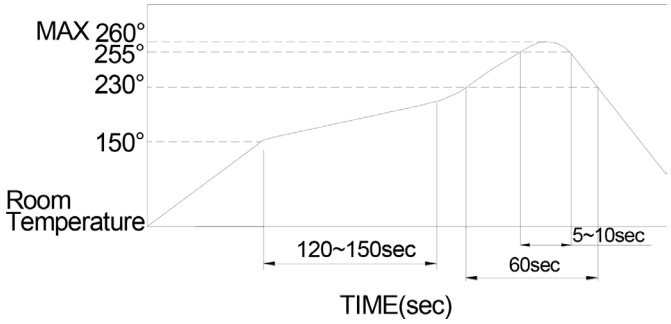
4. **Test Sequence**:

<table>
<tr><th>Item</th><th>Description</th><th>Test Conditions</th><th>Requirements</th></tr>
<tr><td colspan="4">Appearance</td></tr>
<tr><td>1</td><td>Visual Examination</td><td>By visual examination check without any out pressure & testing.</td><td>There shall be no defects that affect the serviceability of the product.</td></tr>
<tr><td colspan="4">Electric Performance</td></tr>
<tr><td>2</td><td>Contact Resistance</td><td>Applying a static load 1.5~2 times the operating force to the center made with a 1 kHz small current contact resistance meter.</td><td>100mΩ Max.</td></tr>
<tr><td>3</td><td>Insulation Resistance</td><td>Measurements shall be made following application of 500V DC potential across terminals and cover for 1 minute ±5 seconds</td><td>100MΩ Min.</td></tr>
<tr><td>4</td><td>Dielectric Withstanding Voltage</td><td>250V AC (50Hz or 60Hz) shall be applied across terminals and cover for 1 minute</td><td>There shall be no breakdown or flashover.</td></tr>
<tr><td>5</td><td>Bounce</td><td>3 to 4 operations at a rate of 1 cycles per second
 
</td><td>5 m seconds Max.
 
</td></tr>
<tr><td colspan="4">Mechanical Perfprmance</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Operating Force</td><td rowspan="2">Applied in the direction of operation.
 
</td><td colspan="6">OF</td></tr>
<tr><td>U</td><td>K</td><td>N</td><td>R</td><td>S</td><td>Y</td></tr>
<tr><td></td><td></td><td></td><td>70±30
[.69N±.29N]</td><td>100±50
[.98N±.49N]</td><td>160±50
[1.568N±.49N]</td><td>260±50
[2.548N±.49N]</td><td>320±80
[3.136N±.784N</td><td>520±130
[5.096N±1.274N]</td></tr>
<tr><td>7</td><td>Stroke</td><td>Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the stem, the stroke distance for the stem to come to a stop shall be measured.</td><td colspan="6">0.25 +0.2/-0.1mm</td></tr>
</table>

8	Stop Strength	Placing the switch such that the direction of switch operation is vertical, a static load of 3 kgf(29.4N) shall be applied in the direction of stem 7 operation for a period of 15 seconds	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3.Insulation Resistance: 10MΩ Min
9	Solder Heat Resistance	(Through Hole Type (Soldering Temperature: 260 ±5°C (Duration of Solder Immersion: 5 ± 1 seconds. (Frequency of Soldering Process 2 times max. (PCB is 1.6mm in thickness) SMT Type ~DTSM Series(4/4)	1. Shall be free from pronounced backlash and falling-off or breakage terminals 2. As shown in item 4, 5 3. Contact Resistance: 200mΩ Max 4. Insulation Resistance:10MΩ Min
10	Vibration	Shall be vibrated in accordance with Method 201A of MIL-STD-202F 1. Frequency: 10-55-10Hz in 1-min/cycle. 2. Direction: 3 vertical directions including the directions of operation 3. Test time: 2 hours each direction. 4. Swing distance=1.5mm	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3. Insulation Racesistance: 10MΩ Min
11	Shock	Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F 1) Acceleration: 50G 2) Action time:11±1m seconds 3) Testing Direction: 6 sides 4) Test Cycle: 3 times in each direction	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3. Insulation Racesistance: 10MΩ Min
12	Solder ability	1)Through Hole Soldering Temperature: 245±3°C 2) Lead-Free solder: M705E JIS Z 3282 A (Tin 96.5%, Silver 3%, Copper 0.5%) 3)Flux: 5~10 sec 4)Duration of solder Immersion: 5±1 sec	No anti-soldering and the coverage of dipping into solder must more than 66% was requested.
Durability			
13	Operating Life	Measurements shall be made following the test forth below: 1)5 mA,5V DC resistive load 2)Applying a static load the operating force to the center of the stem in the direction of operation 3)Cycle of Operation: (Through Hole, S.M.T Dome=Phosphor Bronze) 200,000 cycle's Min. For 100,160gf 100,000 cycle's Min. For 260gf 50,000 cycle's Min. For 320,520gf (S.M.T Dome=Stainless Steel) 1,000,000 cycle's Min~100,160gf 500,000 cycle's Min~260gf 300,000 cycle's Min~320, 520gf	1) As shown in item 4, 5 2) Operating force:±50% of initial force. 3) Contact Resistance: 10Ω Max 4) Insulation Resistance: 10MΩ Min 5) Bounce: 10 m seconds Max

14	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: 1)Temperature: -25±3°C 2)Time: 96 hours	1)As shown in item 4~7 2)Contact Resistance: 200mΩ Max 3)Insulation Resistance: 10MΩ Min
15	Resistance High Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: 1)Temperature:80±2°C 2)Time:96 hours	1)As shown in item 4~7 2)Contact Resistance: 200mΩ Max 3)Insulation Resistance: 10MΩ Min
16	Resistance Humidity	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: 1) Temperature:40±2°C 2) Relative Humidity:90~95% 3) Time:96 hours	1)As shown in item 4~7 2)Contact Resistance: 200mΩ Max 3)Insulation Resistance: 10MΩ Min

Soldering Conditions



- The condition mentioned above is the temperature on the Cu foil of the PCB surface.
  There are cases where board's temperature greatly differs from switch's surface temperature depending on board's material, size, thickness, etc. Care, therefore, should be used not to allow switch's surface temperature to exceed 260°C.
- Manual Soldering

Soldering Temperature Max.350°C
Continuous Soldering Time Max. 5 seconds

Part Number Table

Description	Part Number
Tactile Switch, 6mm × 6mm, SMT	MPDTSM-61N-V-T/R
Tactile Switch, 6mm × 6mm, SMT	MPDTSM-61R-V-T/R