

# Body Height 1.5mm, Compact-sized Double Action Type Tactile Switches

## TSW-3 Series

### Features

- ◇ With 6.0x6.4mm dimension and 1.5mm height, surface-mounting type switches are ideal for high-density mounting.
- ◇ A double action type with 2 contacts in 1 circuit turning on the first push and the second step by pushing further.
- ◇ 2 types of switches with or without click feeling are available.
- ◇ 2nd operating force with 2.5N and 3.5N are available.
- ◇ Available with ground terminal for electrostatic discharge.
- ◇ A sharp click feeling of key touch is provided utilizing the tactile feedback characteristic.
- ◇ J-bent terminal and straight terminal are standardized. Permits reflow soldering.
- ◇ Switches are packaged in 16mm wide embossed taping.

### Applications

- ◇ Digital still camera and digital video camera
- ◇ Portable audio devices, Car navigation system
- ◇ Cellular phone, Personal digital assistance

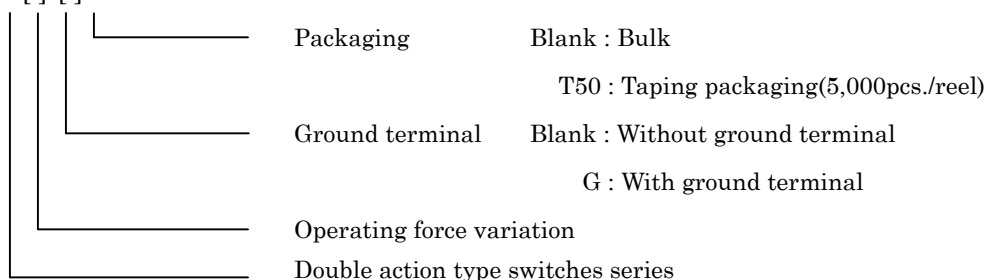


Actual size

Zoom

### Product number

TSW-3[ ]-[ ]T50



### Products Line

- ◇ With 1st click feeling type

No	Products No.	Operating force	Operating position (Distance from P.C. Board mounting face)	Ground terminal	Terminal style	Variety
1	TSW-3A-T50	1 <sup>st</sup> 980mN 2 <sup>nd</sup> 2548mN	1st 1.0mm 2nd 0.8mm	Without ground terminal	Straight	With guide bosses
2	TSW-3B-T50				J-bent	
1	TSW-3C-T50				Straight	Without guide bosses
2	TSW-3D-T50				J-bent	
3	TSW-3A-GT50			With ground terminal	Straight	With guide bosses
4	TSW-3B-GT50				J-bent	
3	TSW-3C-GT50				Straight	Without guide bosses
4	TSW-3D- GT50				J-bent	
1	TSW-3AS2-T50	1 <sup>st</sup> 1000mN 2 <sup>nd</sup> 3500mN	1st 1.0mm 2nd 0.8mm	Without ground terminal	Straight	With guide bosses
2	TSW-3BS2-T50				J-bent	
1	TSW-3CS2-T50				Straight	Without guide bosses
2	TSW-3DS2-T50				J-bent	
3	TSW-3AS2-GT50			With ground terminal	Straight	With guide bosses
4	TSW-3BS2-GT50				J-bent	
3	TSW-3CS2-GT50				Straight	Without guide bosses
4	TSW-3DS2-GT50				J-bent	

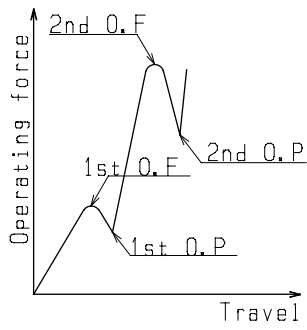
◇ Without 1st click feeling type

No	Products No.	Operating force	Operating position (Distance from P.C. Board mounting face)	Ground terminal	Terminal style	Variety
5	TSW-3E-T50	1st <588mN 2nd 2352mN	1st 0.9mm 2nd 0.7mm	Without ground terminal	Straight	With guide bosses
6	TSW-3F-T50				J-bent	
5	TSW-3G-T50				Straight	Without guide bosses
6	TSW-3H-T50				J-bent	
7	TSW-3E-GT50			With ground terminal	Straight	With guide bosses
8	TSW-3F-GT50				J-bent	
7	TSW-3G-GT50				Straight	Without guide bosses
8	TSW-3H-GT50				J-bent	
5	TSW-3ES2-T50	1st <686mN 2nd 3038mN		Without ground terminal	Straight	With guide bosses
6	TSW-3FS2-T50				J-bent	
5	TSW-3GS2-T50				Straight	Without guide bosses
6	TSW-3HS2-T50				J-bent	
7	TSW-3ES2-GT50			With ground terminal	Straight	With guide bosses
8	TSW-3FS2-GT50				J-bent	
7	TSW-3GS2-GT50				Straight	Without guide bosses
8	TSW-3HS2-GT50				J-bent	

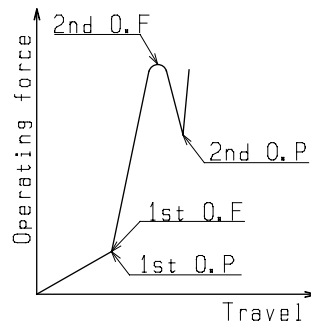
## □ Typical Specifications

Item	Specifications
<b>Ratings (max.) (Resistive load)</b>	50mA 12V DC
<b>Contact resistance</b>	100 milliohm max. (Initial)
<b>Insulation resistance</b>	100 megohm min. 100V DC
<b>Withstanding voltage</b>	250V AC for 1min.
<b>Operating force</b>	With 1st click feeling type ; 1st 980mN,2nd 2548mN / 1st 1000mN,2nd 3500mN Without 1st click feeling type ; 1st <588mN,2nd 2352mN/1st <686mN,2nd 3038mN
<b>Operating life</b>	With 1st click feeling type ; 30,000 cycles Without 1st click feeling type ; 100,000 cycles
<b>Operating temperature range</b>	-20 to +70 degree Celsius
<b>Storage temperature range</b>	-30 to +80 degree Celsius (except carrier tape)

▣ Feeling chart

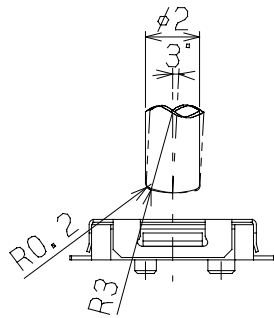


With 1st click feeling type



Without 1st click feeling type

▣ Recommended actuator style / Inclination of the actuator



Operating area: Within 0.3mm from the center of the switch  
 Allowable incline of operating: Less than 3 degree

Dimensions

Unit : mm

No	Style	P.C.B reference Land Dimensions Circuit Diagram (TOP VIEW)
1	<p>With 1st click feeling / Straight terminal / Without ground terminal                      TSW-3A-T50 / TSW-3C-T50                      TSW-3AS2-T50 / TSW-3CS2-T50</p> <p>Above is the drawing of TSW-3 with guide bosses.</p>	<p>2nd Operating</p> <p>1st Operating</p> <p>Circuit diagram</p>
2	<p>With 1st click feeling / J-bent terminal / Without ground terminal                      TSW-3B-T50 / TSW-3D-T50                      TSW-3BS2-T50 / TSW-3DS2-T50</p> <p>Above is the drawing of TSW-3 with guiding bosses.</p>	<p>2nd Operating</p> <p>1st Operating</p> <p>Circuit diagram</p>

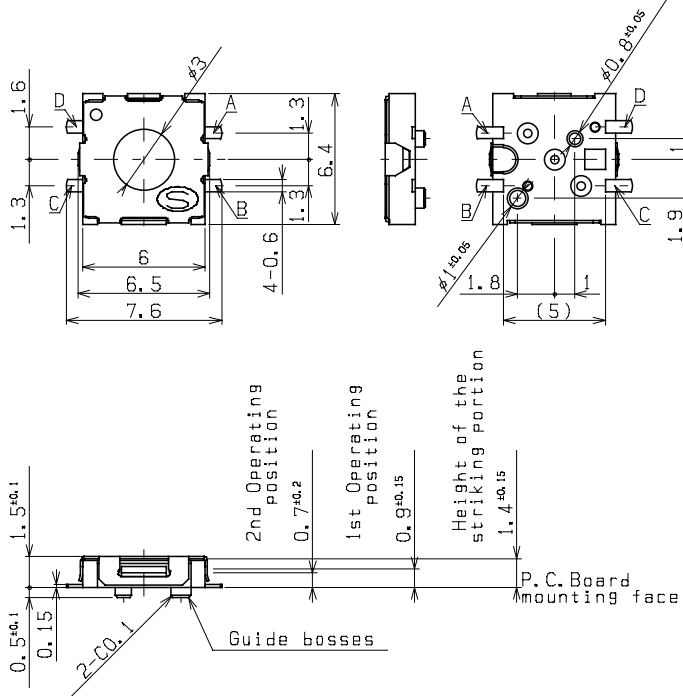
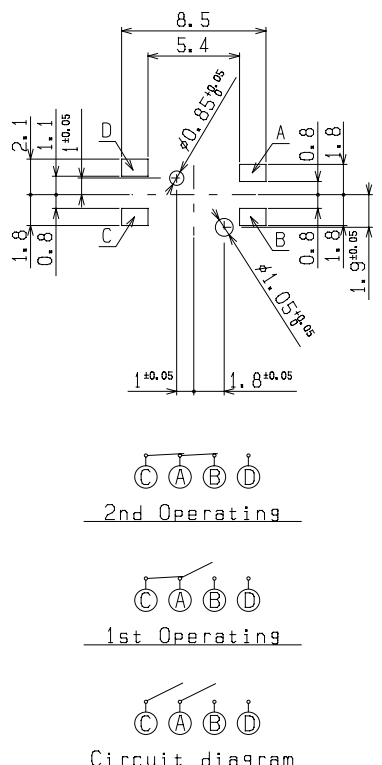
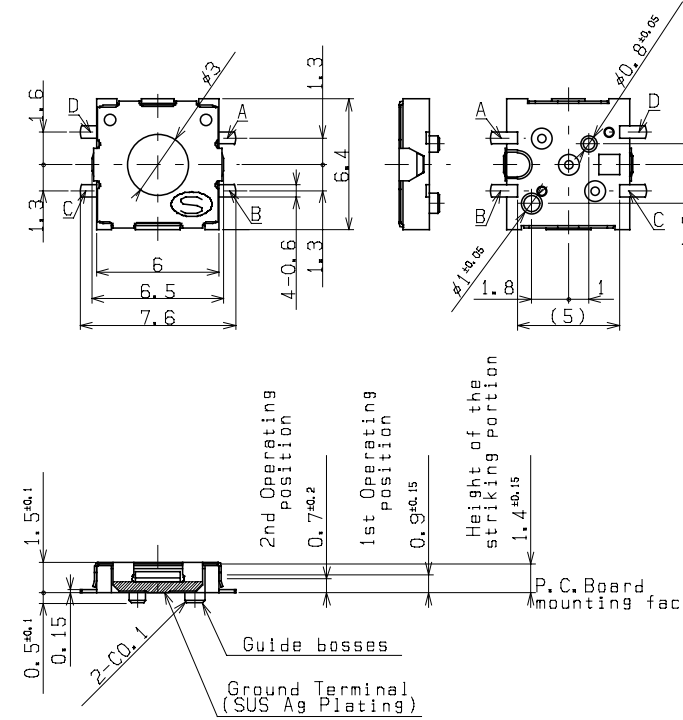
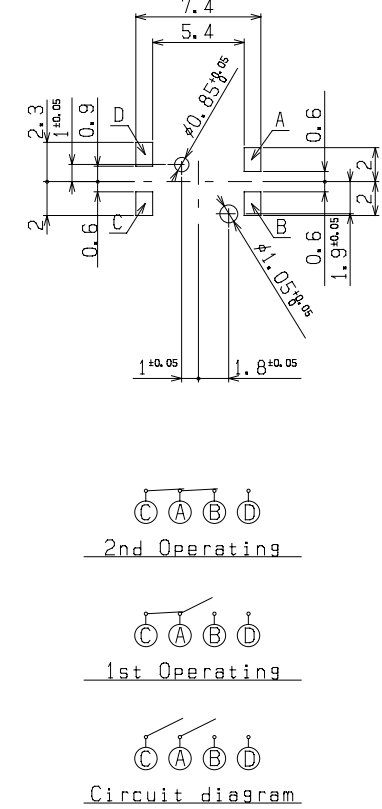
Dimensions

Unit : mm

No	Style	P.C.B reference Land Dimensions Circuit Diagram (TOP VIEW)
3	<p>With 1st click feeling / Straight terminal / With ground terminal                      TSW-3A-GT50 / TSW-3C-GT50                      TSW-3AS2-GT50 / TSW-3CS2-GT50</p> <p>Above is the drawing of TSW-3 with guide bosses.</p>	<p>2nd Operating</p> <p>1st Operating</p> <p>Circuit diagram</p>
4	<p>With 1st click feeling / J-bent terminal / With ground terminal                      TSW-3B-GT50 / TSW-3D-GT50                      TSW-3BS2-GT50 / TSW-3DS2-GT50</p> <p>Above is the drawing of TSW-3 with guiding bosses.</p>	<p>2nd Operating</p> <p>1st Operating</p> <p>Circuit diagram</p>

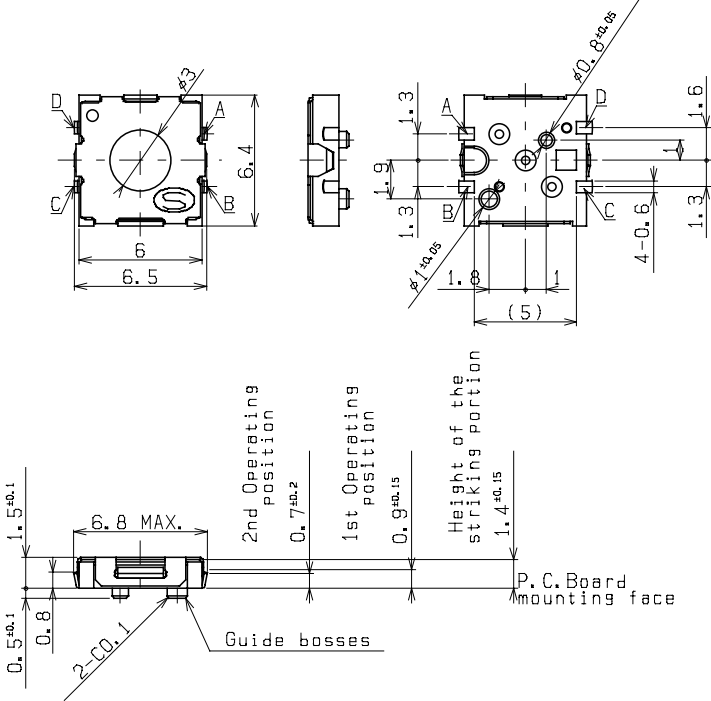
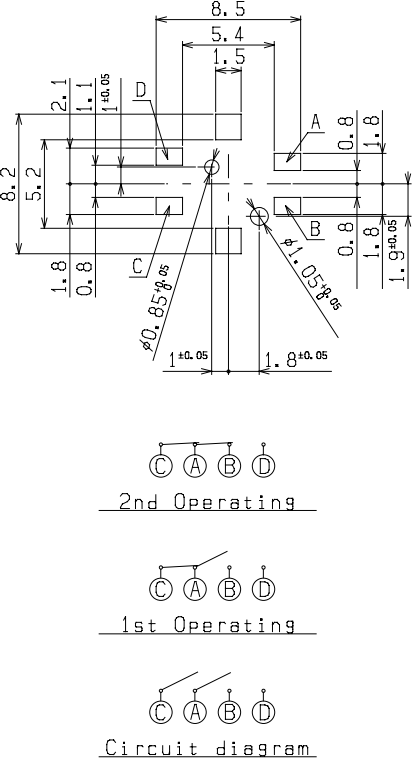
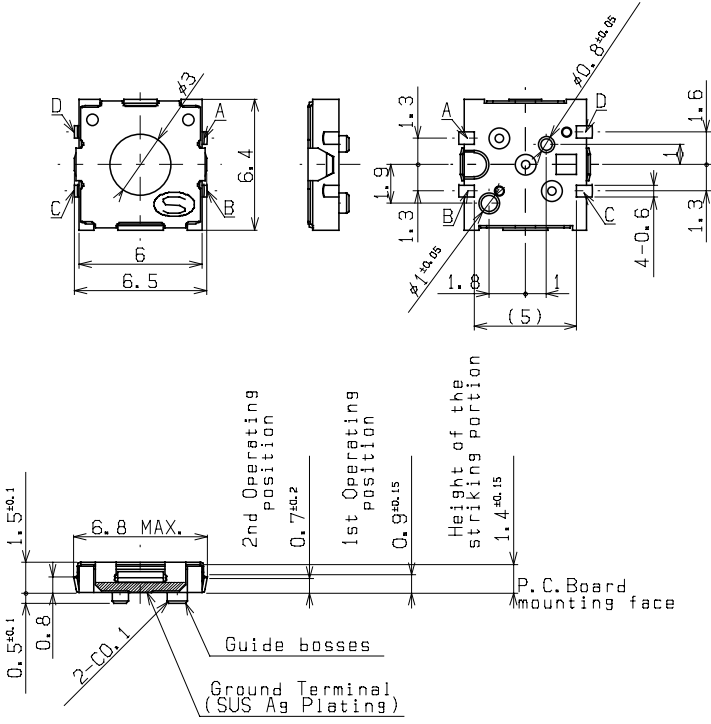
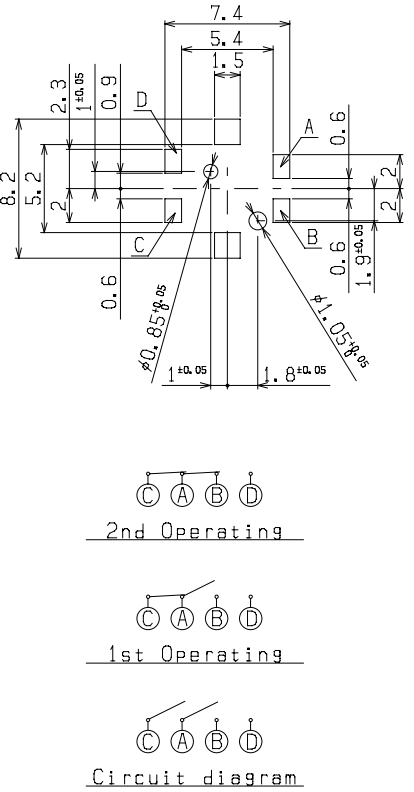
## Dimensions

Unit : mm

No	Style	P.C.B reference Land Dimensions Circuit Diagram (TOP VIEW)
5	<p>Without 1st click feeling / Straight terminal / Without ground terminal                      TSW-3E-T50 / TSW-3G-T50                      TSW-3ES2-T50 / TSW-3GS2-T50</p>  <p>Above is the drawing of TSW-3 with guide bosses.</p>	
6	<p>Without 1st click feeling / J-bent terminal / Without ground terminal                      TSW-3F-T50 / TSW-3H-T50                      TSW-3FS2-T50 / TSW-3HS2-T50</p>  <p>Above is the drawing of TSW-3 with guiding bosses.</p>	

Dimensions

Unit : mm

No	Style	P.C.B reference Land Dimensions Circuit Diagram (TOP VIEW)
7	<p>Without 1st click feeling / Straight terminal / With ground terminal TSW-3E-GT50 / TSW-3G-GT50 TSW-3ES2-GT50 / TSW-3GS2-GT50</p>  <p>Above is the drawing of TSW-3 with guide bosses.</p>	
8	<p>Without 1st click feeling / J-bent terminal / With ground terminal TSW-3F-GT50 / TSW-3H-GT50 TSW-3FS2-GT50 / TSW-3HS2-GT50</p>  <p>Above is the drawing of TSW-3 with guiding bosses.</p>	

**□ Notes**

1. The appearance and specifications of the product may be modified to improve its performance without prior notice.
2. This catalog shows only outline specifications. When using the product, please obtain formal specifications.
3. Please see appendix [Cautions in Using Switches].
4. 5,000pcs/one reel is the minimum packing unit. It is requested that the quantity of order shall be an integer multiple of the minimum packing unit.
5. Please set the reflow soldering condition confirming under the actual conditions of mass-production.
6. Characteristics of switch may change due to the warping of the circuit writing board. Consideration shall be given to the pattern design and layout.
7. This push switch is not washable.
8. This push switch permits reflow soldering and the switch has the possibility to be mounted on the edge of the PC board. But auto-dip shall not be done after the mounting of the switch because of the big possibility of the penetration of the soldering flux into the contacts sliding portion.
9. Larger stress than specified and/ or shock shall not be applied during switch operation.
10. Do not press the portion of the film by the sharp edged object.
11. In manual soldering, consider that the abnormal pressure of the soldering iron shall not be applied to the tip of the terminal as well do not apply any pressure for more than 1 minute after soldering.
12. Care shall be taken so that the flux shall not penetrate into the terminal portion.
13. The operating characteristic may change if force is exerted to the top the cover.



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