

# Body Height 0.75mm, Compact-sized Double Action Type Tactile Switches

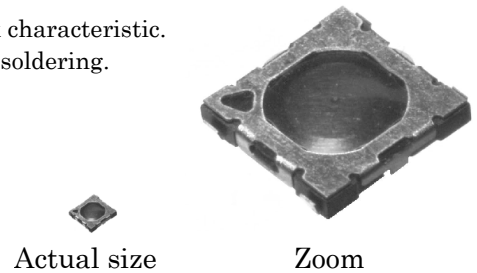
## TSW-15 Series

### Features

- ◇ With 5.0x5.0mm dimension and 0.75mm height, surface-mounting type switches are ideal for high-density mounting.
- ◇ Compact sized, low-profile type with decreasing surface-mounting area by 35%, height by 50% and volume by 66% as compared with the existing TSW-3 series.
- ◇ A double action type with 2 contacts in 1 circuit turning on the first push and the second step by pushing further.
- ◇ 3 types of switches, with 2 clicks (0.7N, 1.0N) or without click feeling.
- ◇ 2nd operating force with 2.4N and 3.5N are available.
- ◇ All types with earth terminal for static 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 12mm wide embossed taping

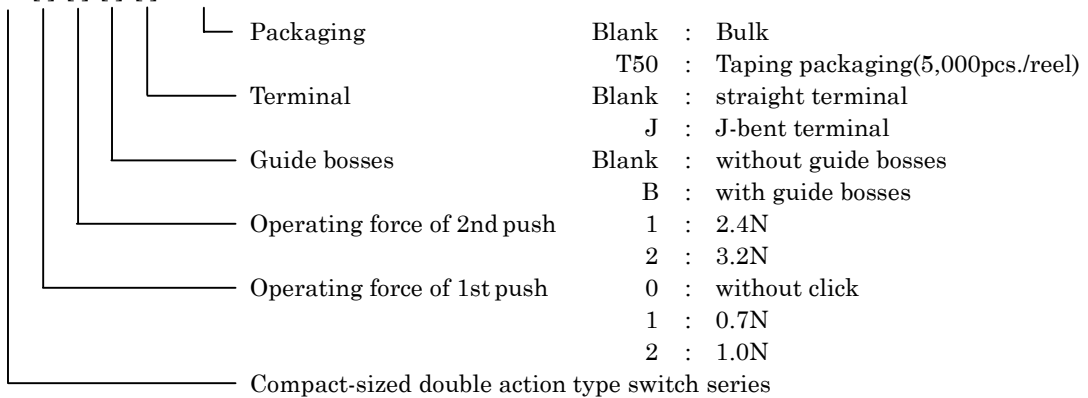
### Applications

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



### Product number

TSW-15-[ ] [ ] [ ] [ ]-T50



### 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. 500V DC
<b>Withstanding voltage</b>	250V AC for 1min.
<b>Operating force</b>	With 1st click feeling type ; 1st 0.7N,2nd 2.4N / 1st 1.0N,2nd 2.4N ; 1st 0.7N,2nd 3.2N / 1st 1.0N,2nd 3.2N Without 1st click feeling type ; 1st <0.55N,2nd 2.3N/1st <0.55N,2nd 3.0N
<b>Operating life</b>	30,000 cycles
<b>Operating temperature range</b>	-20 to +70 degree Celsius
<b>Storage temperature range</b>	-30 to +80 degree Celsius (except carrier tape)

□ Products Line

◇ With 1st click feeling type

No	Products No.	Operating Force(1st)	Operating Force(2nd)	Operating position (Distance from P.C. Board mounting face)	Variety	Terminal style
1	TSW-15-11-T50	0.7N	2.4N	1st 0.45mm 2nd 0.3mm	Without guide bosses	Straight
1	TSW-15-11B-T50				With guide bosses	
2	TSW-15-11J-T50				Without guide bosses	J-bent
2	TSW-15-11BJ-T50				With guide bosses	
1	TSW-15-12-T50		3.2N		Without guide bosses	Straight
1	TSW-15-12B-T50				With guide bosses	
2	TSW-15-12J-T50				Without guide bosses	J-bent
2	TSW-15-12BJ-T50				With guide bosses	
1	TSW-15-21-T50	1.0N	2.4N		Without guide bosses	Straight
1	TSW-15-21B-T50				With guide bosses	
2	TSW-15-21J-T50				Without guide bosses	J-bent
2	TSW-15-21BJ-T50				With guide bosses	
1	TSW-15-22-T50		3.2N		Without guide Bosses	Straight
1	TSW-15-22B-T50				With guide bosses	
2	TSW-15-22J-T50				Without guide bosses	J-bent
2	TSW-15-22BJ-T50				With guide bosses	

◇ Without 1st click feeling type

No	Products No.	Operating Force(1st)	Operating Force(2nd)	Operating position (Distance from P.C. Board mounting face)	Variety	Terminal style
1	TSW-15-01-T50	<0.55N	2.3N	1st 0.4mm 2nd 0.25mm	Without guide Bosses	Straight
1	TSW-15-01B-T50				With guide bosses	
2	TSW-15-01J-T50				Without guide Bosses	J-bent
2	TSW-15-01BJ-T50				With guide bosses	
1	TSW-15-02-T50		3.0N		Without guide Bosses	Straight
1	TSW-15-02B-T50				With guide bosses	
2	TSW-15-02J-T50				Without guide Bosses	J-bent
2	TSW-15-02BJ-T50				With guide bosses	

Dimensions

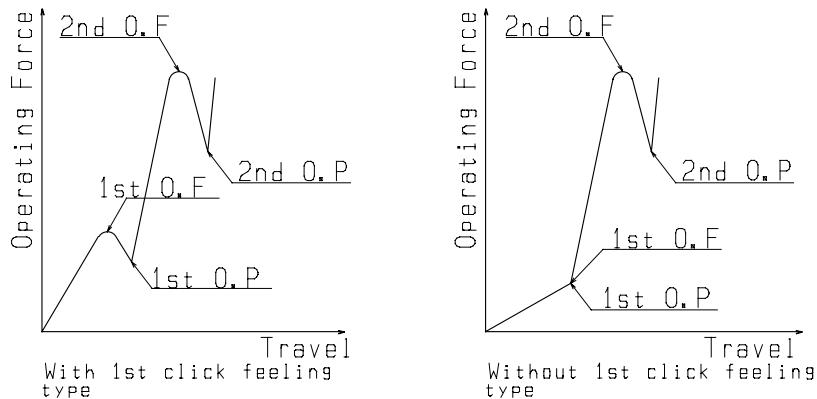
Unit : mm

No	Style	P.C.B reference Land Dimensions Circuit Diagram (TOP VIEW)
1	<p>Straight terminal</p>	<p>Dummy terminal part</p> <p>Land dimensions Pattern exposure prohibition domain *Please don't connect a dummy terminal with other patterns.</p> <p>2nd Operating 1st Operating Circuit diagram</p>
2	<p>J-bent terminal</p>	<p>Dummy terminal part</p> <p>Land dimensions Pattern exposure prohibition domain *Please don't connect a dummy terminal with other patterns.</p> <p>2nd Operating 1st Operating Circuit diagram</p>

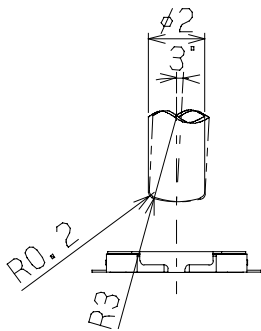
Above is the drawing of TSW-15 with guide bosses.

Above is the drawing of TSW-15 with guide bosses.

▣ Feeling chart



▣ Recommended actuator style / Inclination of the actuator



Operating area: Within 1mm from the center of the switch  
 Allowable incline of operating: Less than 3 degree

▣ 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.