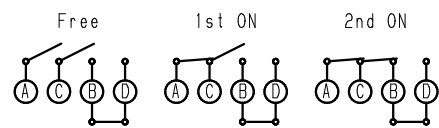


※基板パターンにてB-D間を繋いでください。  
To be connected B and D by PCB pattern.

- ランド指定領域  
Appointed area of soldering
- ランドパターン禁止領域  
Prohibition area of exposing patterns

プリント基板ランド推奨寸法  
PCB land recommended dimensions



※基板パターンにて繋いでください。  
To be connected by PCB pattern.

回路  
CIRCUIT

打鍵部推奨条件  
Push part recommended conditions

# REFERENCE

7	カバーテープ	COVER TAPE		
6	キャリアテープ	CARRIER TAPE		
5	カバー	COVER	1	PBSR Sn plated
4	ダストカバー	DUST COVER	1	PI
3	コンタクトブレード	CONTACT BLADE	1	SUS Ag plated
2	端子	TERMINAL	1	PBSR Ag plated
1	ベースモールド	BASE MOLD	1	LCP
No.	PART NAME	QTY	REMARKS	

Note 3. Operating force : 1st <0.3N 2nd 1.5±0.5N  
 Note 2. Taping specification : spec No. TSW-24T-1  
 Note 1. Product specification : spec No. TSW-24

DESIGNED	DRAWN	CHECKED	APPROVED	SCALE	NAME	TACTILE SWITCH	THIRD ANGLE PROJECTION UNIT:mm TOLERANCE	
山形	岩波	森	山本	15/1	DRAWING No.	TSW-24-01BU-T80		
09.02.09	09.02.20	10.04.21	10.04.21					
							L ≤ 10	±0.2
							10 < L ≤ 100	±0.3
							100 < L	±0.5

SPECIFICATION FOR TACTILE SWITCH		Spec No. TSW-24-01BJ-T80.1/3 ' 16.03.10 S.Yamagata
1. Structure	: 1-circuit 2-contact point push-on switch (normal open) of double action	
2. Maximum rating	: 12V DC 50mA (Resistance load)	
3. Circuit	: 1-circuit 2-contact point	
4. Operation temperature Range	: -20°C to +70°C	
5. Storage temperature Range	: -30°C to +80°C (except carrier tape)	
6. Mechanical performance		
Item	Specification	Test conditions
Operation force	Refer to product drawing.	Placing the switch such that the operating direction is vertical. The load is added to the center of operation area, and the peak load is measured.
Travel	Refer to product drawing.	Placing the switch such that the operating direction is vertical. The position from the printed circuit board to the ON position is measured in the center of operation area.
Stop strength	Table 9 criteria shall be satisfied.	Placing the switch such that the operating direction is vertical. The static load of 29N (3kgf) is added in the center operation area for 5 seconds.
Resistance to flux and soldering	(1) More than 75 % of the dipped part shall be covered with solder. (2) Table 9 criteria shall be satisfied.	Flux shall be methanol (JIS K 1501) solution of Rosin (JIS K 5902), density of rosin approx. 25 wt%. (Unless any doubt NA200 [Tamura Chemical] or equivalent.) Fluxed terminal shall be dipped into a soldering bath (230±5 °C) for 3±0.5 seconds.
Resistance to soldering heat.	Table 9 criteria shall be satisfied. But, In externals and the structure, no do striking changes.	(1) Reflow soldering: Measurement shall be made in normal room temperature after leaving the switch in a thermostatic chamber at 150±2 °C for 3 minutes followed by leaving it in a chamber at 250±2 °C for 1 minute. Reflow shall be one time. (2) Manual soldering : Power of soldering iron: 15 W Diameter of soldering iron tip: 1 mm Temperature of soldering iron tip: 320±5 °C Soldering time: 3 seconds max. The terminal shall be free from abnormal pressure when the soldering iron is applied to the tip of terminal.
7. Electrical performance		
Item	Specification	Test conditions
Contact resistance	100 mΩ max.	After the switch is operated several times by without load, it is measured by Low ohmmeter (measuring frequency : 1kHz , voltage and current : 20mV, 50mA or less), when the static load of the twice operation force is added to center of operation area.
Insulation resistance	100 MΩ min.	It is measured by megohmmeter (measured voltage : 500VDC) between each terminal, and between each terminal and frame.
Withstanding voltage	No insulation Destruction at 100VAC	The voltage of 100VAC is impressed for 1 minute between each terminal, and between each terminal and frame.
Chattering	10ms or less	Measured at DC 5V, 1mA , operation speed of 60rpm. Chattering is assumed to be a voltage change of 1.5V or more.

**SPECIFICATION FOR TACTILE SWITCH**

Spec No. TSW-24-01BJ-T80. 2/3  
' 16. 03. 10 S. Yamagata

**8. Life Test and Special Test.**

Item	Method of Test and Testing conditions	Specification
Durability	(1) Without load (2) Rate of operation : 15 to 20 operations per minute (3) Push force : push force of the standard max value (4) Cycle of operation : 100,000 cycles	Table 9 criteria shall be satisfied.
Resistibility to Heat	Measured within 1 hour after keeping the switch in the chamber at $85\pm 2$ °C for 96 hours then leaving it in the normal temperature and humidity for 1 hour.	Ditto
Resistibility to Humidity	Measured within 1 hour after keeping the switch in the chamber at $40\pm 2$ °C, 90-95%RH 96 hours then leaving it in the normal temperature and humidity for 1 hour. Here, water drops shall be removed.	Ditto
Resistibility to Cold	Measured within 1 hour after keeping the switch in the chamber at $-30\pm 2$ °C for 96 hours then leaving it in the normal temperature and humidity for 1 hour. Here, water drops shall be removed.	Ditto
Resistibility to Vibration	Measurements shall be made following the test set forth below: (1) Vibration frequency range : 10 to 55 Hz (2) Cycle of sweep : 10~55~10 Hz in 1 minute (3) Total amplitude, pk-to-pk : 1.5 mm (4) Sweep ratio : Logarithmical sweep or uniform sweep (5) Direction of oscillation : Three mutually perpendicular directions, including the direction of stem travel. (6) Duration : 2 hours each, total 6 hours.	Ditto

**9. Criteria of Life Test and Special Test.**

Item	Criteria
1 Operation Force	Within $\pm 30\%$ of the initial value
2 Contact Resistance	1000 mΩ max
3 Insulation Resistance	10 MΩ min
4 Withstanding Voltage	NO abnormal for 1 minute at 100VAC.
5 Chattering	20ms or less
6 Others	No abnormal in externals and the structure.

## 11. Precautions :

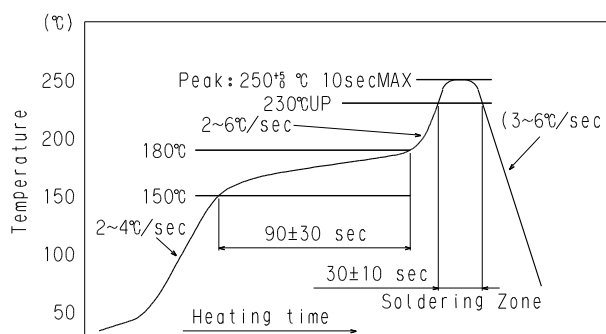
- (1) The setting of reflow condition should be verified under the actual mass production conditions.
- (2) Characteristics may change due to the warping of printed circuit board.  
Consideration should be given to the pattern design and layout.
- (3) Please do not wash this switch, for no washing type.
- (4) This switch permits reflow soldering and the switch has the possibility to be mounted on the edge of the printed circuit 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.
- (5) 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.
- (6) Care shall be taken so that the flux shall not penetrate into the terminal portion.
- (7) The operating characteristic will change if force is applied to the top of cover.
- (8) On designing of hardware and software, please consider of chattering.
- (9) Please check the mounting of the switch before using it.

## (10) Example of reflow (reference)

①Heating : Heated from above and below by far-infrared heating.

②Temperature measuring method : Temperature shall be measured by using a 0.1 mm-dia. to 0.2 mm-dia. CA (K) or CC (T) thermocouple at the soldered joint.  
Heat resisting tape is used to fix the thermocouple.

③Temperature profile



April/10/09

T. Iwanami

Specification Taping Package

SPEC No

TSW-24-01BJ-T80

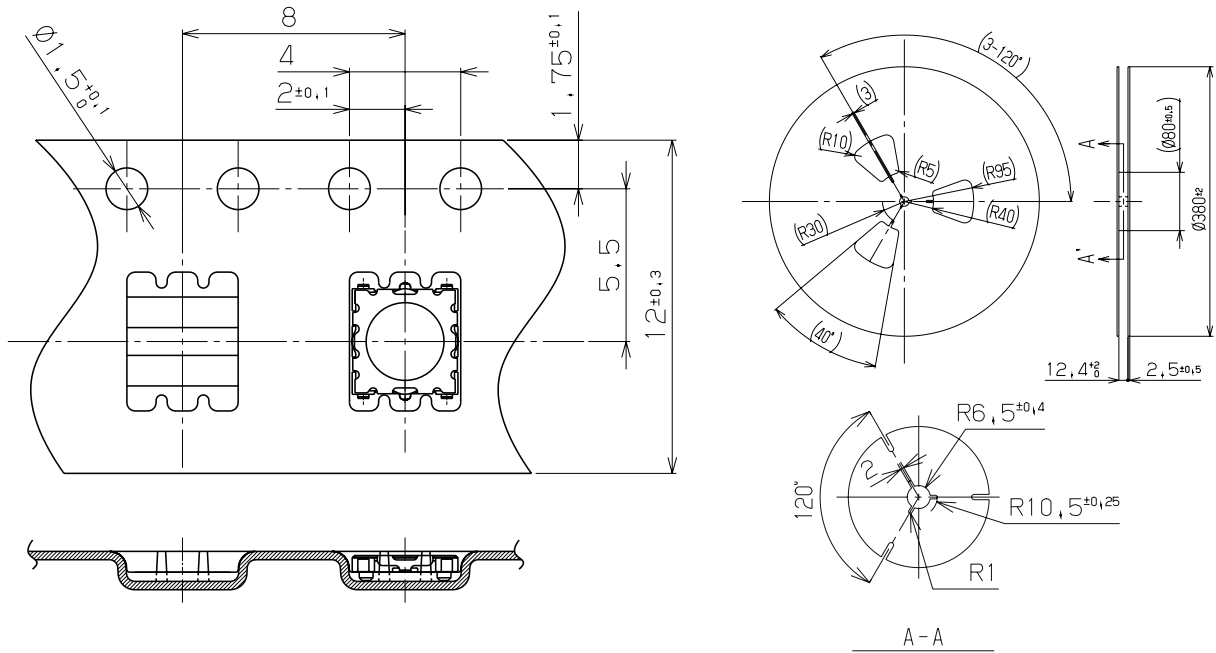
1. Scope : This specifications is applied to the taping package for our Tactile switch (model TSW-24 with boss type)

2. Parts and materials :

Package specification	Parts	Materials
Taping	Reel	Corrugated cardboard
	Carrier Tape	PET or PS
	Cover Tape	PET or PS

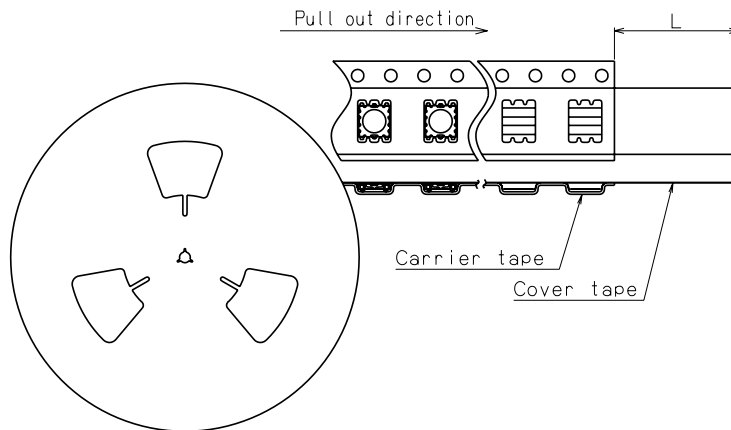
3. Package quantity : 8,000pcs. / reel (Standard Quantity)

4. Dimensions



5. Taping package form :

(1) Pilot holes of carrier tape shall be right side of pull out direction.



(2) Switch lacking and reverse direction packing is max 0.1% of package quantity. It is not continue more than 2 switches.

(3) Top and end of tape shall be non-packed portion(10~50 branks) L Dimensions shall be 150mm min.

(4) Direction of product : Knob shall be opposite side of pull out direction. Switch cover shall be same side of cover tape.

(5) Peeling strength of cover tape shall be 0.1~1.0 N(10~100gf)

(6) Following items shall be marked on the reel.

Our model No, Quantity, Production lot No, Our company name, RoHS mark.