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Tact switch	KAN0642-0501C1-C15	A/01		3/12

## 1、GENERAL

### 1.1 APPLICATION

This specification is applied to the requirements for tactile switch (mechanical contact)

### 1.2 Operating Temperature Range

-30°C~80°C(Normal humidity, normal air pressure)

### 1.3 Storage Temperature Range

-40°C~90°C(Normal humidity, normal air pressure)

### 1.4 Test Conditions

Unless otherwise specified, tests and measurement shall be made in the following standard conditions:

Normal temperature.....5°C~35°C

Normal humidity.....relative humidity 25%~85%

Normal air pressure.....86Kpa~106Kpa

If any doubt arise from the judgment, tests shall be conducted at the following conditions:

Temperature.....20°C±2°C

Relative humidity.....65%±5%

Air pressure.....86Kpa~106Kpa

### 1.5 Storage method

1. Ensure that the product without package breaking or wetting before use.

2. Storage conditions:

Storage temperature: -5 ~ 35 C;

Storage humidity: 25% ~80%;

Unopened status: Use up the product as soon as possible before 6 months. (calculated from shipment date).Over 6 months, please make sure below before use it: terminal without oxidation or blackening, plastic parts without moisture absorption or bubble, ensure solderability.

Opened status: use up within 1 month;

Storage precautions: Please avoid the following environment: with high humidity, high temperature , corrosive gases and direct sunlight.

3. Do not stack too many switches.

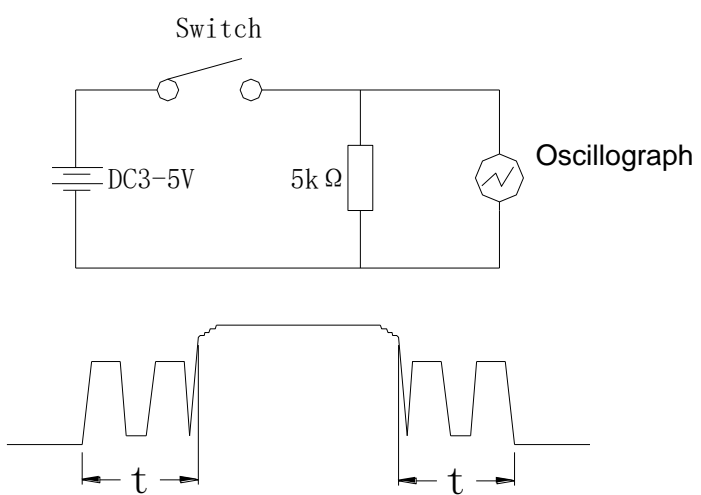
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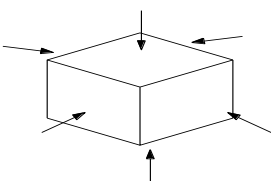
## 2、 Detailed specification

- 2.1 Appearance: There should be no defects that affect the serviceability of product.
- 2.2 Style and dimension: shall conform to the assemble drawings.
- 2.3 Type of actuating: Tactile feedback.
- 2.4 Contact arrangement: 1 pole, 1 throw  
(Details of contact arrangement are given in the assembly drawings.)
- 2.5 Ratings: DC 12V 50mA (Max)      DC 1V 10 $\mu$ A (Min)

## 3. ELECTRICAL SPECIFICATION

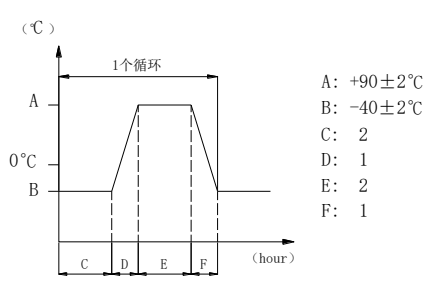
ITEM		TEST CONDITIONS	REQUIREMENTS
3.1	Contact Resistance	Applying a static load of 2 times operating force to the center of the stem, measurements shall be made by 5V DC 10mA or more than 1KHz AC small-current contact resistance meter.	$\leq 100\text{m}\Omega$
3.2	Insulation Resistance	Measurement shall be made following application of 100V DC potential, across terminals, and across terminals and cover, for one minute.	$\geq 100\text{M}\Omega$
3.3	Dielectric voltage proof	250V AC (50Hz or 60Hz) shall be applied across terminals, for one minute.	There should be no breakdown and flashover

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ITEM	TEST CONDITIONS			REQUIREMENTS
3.4	Bounce	<p>Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 times per second), and bounce shall be tested at "ON" and "OFF"</p> <div style="text-align: center;">  <p>The diagram shows a circuit for testing switch bounce. It consists of a DC power source labeled 'DC3-5V', a switch labeled 'Switch', a 5kΩ resistor, and an oscilloscope. The DC source is connected in series with the switch. The switch is connected to one terminal of the 5kΩ resistor. The other terminal of the resistor is connected to the oscilloscope. The oscilloscope is also connected to ground. Below the circuit diagram is a waveform showing the signal as seen on the oscilloscope. The waveform shows a series of pulses with a period 't' between the start of each pulse. The pulses have a sharp rise and a slower fall, characteristic of switch bounce.</p> </div>		<p>ON-10ms max OFF-10ms max</p>
<b>4. MECHANICAL SPECIFICATION</b>				
4.1	Operating Force	<p>Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the center of the stem, the maximum load required for the switch to come to a stop shall be measured.</p>		260±50gf
4.2	Full Travel	<p>Placing the switch such that the direction of switch operation is vertical and then applying static load of 2times operating force to the center of the stem; the travel distance for the switch to come to a stop shall be measured.</p>		0.30±0.1mm

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ITEM	TEST CONDITIONS			REQUIREMENTS
4.3	Return Force	The sample switch is installed such that the direction of switch operation is vertical and upon depressing the stem in its center to the whole travel distance, the force of the stem to return to its free position shall be measured.		20gf Min
4.4	Stop Strength	Placing the switch such that the direction of switch operation is vertical, and then a static load of 30N shall be applied in the direction of stem operation for a period of 1 min.		There shall be no sign of damage mechanically and electrically.
4.5	Stem Strength	Placing the switch such that the direction of switch operation is vertical, and then the maximum force to withstand a pull applied opposite to the direction of stem operation shall be measured.		20N min.
4.6	Vibration	Measurement shall be made following the test set forth below: <ol style="list-style-type: none"> <li>(1) Vibration frequency range: 10 to 55 to 10Hz</li> <li>(2) Amplitude: 1.5mm</li> <li>(3) Direction of vibration: Three mutually perpendicular direction including the direction of stem travel</li> <li>(4) Duration: Each 2 hours.</li> </ol>		Item 3 Item4.1 Item4.2 Item4.3
4.7	Shock	Test by following conditions <ol style="list-style-type: none"> <li>(1) installation method: normal</li> <li>(2) Acceleration: 784m/s<sup>2</sup></li> <li>(3) Acting time: 11ms</li> <li>(4) Test direction: 6 directions</li> </ol> Times: 3 times/direction ,total 18 times <div style="text-align: center; margin-top: 10px;">  </div>		Item3 Item4.1 Item4.2 Item4.3

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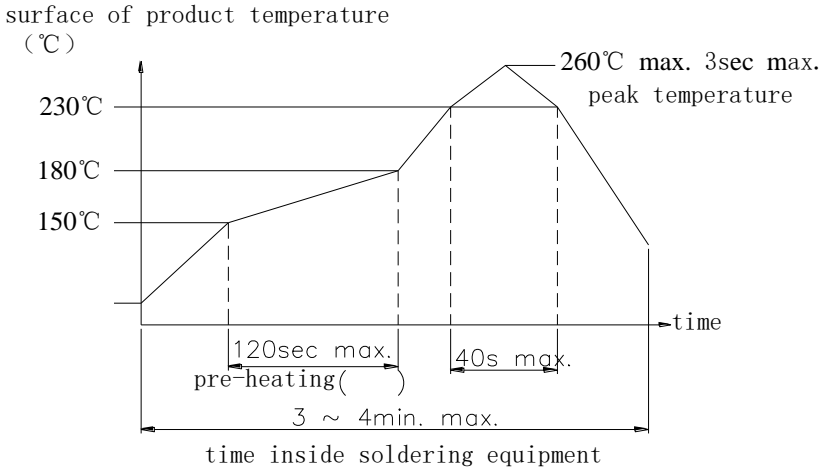
## 5、 ENVIRONMENTAL SPECIFICATION

ITEM	TEST CONDITIONS	REQUIREMENTS
5.1	Resistance to low temperature  (1) Temperature : $-40\pm 2^{\circ}\text{C}$ (2) Time: 96h	Item3 Item4.1 Item4.2 Item4.3
5.2	Heat resistance  (1) temperature: $90\pm 2^{\circ}\text{C}$ (2) time: 96h	Item3 Item4.1 Item4.2 Item4.3
5.3	Change of temperature  After 5 cycles of following conditions, the sample shall be allowed to stand under normal temperature and humidity conditions for 1 h. and measurements shall be made. During the test water drops shall be removed.  	Item3 Item4.1 Item4.2 Item4.3
5.4	Moisture resistance  (1) temperature: $60\pm 2^{\circ}\text{C}$ (2) relative humidity: 90% to 95% (3) time: 96h	Contact resistance $\leq 200\text{m}\Omega$ Insulation Resistance $\geq 10\text{M}\Omega$  Item3.3 Item3.4 Item4.1 Item4.2 Item4.3

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ITEM	TEST CONDITIONS			REQUIREMENTS
5.5	Sulfuration resistance	<p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) H<sub>2</sub>S gas concentration: 3ppm±1ppm            (2) Time: 96h            (3) temperature: 40±2°C (90~95%RH)</p>		<p>Contact resistance≤200mΩ Item3.3</p> <p>Item3.4 Item4.1 Item4.2 Item4.3</p>
5.6	Salt Mist	<p>The switch shall be checked after following test:</p> <p>(1) temperature: 35°C±2°C            (2) salt solution : 5±1%(solids by mass)            (3) Time: 48±1h</p> <p>After test, salt deposit shall be removed by running water.</p>		<p>No remarkable corrosion shall be recognized in metal part.</p>
5.7	Operation life	<p>Measurement shall be made following the test set forth below:</p> <p>(1) DC 12V, 50 mA resistive load            (2) Rate of operation: 2 times/s            (3) Operating Force: 1.5 times as much as Operating Force            (4) fault-free life:100,000 cycles</p>		<p>Contact resistance≤1Ω            Insulation Resistance≥10MΩ            ON-20ms max Bounce            OFF-20ms max            Operating Force: initial value±30%            Item3.3            Item4.2</p>

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ITEM		TEST CONDITIONS		REQUIREMENTS
5.8	Solderability	Measurements shall be made following the test set forth below: (1) Solder temperature : $235\pm 5^{\circ}\text{C}$ (2) Immersion time: $3\text{s}\pm 0.5\text{s}$		Except for the edge, the coating should cover a minimum 90%
5.9	Waterproof grade	1、IPX6: 2.5m~3m, 100L/min(6000L/), 12.5mm, 1min, 3min		Contact resistance $\leq 200\text{m}\Omega$ Insulation Resistance $\geq 10\text{M}\Omega$  Item3.3 Item3.4 Item4.1 Item4.2 Item4.3
<b>6. SOLDERING CONDITIONS:</b>				
6.1	Hand soldering	Please practice according to below conditions:  (1) Soldering temperature: $\leq 350^{\circ}\text{C}$ (2) Continuous soldering time: $\leq 3\text{ s}$		

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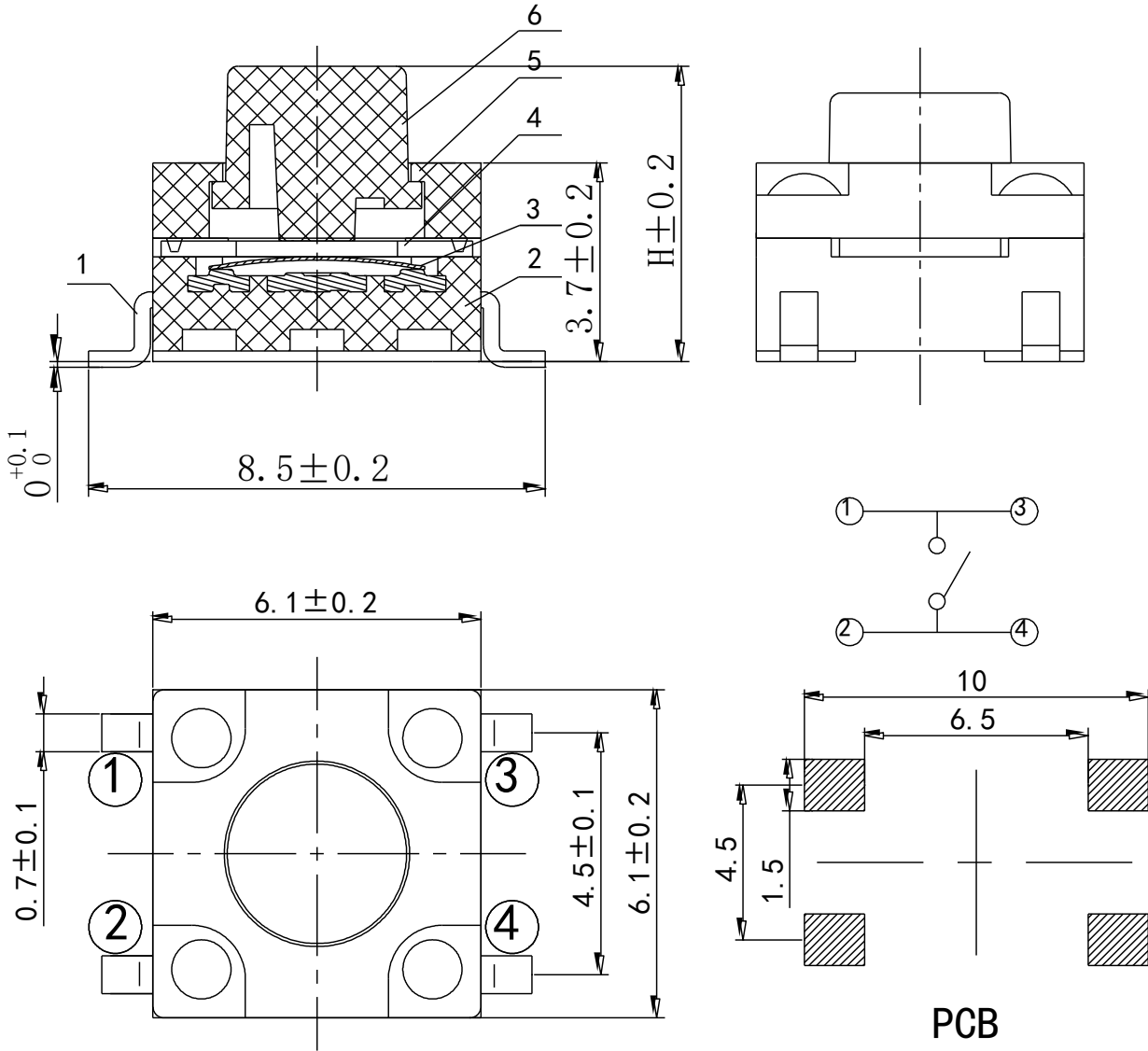
ITEM	Recommended conditions
<p>6.2</p> <p style="text-align: center;">Conditions for reflow</p>	<p>For SMT products, Pls soldering by follow conditions:</p> <div style="text-align: center;">  <p style="font-size: small;">surface of product temperature (°C)</p> <p style="font-size: small;">260°C max. 3sec max. peak temperature</p> <p style="font-size: small;">230°C</p> <p style="font-size: small;">180°C</p> <p style="font-size: small;">150°C</p> <p style="font-size: small;">time</p> <p style="font-size: small;">120sec max. pre-heating( )</p> <p style="font-size: small;">40s max.</p> <p style="font-size: small;">3 ~ 4min. max. time inside soldering equipment</p> </div> <p>Attention:the condition above is the temperature of the PWB surface on the parts,and PWB will get different temperature because of the differences of materials,sizes,thickness and so on.Should control it below 260°C</p>

**(Notes):**

- a、 The pad size of the printed substrate is shown in the product diagram.
- b、 In the case of using soldering iron, soldering conditions shall be 350°C max and 3 sec.max.
- c、 Prevent flux penetration from the top of the switch
- d、 After switches were soldered,please be careful not to clean switches with solvent or other similar products.
- e、 Right after switches were soldered;please be careful not to load to on the knobs of switches.
- f、 Please be cautions not to give excessive static load or shock to switches.
- g、 Please be careful not to pile up P.W.B.after switches were soldered



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General tolerance:  $\pm 0.2\text{mm}$  H=5.0

NO.	NAME	MATERIAL	QTY.	FINISHING
1	Terminal	Brass	1	Silver plating
2	Case	PA10T	1	Black
3	Contact	SUS	1	Contact side silver plating
4			1	Black
5	Cover	PA10T	1	Black
6	Stem	PA6T	1	Black

