

APPROVAL SPECIFICATIONS

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Tact switch	KAN0649-0501C1	A/01		3/12

1、概述

GENERAL

1.1 适用范围

APPLICATION

此规格书适用于机械式轻触开关的相关要求

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

1.2 工作温度范围

Operating Temperature Range

-30°C~80°C(在标准大气压、标准湿度条件下)

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

1.3 贮藏温度范围

Storage Temperature Range

-40°C~90°C(在标准大气压、标准湿度条件下)

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

1.4 测试条件

Test Conditions

在没有其它特定的条件下, 应该在以下的条件下进行测试和测量:

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

常温.....5°C~35°C

Normal temperature.....5°C~35°C

标准湿度.....相对湿度 25%~85%

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

标准大气压.....86Kpa~106Kpa

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

在制造过程中, 测试和测量应该在以下的条件下进行:

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

温度.....20°C±2°C

Temperature.....20°C±2°C

相对湿度.....65%±5%

Relative humidity.....65%±5%

环境气压.....86Kpa~106Kpa

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

1.5 存储方法

Storage method

1. 使用前确保包装完整无破损, 无浸湿.

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

2. 存储条件 Storage conditions:

储存温度 Storage temperature: -5 ~ 35 C;

储存湿度 Storage humidity: 25% ~80%;

未开封状态: 6 个月内使用完毕 (从发货日开始计算); 超过 6 个月后再使用的, 使用前请先验证: 端脚无氧化、无发黑、塑料件无吸湿起泡, 确保焊接的适宜性;

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.

已开封状态: 1 个月内使用完毕;

Opened status: use up within 1 month;

储存注意事项: 避开高湿高温和有腐蚀性气体的环境及阳光直射;

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

3. 请勿超重叠放.

Do not stack too many switches.

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2、 详细说明

Detailed specification

2.1 外观：应无影响、降低产品性能的缺陷；

Appearance: There should be no defects that affect the serviceability of product.

2.2 结构尺寸和安装尺寸：应符合装配图要求；

Style and dimension: shall conform to the assemble drawings.

2.3 操作形式：有触觉反应的操作

Type of actuating: Tactile feedback.

2.4 开关结构：单回路单输出(具体的触点结构在装配图中已绘出)；

Contact arrangement: 1 pole, 1 throw

(Details of contact arrangement are given in the assembly drawings.)

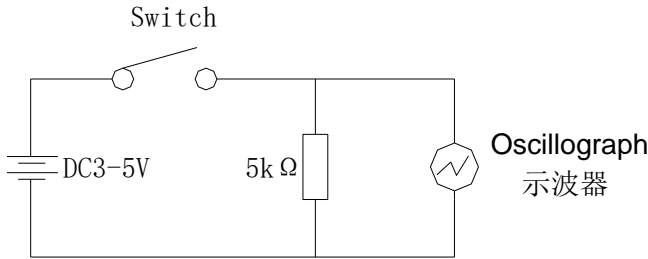
2.5 开关工作额定值：DC 12V 50mA（最大值） DC 1V 10 μ A（最小值）

Ratings: DC 12V 50mA (Max) DC 1V 10 μ A (Min)

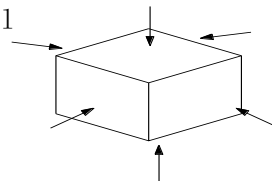
3. 电气性能：

ELECTRICAL SPECIFICATION

项 目 ITEM	试 验 条 件 TEST CONDITIONS	要 求 REQUIREMENTS
3.1 接触电阻 Contact Resistance	在以 5V 10mA 的直流电源或不低于 1KHz 的交流电源的电路中，以一个等于 2 倍按力的静负荷施加于手柄中心 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.	$\leq 100m\Omega$
3.2 绝缘电阻 Insulation Resistance	在端子之间施加 DC 100V /min 的条件下,测量端子之间底座、盖板的电阻值 Measurement shall be made following application of 100V DC potential, across terminals, and across terminals and cover, for one minute.	$\geq 100M\Omega$
3.3 介质耐压 Dielectric voltage proof	在端子之间施加 250V AC(50Hz 或 60Hz)/min 250V AC (50Hz or 60Hz) shall be applied across terminals, for one minute.	无击穿、无飞弧 There should be no breakdown and flashover

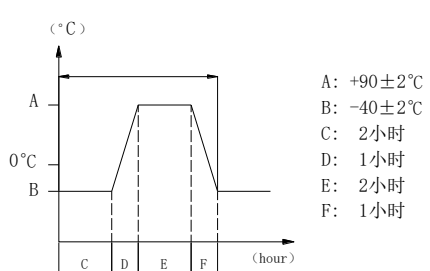
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项目 ITEM	试验条件 TEST CONDITIONS			要求 REQUIREMENTS
3.4	触点抖动 Bounce	<p>按照正常使用时的力度轻按手柄中心（每秒 3~4 次），在导通和断开过程中测试开关抖动 Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 times per second), and bounce shall be tested at "ON" and "OFF"</p> <div style="text-align: center;">  <p style="margin-left: 100px;">t 为触点抖动时间</p> </div>		ON-10ms max OFF-10ms max
4. 机械性能: MECHANICAL SPECIFICATION				
4.1	按力 Operating Force	<p>开关垂直于操作方向放置，在开关驱动件顶端中心逐渐施力，测量开关导通所需的最大力度。 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±50 gf
4.2	最大行程 Full Travel	<p>开关垂直于操作方向放置，以一个等于 2 倍按力的静负荷施加在开关驱动件顶端中心，测量顶端移动的距离。 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>		0.25±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: <ul style="list-style-type: none"> (1) Vibration frequency range: 10 to 55 to 10Hz (2) Amplitude: 1.5mm (3) Direction of vibration: Three mutually perpendicular direction including the direction of stem travel (4) Duration: Each 2 hours. 		Item 3 Item4.1 Item4.2 Item4.3
4.7	Shock	Test by following conditions <ul style="list-style-type: none"> (1) installation method: normal (2) Acceleration: 784m/s² (3) Acting time: 11ms (4) Test direction: 6 directions Times: 3 times/direction , total 18 times		Item3 Item4.1 Item4.2 Item4.3



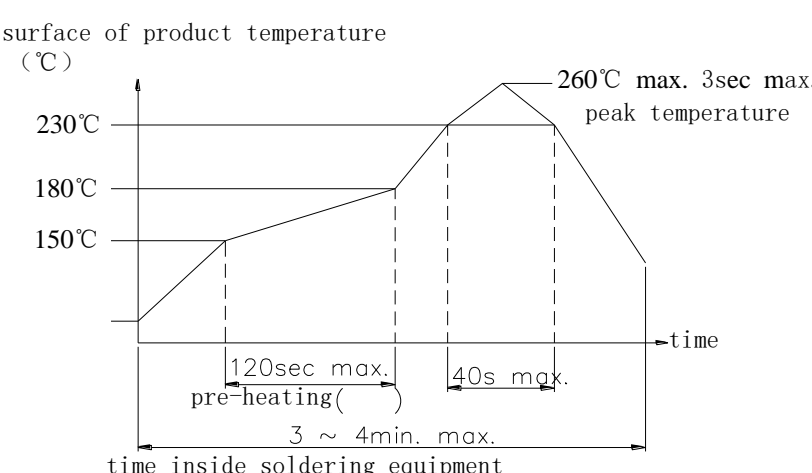
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5、 ENVIRONMENTAL SPECIFICATION

ITEM	TEST CONDITIONS	REQUIREMENTS
5.1	Resistance to low temperature Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: (1) Temperature : $-40\pm 2^{\circ}\text{C}$ (2) Time: 96h	Item3 Item4.1 Item4.2 Item4.3
5.2	Heat resistance Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: (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. <div style="text-align: center;">  </div>	Item3 Item4.1 Item4.2 Item4.3
5.4	Moisture resistance Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: (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
5.8	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%
6. SOLDERING CONDITIONS:					
6.1	Hand soldering	Please practice according to below conditions: (1) Soldering temperature: $\leq 350^{\circ}\text{C}$ (2) Continuous soldering time: $\leq 3\text{ s}$			

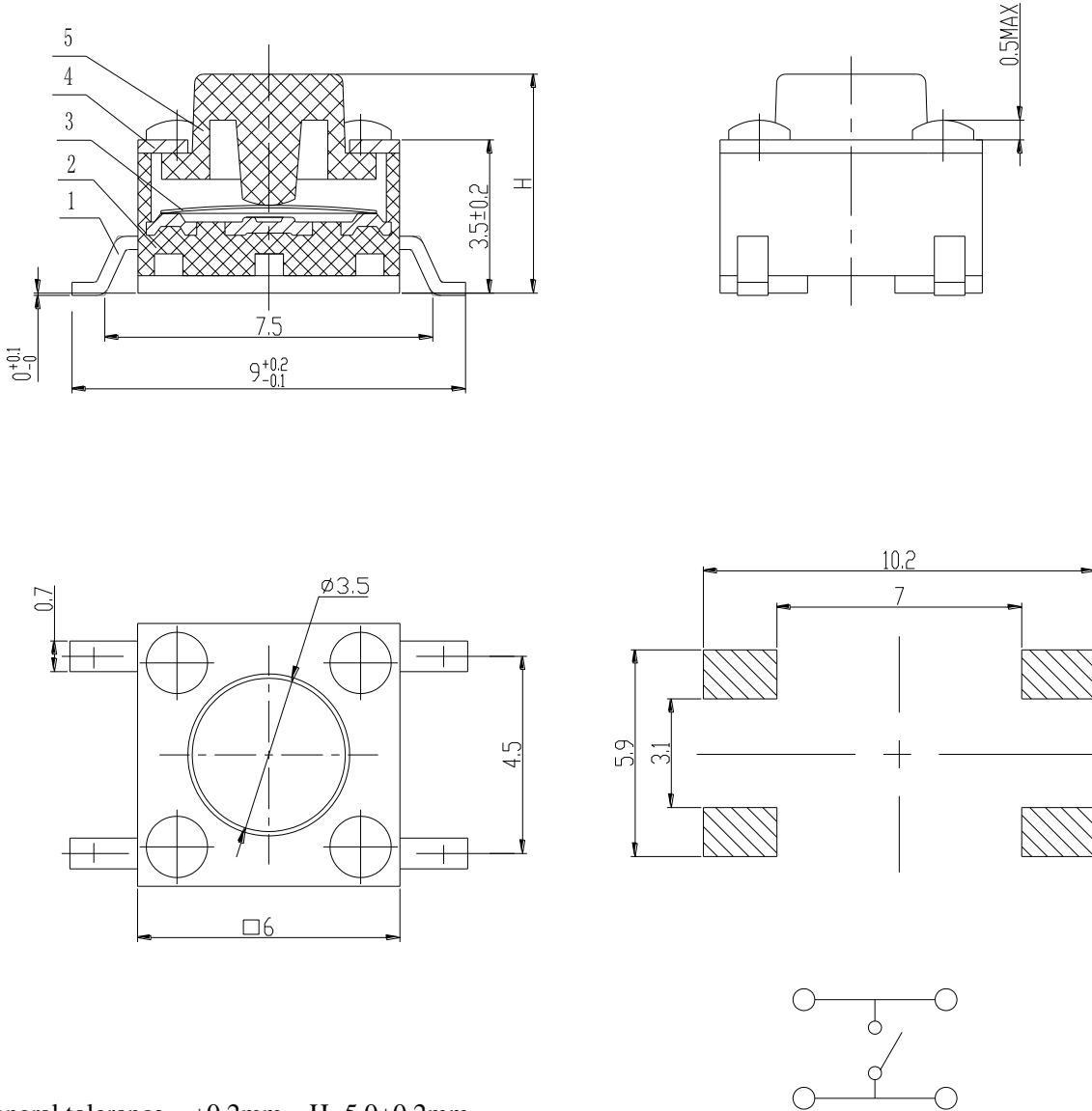
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ITEM	Recommended conditions
6.2	<p style="text-align: center;">Conditions for reflow</p> <p>For SMT products, Pls soldering by follow conditions:</p> <div style="text-align: center;">  <p style="font-size: small;">surface of product temperature (°C)</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.</p> <p style="font-size: small;">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

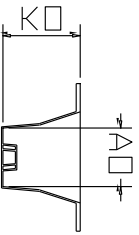
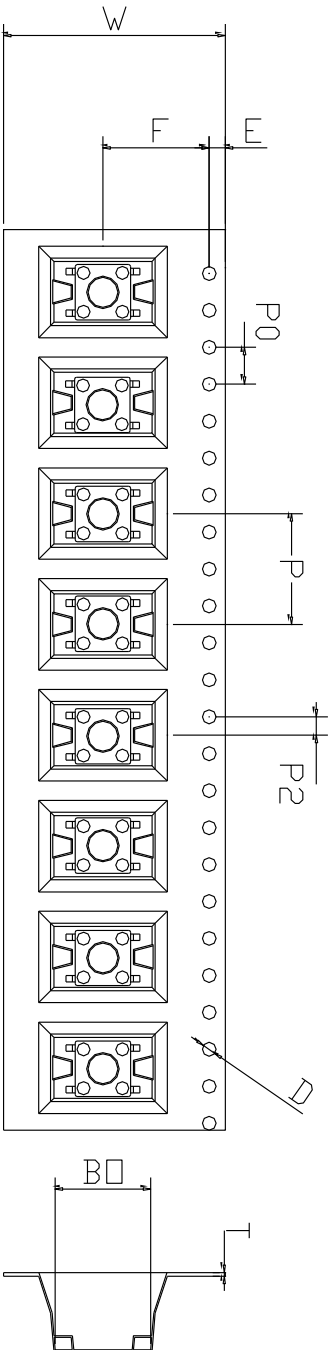
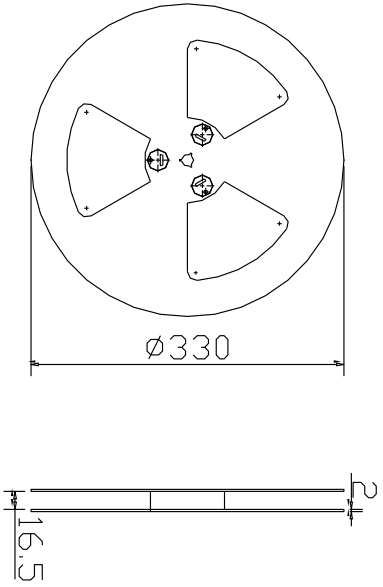
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General tolerance: ± 0.2 mm H= 5.0 ± 0.2 mm

NO.	NAME	MATERIAL	QTY.	FINISHING
1	Terminal	Brass	1	Silver plating
2	Case	FR52	1	Black
3	Contact	Phosphor bronze	1	Contact side silver plating
4	Cover	SUS	1	
5	Stem	FR52	1	Black

ITRM	W	AD	BD	KD	P	F	E	D	PD	P2	T
DIM	16	6.3	10.3	5.2	12	7.5	1.75	1.5	4	2	0.4
TOL	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	$+0.1$ -0	±0.1	±0.1	±0.05



1. 1000pcs/reel, 20,000pcs/carton
2. Reel color: black

Title		Change file		Material		HRC		The weight proportion	
Tab	Revise	Change file number	File name	Material	Pattern number	HRC	The weight	Proportion	
Design				Came					
Draw diagrams approved									
Buy period				A total of 1 page		Page 1			

Type: CT20042-2

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