

# 产 品 规 格 书

PRODUCT SPECIFICATION

产品名称: 轻触开关  
ITEM: TACT SWITCH

产品型号: KAN0649-0431B1-CL15  
TYPE:

制 订: 刘叶泉  
DRAWN:

审 批: 彭 飞  
APPD:

发布日期: 2019.3.27  
DATE:

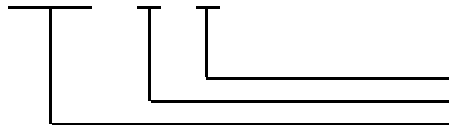


CUSTOMER	CUSTOMER'S P/N	GYE'S P/N	PRODUCT	REVISION
		KAN0649-0431B1-CL15	TACT SWITCH	A

## A. Specification & meanings

The name of the tact switch is composed by type and specification, the particular meaning of the type、specification and code is as follows.

KAN0649— □□□ □ □



Press force (refer to chart 3)  
Stem color (refer to chart 2)  
Product height (refer to chart 1)

1、 **Product height:** It is denoted by three figures; For examples,“075”expresses the product which the total height is 7.5mm,as chart 1 shows:

Code	Product height	Code	Product height	Code	Product height
043	4.3	085	8.5	153	15.3
050	5	090	9		
060	6	095	9.5		
070	7	100	10		
073	7.3 (Joint stem)	110	11		
075	7.5	130	13		
080	8	150	15		

2、 **Stem color:** It is expressed by a figure, as chart 2 shows:

Color	Black	Red	White	Blue	Yellow	Blue	Gray
Code	1	2	3	4	5	6	7

3、 **Operating force:** An English letter expresses it, unite: Newton (N),as chart 3 shows:

force Code	Operating Spec		Press force	Return force
	Operating Spec	Press force		
A	1.0	1.0±0.3	0.2min	
B	1.6	1.6±0.5	0.4min	
C	2.6	2.6±0.5	0.6min	

Examples: “KAN0641-0431B” denotes the tact switch with 6×6 base, the height is 4.3mm,the stem is black , the operating force is 1.6N,The cover and the base material is PPA, It is waterproof products.

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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)

-20℃~70℃(在标准大气压、标准湿度条件下)

-20℃~70℃ (Normal humidity, normal air pressure)

1.3 贮藏温度范围(Storage Temperature Range)

-30℃~80℃(在标准大气压、标准湿度条件下)

-30℃~80℃ (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℃~35℃

Normal temperature.....5℃~35℃

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℃±2℃

Temperature.....20℃±2℃

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: 建议半个月使用完毕;

Opened status: use up within half of 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 (有效值)

Ratings: 12V DC, 50mA (effective value)

## 3. 电气性能:

## ELECTRICAL SPECIFICATION

项 目 ITEM		试 验 条 件 TEST CONDITIONS	要 求 REQUIREMENTS		
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.	$\leq 100\text{m}\Omega$		
2	绝缘电阻 Insulation Resistance	在端子之间施加 DC 100V /1min 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.	$\geq 100\text{M}\Omega$		
3	介质耐压 Dielectric voltage proof	在端子之间施加 250V AC(50HZ 或 60HZ)/1min 250V AV (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
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4	触点弹力 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弹力 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> <p>开关 Switch</p> <p>示波器 Oscillograph</p> <p>“导通” “ON”</p> <p>“断开” “OFF”</p>	<p>ON-3msec.max OFF-8msec.max</p>
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4. 机械性能：  
MECHANICAL SPECIFICATION

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>	refer to chart 3
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项目 ITEM		试验条件 TEST CONDITIONS			要求 REQUIREMENTS
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
3	回弹力 Return Force	<p>开关垂直于操作方向放置，在开关驱动件顶端中心下降至全行程后，测量顶端向自由位置转换的力度。 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.</p>			refer to chart 3
4	停止强度 Stop Strength	<p>开关垂直于操作方向放置，从操作方向向驱动件施加 30N 的静负荷持续 1min。 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.</p>			无机械和电气损坏 There shall be no sign of damage mechanically and electrically.
5	手柄拔出 强度 Stem Strength	<p>开关垂直于操作方向放置，反方向实施最大操作力，并测量手柄的行程范围。 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.</p>			20N.min.
6	耐焊接热 Soldering heat resistance	<p>样品应放在常温及标准湿度的环境中 1 小时后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurement are made:</p>			无机械和电气损坏
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# APPROVAL SPECIFICATIONS

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项目 ITEM		试验条件 TEST CONDITIONS			要求 REQUIREMENTS
6	耐焊接热 Soldering heat resistance	(1) 温度和浸焊时间: 260±5℃,5s±1s Temperature and Immersion time: 260±5℃, 5s±1s			There shall be no sign of damage mechanically and electrically.
7	可焊性 Solderability	在以下设定条件下进行测量: Measurements shall be made following the test set forth below: (1) 焊接温度:245±5℃ Solder temperature : 245±5℃ (2) 浸入时间:2s±0.5s Immersion time: 2s±0.5s 对于其它步骤参考《GB 5095.6—86》试验 12a The other steps please refer to 《GB 5095.6-86》TEST 12a			除边缘外涂层应均匀覆盖 90%以上 Except for the edge, the coating should cover a minimum 90%
5、极限电气性能: ENVIRONMENTAL SPECIFICATION					
1	低温测试 Resistance to low temperature	样品应放在常温及标准湿度的环境中 1 小时后, 根据下面的测试要求进行测试: 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) 温度: -30±2℃ Temperature :-30±2℃ (2) 时间: 96h Time: 96h			接触电阻: ≤200mΩ Contact resistance: ≤200mΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3
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项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS
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2	高温测试 Heat resistance  样品应放在常温及标准湿度的环境中 1 小时后, 根据下面的测试要求进行测试: 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) 温度: 80±2°C temperature:80±2°C (2) 时间: 96h time: 96h	接触电阻: ≤200mΩ Contact resistance: ≤200mΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3
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3	温度周期性测试 Change of temperature  样品应放在常温及标准湿度的环境中 1 小时后, 根据下面的测试要求进行 5 次循环的温度周期性测试: 测试期间样品应保持干燥 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 waterdrops shall be removed.	接触电阻: ≤200mΩ Contact resistance: ≤200mΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3
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	Temperature	Time
1cycle	-10±2°C	2(hour)
	-10~65°C	1
	65±2°C	2
	65~-10°C	1

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项目 ITEM	试验条件 TEST CONDITIONS		要求 REQUIREMENTS	
4	样品应放在常温及标准湿度的环境中 1 小时后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: <ul style="list-style-type: none"> <li>(1) 温度: 60±2°C temperature: 60±2°C</li> <li>(2) 相对湿度: 90%~95% relative humidity: 90% to 95%</li> <li>(3) 时间: 96h time: 96h</li> </ul>		接触电阻: ≤200mΩ Contact resistance: ≤200mΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3	
5	样品应放在常温及标准湿度的环境中 1 小时并重复 2~3 次后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h and repeat two to three times before measurements are made: <ul style="list-style-type: none"> <li>(1) H<sub>2</sub>S 气体浓度: 3ppm±1ppm H<sub>2</sub>S gas concentration: 3ppm±1ppm</li> <li>(2) 时间: 72h Time: 72h</li> <li>(3) 温度: 40±2°C (90~95%RH) temperature: 40±2°C (90~95%RH)</li> </ul>		接触电阻: ≤200mΩ Contact resistance: ≤200mΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3	
6	在以下设定条件下进行测量： The switch shall be checked after following test: <ul style="list-style-type: none"> <li>(1) 温度: 35°C±2°C temperature: 35°C±2°C</li> <li>(2) 盐溶液浓度: 5±1% (质量百分比) salt solution : 5±1%(solids by mass)</li> <li>(3) 时间: 48h±1h Time: 48h±1 hour</li> </ul> 实验后的盐沉积物后水冲掉 After test,salt deposit shall be removed by running water.		金属件上没有腐蚀斑点 No remarkable corrosion shall be recognized in metal part.	
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**6. 极限机械性能:**
**ENDURANCE SPECIFICATION**

项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS			
1  工作寿命 Operation life	根据下面的测试要求进行测试: Measurement shall be made following the test set forth below: (1) DC 12V, 50mA 带负载 DC 12V, 50 mA resistive load (2) 按动速率: 1-2 次/秒 Rate of operation: 1-2 times/s (1) 按力: 按力的 1-1.5 倍 Operating Force: Operating Force 1-1.5 double (2) 无负载寿命: Average fault-free life <table border="1" style="margin-left: 40px;"> <tr> <td>B</td> <td>1.6</td> <td>100000 次</td> </tr> </table>	B	1.6	100000 次	接触电阻 $\leq 1\Omega$ Contact resistance $\leq 1\Omega$ 按力: 初值的 $\pm 30\%$ Operating Force: initial value $\pm 30\%$ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3
B	1.6	100000 次			
2  振动 Vibration	根据以下给定条件进行测试: Measurement shall be made following the test set forth below: (1) 振动频率范围: 10~55~10Hz Vibration frequency range: 10 to 55 to 10Hz (2) 振幅 (峰-峰): 1.5mm Amplitude: 1.5mm (3) 振动方向: 包括手柄行程方向在内的三个相互垂直的方向 Direction of vibration: Three mutually perpendicular direction including the direction of stem travel (4) 测试时间: 每次 2hours. Duration: Each 2hours.	项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3			

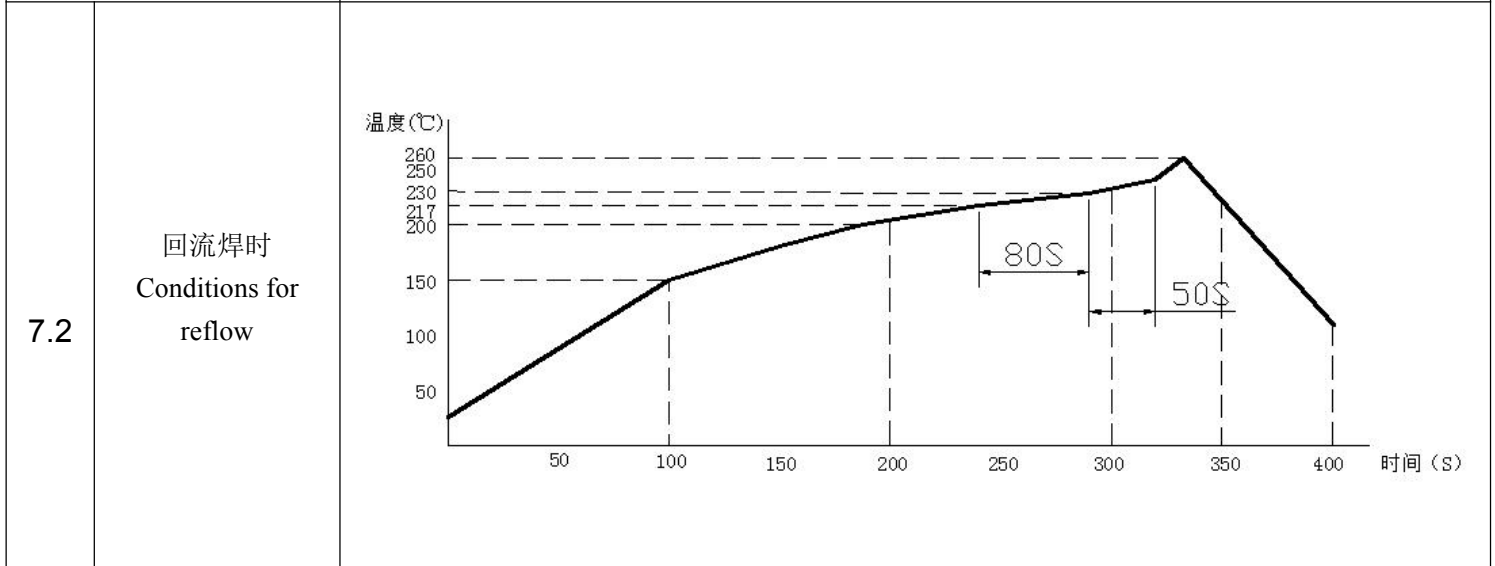
**7. 焊接条件:**
**SOLDERING CONDITIONS:**

7.1  手工焊接 Hand soldering	请按以下条件进行焊接: (1) 焊锡温度: $\leq 350^\circ\text{C}$ (2) 连续焊接时间: $\leq 3\text{ s}$ Please practice according to below conditions: (1) Soldering temperature: $350^\circ\text{C}$ Max. (2) Continuous soldering time: 3 s Max.				
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项目 ITEM	推荐条件 Recommended conditions
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回流焊说明	217°C，80 秒与 230°C 50 秒的耐温条件完全可以满足，230°C 停留的时间考虑锡膏的性能。
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**说明:**

1.1 开关浸焊后，注意不要用溶剂清洗。  
After switches were soldered, please be careful not to clean switches with solvent.

1.2 在使用烙铁的情况下，焊锡温度应在 380°C 以下、3 秒以内。  
In the case of using soldering iron, soldering conditions shall be 380°C max and 3 sec.max.

1.3 浸焊后，注意不要在顶部施加负荷。  
Right after switches were soldered; please be careful not to load to on the knobs of switches.

**2 设计中应注意的事项( Design instructions):**

2.1 印刷基板的安装孔尺寸参见产品图。  
Follow recommended P.W.B. piercing plan in outside drawing page.

**3 注意点(Note):**

3.1 注意不要施加超负荷的压力或晃动开关  
Please be cautions not to give excessive static load or shock to swiches.

3.2 开关浸焊后，印刷基板注意不要叠放。  
Please be careful not to pile up P.W.B.after switches were soldered

3.3 保管时尤其应注意避开高湿高温和有腐蚀性气体的环境。如需要长时间保存，请不要打开包装箱。  
Preservation under high temperature and high high humidity or corrosive gas should be avoided Especially . When you need to preserve for a long period ,do not open the carton .

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**8. 防水性 waterproof test**

防水等级 Waterproof of grade	<p>经过试验的样品应放在常温及标准湿度的环境中风干 0.5 小时后，根据要求进行测试： The tested samples should be dried in the environment of normal temperature and standard humidity for 0.5 hours, and then tested as required.</p> <p>1、温度：常温下 Under the normal temperature</p> <p>2、条件：1 米深下 0.5 小时后取出 Remove from 1 meter depth after 0.5 hours</p>	IP67	<p>实验后簧片无浸水、无腐蚀、无生锈、电阻<math>\leq 100m\Omega</math> After the experiment, there is no water, no corrosion, no rust and the resistance<math>\leq 100m\Omega</math></p> <p>绝缘电阻：<math>\geq 100M\Omega</math> Insulation Resistance<math>\geq 100M\Omega</math></p> <p>耐压测试：在端子之间施加 250V AC (50HZ 或 60HZ) /1min Pressure test:250V AV (50HZ or 60HZ) shall be applied across terminals, for one minute.</p>
	<p>根据与客户协商的条件下进行试验，并且经过试验的样品应放在常温及标准湿度的环境中风干 0.5 小时后，根据要求进行测试： Test according to the conditions negotiated with the customer,The tested samples should be dried in the environment of normal temperature and standard humidity for 0.5 hours, and then tested as required.</p>	IP68	

**9. 焊接说明：SOLDERING EXPLAIN:**

**焊接说明：**

- 1、开关浸焊后，注意不要用溶剂清洗。  
After switches were soldered, please be careful not to clean switches with solvent.
- 1.1 在使用烙铁的情况下，焊锡温度应在 350℃ 以下、3 秒以内。  
In the case of using soldering iron, soldering conditions shall be 350℃ max and 3 sec.max.
- 1.2 浸焊后，注意不要在顶部施加负荷。  
Right after switches were soldered; please be careful not to load to on the knobs of switches.
- 2、设计中应注意的事项( Design instructions)
- 2.1 印刷基板的安装孔尺寸参见产品图。  
Follow recommended P.W.B. piercing plan in outside drawing page.
- 3、注意点(Note):
- 3.1 注意不要施加超负荷的压力或晃动开关。  
Please be cautions not to give excessive static load or shock to swiches.
- 3.2 开关浸焊后，印刷基板注意不要叠放。  
Please be careful not to pile up P.W.B. after switches were soldered.
- 3.3 保管时尤其应注意避开高湿高温和有腐蚀性气体的环境。如需要长时间保存，请不要打开包装箱。  
Preservation under high temperature and high high humidity or corrosive gas should be avoided Especially . When you need to preserve for a long period ,do not open the carton.
- 3.4 使用标准插入机器 PANASERT 和 RH6 (使用 N 式钉)  
Panaset RH and RH6 shall be used as the standard inset machine (use N type clinch)
- 3.5 产品应满足 SONY-SS-00259 环境管理物质管制标准  
Control hanzardous substance :The product should be meet SONY-SSS-00259 speciffication.

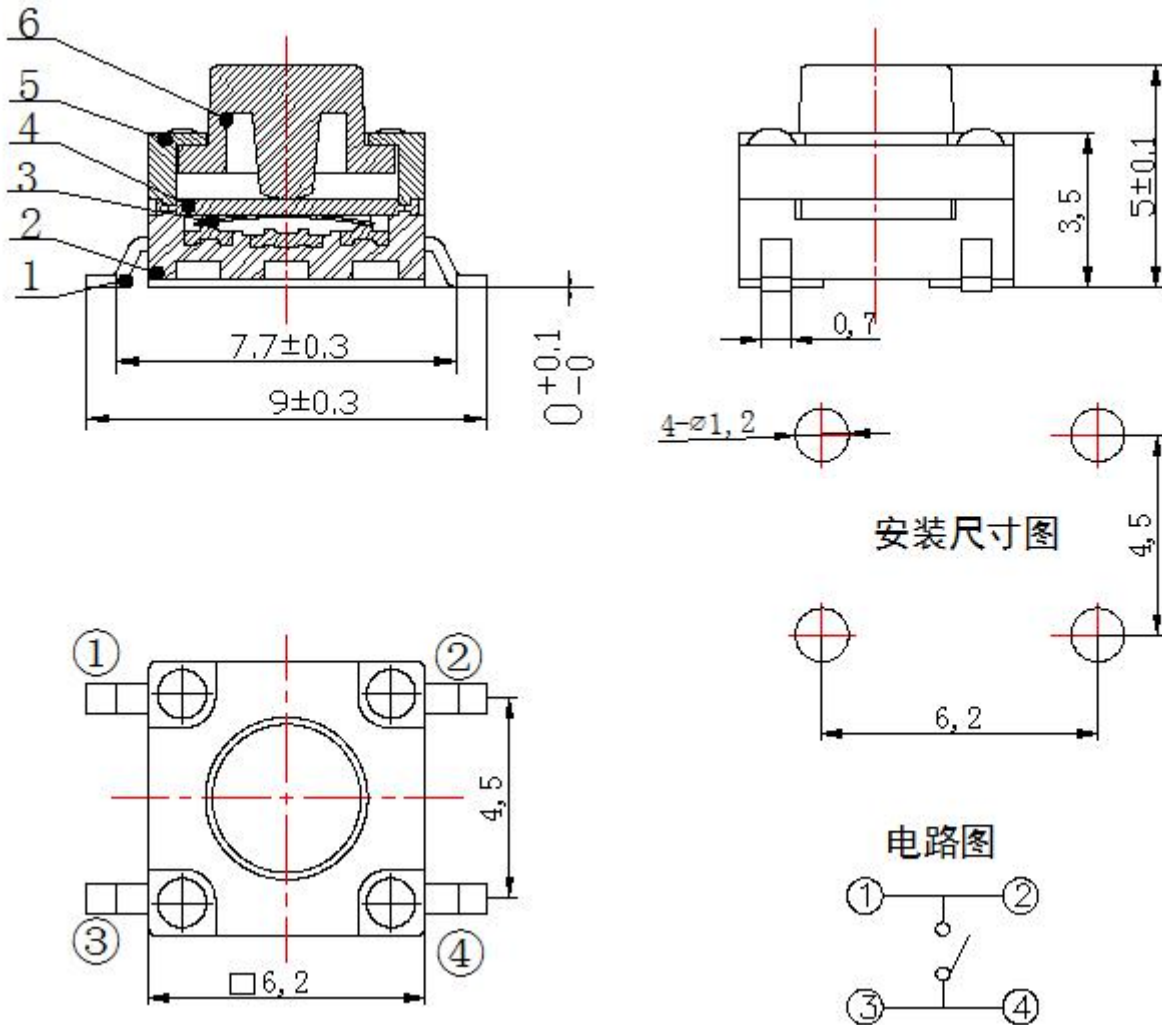
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**GANGYUAN**

# APPROVAL SPECIFICATIONS

CUSTOMER	CUSTOMER'S P/N	GYE'S P/N	PRODUCT	REVISION
		KAN0649-0431B1-CL15	TACT SWITCH	A



General tolerance:  $\pm 0.2$ mm    H=4.3mm

NO.	NAME	MATERIAL	QTY.	FINISHING
1	TERMINAL	Brass	1	Silver plating
2	CASE	PPA	1	Black
3	CONTACT	F.Ag SUS	1	Contact side silver plating
4	防水垫	硅橡胶	1	Black
5	COVER	PPA	1	Black
6	STEM	PPA	1	Black

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