		文件编号 FILE NO.	170306-01
		发布日期 DATE OF ISSUE	2017-03-06
规格书 SPECIFICATION		第 D 版 VERSION NO. D	
产品系列 SERIES	轻触开关 TACT SWITCH	产品型号 TYPE	KAN0616-0501C-C15/449

1、概述

1.1 适用范围

此规格书适用于机械式轻触开关的相关要求

1. 温度范围：

Temperature range:

1.1 保存的温度范围： -25℃~70℃

Storage Temperature range -25℃ to 70℃

1.2 使用的温度范围： -20℃~60℃

Temperature range for use -20℃ to 60℃

2. 测试环境条件：

Test circumstance condition:

环境温度： 16℃

Ambient temperature 16℃

相对湿度： 63%~74%

Relative humidity 63% to 74%

空气压力： 86~106 千帕

Air pressure 86~106KPa

3. 外观、结构和尺寸：

Appearance、 Structure and Dimension:

3.1 外观：

Appearance:

没有生锈，伤痕、电镀不良，破裂，剥离现象。动作正常，换位清晰。

Functionally free from rust, crack and bad plating.

3.2 结构和尺寸：


Structure and Dimension:


参照有关外形图

Reference per attached outline drawing.


4. 额定值： DC 12 V 50mA


Rating: DC 12 V 50mA

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5. 机械性能: Mechanical performance:			
项目 Items		试验条件 Test conditions	规格 Requirements
5.1	按力 Press force	<p>开关垂直于操作方向放置，在驱动件顶端中心逐渐施力，测量开关导通所需的最大力度。</p> <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 knob the maximum load for the knob to come to a stop shall be measured.</p>	260±30 克
5.2	行程 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于驱动件顶端中心，测量顶端的移动距离。</p> <p>Placing the switch such that the direction of switch operation is vertical and then applying a static load twice the operating force to the center of the knob, the travel distance for the knob to come to a stop shall be measured.</p>	1.2±0.1mm
5.3	回弹力 Return force	<p>开关垂直于操作方向放置，驱动件顶端中心下降至全行程后，测量顶端向自由位置返回的力度。</p> <p>The sample switch is installed such that the direction of switch operation is vertical, and upon depression of knob in its center the whole travel distance, the force of the knob to return to its free position shall be measured.</p>	0.9Nmin
5.4	驱动件强度 Actuator Strength	<p>在驱动件顶端面中央，施加 10 牛顿的力于按压方向的停止位上 5 秒。</p> <p>To the press direction 10N until the stop for 5 sec.</p>	<p>满足 5.1、6.1-6.3 项要求且操作元件不被损坏或太松。</p> <p>Item 5.1、6.1 to 6.3 shall be satisfied. Without damage of actuator. Function and action is in gear.</p>

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项目 Items	试验条件 Test conditions		规格 Requirements
5.5	接线端强度 Connection Port Strength	接线端任意方向施加 5 牛顿的力，持续时间：10±1 秒。 To any the connection place pull 5N, 10±1sec.	接线端无损伤，脱落； 功能动作正常 Without damage of connection Port function and action is in gear.
5.6	可焊性 Solder-Ability	(1) 焊接温度:235±5℃ Solder temperature : 235±5℃ (2) 浸入时间:2s±0.5s Immersion time: 2s±0.5s	大于浸入部分的 90% 被焊锡覆盖。 More than 90% of the dipping part shall be covered by solder.
5.7	耐焊接热 Soldering heat resistance	端子的焊接部分浸入温度为 240±5℃ 熔融的焊锡内 5±1 秒。 The soldering area of the terminal shall be immersed into molten solder at a temperature of 260±5℃ for 5±1 sec.	1) 不能出现变形 There shall not be deforming in appearance 2) 满足 5.1, 6.1 to 6.3 项要求 The requirements specified in Item 5.1, 6.1 to 6.3 shall be satisfie.
6. 电气性能: Electrical performance:			
6.1	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.	50 毫欧以下 50mΩ or less
6.2	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.	100 兆欧以上 100MΩ or more

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项目 Items	试验条件 Test conditions		规格 Requirements	
6.3	耐压 Withstand Voltage	在端子之间施加250V AC(50HZ 或60HZ)/1min 250V AC (50HZ or 60HZ) shall be applied across terminals, for one minute.	应无闪弧及击穿现象。漏电流<0.5mA. No arcing or break down shall occur. Trip current<0.5mA.	
6.4	振动 Librate	振频 10-500Hz 振幅位移幅值: 0.35mm; 加速度幅值: 50m/s ² , 每次扫描时间: 11 分钟。 共进行 5 次循环。 Librate frequency:10-500Hz Swing: Extent cost displacement should be 0.35mm; The accelerated extent cost should be 50m/s ² . The scan time:11 minutes once a time. Do it for five times.	应满足 6.1 项, 外观无明显异常, 功能动作应正常 Item 6.1 shall be satisfied, the facade of the switch have no abnormality, motion and function is good.	
7. 耐候性 Weatherality				
7.1	恒定湿热 Invaria-Blenes Damp Heat	放置在温度为 40±2℃, 相对湿度为 90-95% 的环境中 96 小时, 然后再放在标准大气环境中 1 小时, 在此后 1 小时内进行测量。 Switch for test shall be stored at a temperature 40±2℃, and a relative humidity of 90-95% for 96 hours. Then the switch shall be maintained at standard atmospheric conditions for an hour after which measurement shall be made within 96hour.	接触电阻. 参照 6.1 Contact resistance. Refer to Item 6.1	100 毫欧以下 100mΩ or less
			绝缘电阻. 参照 6.2 Insulation resistance. Refer to Item 6.2	100 兆欧以上 100MΩ or more
			耐电压. 参照 6.3 Withstand voltage. Refer to Item 6.3	应无闪弧及击穿现象 No arcing or break down Shall occur.
			操作力和外观 Operating force and appearance	满足第 5.1 中的要求, 塑件没有出现变形或裂纹, 没有出现严重变色及生锈。 Item 5.1 shall be satisfied, there shall be no deformation or cracks in molded part or excessive rust and discoloration.

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项目 Items	试验条件 Test conditions		规格 Requirements	
7.2	高温 Dry heat proof	储放在 $70\pm 2^{\circ}\text{C}$ 的温箱中 16 小时后, 在标准大气环境中放置 1 小时, 然后在 1 小时之内测量。 Switch for test shall be stored at a temperature of $70\pm 2^{\circ}\text{C}$ for 16 hours, and at standard atmospheric Conditions for 1hour then to be measured within an hour.	满足第 3.1, 5.1, 6.1 至 6.3 中的要求 The Item 3.1, 5.1, 6.1 to 6.3 shall be satisfied.	
7.3	低温 Cold Proof	储放在 $-25\pm 3^{\circ}\text{C}$ 的冰箱中 16 小时后, 在标准大气环境中放置 1 小时, 然后在 1 小时之内测量。 Switch for test shall be stored at a temperature of $-25\pm 3^{\circ}\text{C}$ for 16 hours, and at standard atmospheric conditions for 1hour then to be measured within 1 hour.		
8. 耐久性能 Durability				
8.1	寿命试验 Life Test	30,000 cycles of a knob operation shall be performed continuously at a rate of 2~3 cycles/sec. 操作元件以每秒钟 2~3 次的速度连续完成 30,000 次动作。	按力. 参照 5.1 Press force. Refer to Item 5.1	初始力度值 $\pm 30\%$ $\pm 30\%$ of initial force
			接触电阻. 参照 6.1 Contact resistance .Refer to Item 6.1	100 毫欧以下 100 m Ω or less
			绝缘电阻. 参照 6.2 Insulation resistance. Refer to Item 6.2	100 兆欧以上 100M Ω or more
			耐电压. 参照 6.3 Withstand voltage. Refer to Item 6.3	应无闪弧及击穿 No arcing or Break down shall occur.

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9. 焊接条件:

Soldering conditions:

项目 Items		推荐条件 Recommended conditions	
9.1	手工焊接 Manual soldering	适用于手焊接对应产品 Available for Manual Soldering Type 请按以下条件进行焊接: (1) 焊锡温度: $\leq 250^{\circ}\text{C}$ (2) 连续焊接时间: $\leq 3\text{s}$ Please practice according to below conditions: (1) Soldering temperature: 250°C Max. (2) Continuous soldering time: 3s Max..	
9.2	自动浸焊 Conditons for Auto-dip	适用于接入式、径向型 Available for Snap-in Type and Radial Type	
		项目 Items	条件 Condition
		助焊剂附着量 Flux buit-up	不附着于零部件贴装面的程度 Mounting surface shoud not be coated with flax
		预热温度 Preheating temperature	印刷电路板焊接面的周围温度 100°C max. Ambient temperature of the soldered surface of PC board. 100°C max.
		预热温度时间 Preheating time	60s max.
		焊接温度 Soldering temperature	240°C max.
		焊接浸渍时间 Continuous dipping time	5s max.
		焊接次数 Number of soldering	2 次以下 2times max.



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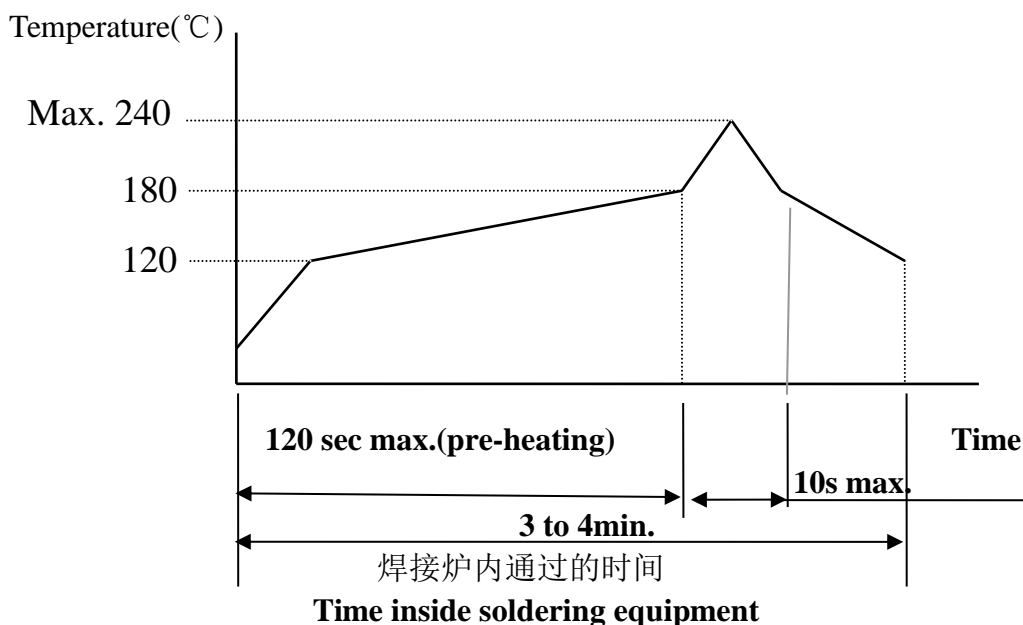
产品系列
SERIES

轻触开关
TACT SWITCH

产品型号
TYPE

KAN0616-0501C-C15/449

适用于 SMD 产品
Available for Surface Mount Type.



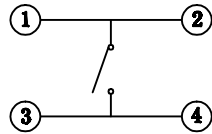
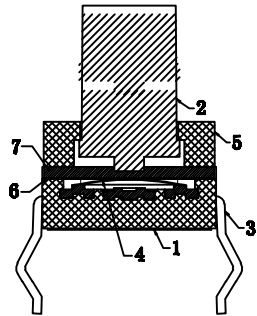
9.3

回流焊时
Conditions for
reflow

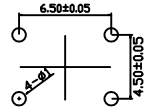
说明：以上提及的条件是零部件上 PWB 表面的温度，由于 PWB 的材料，尺寸、厚度等不同 PWB 从开关表面获得的温度也会有很大的不同，因此，千万小心不要让开关表面的温度超过 260°C。

Caution: The condition mentioned above is a temperature on the PWB surface on which parts mounted. There are cases where PWB temperature greatly differs from switch's surface temperature depending on PWB material, size, thickness, etc. Care, therefore, should be used not to allow switch's surface temperature to exceed 260°C.

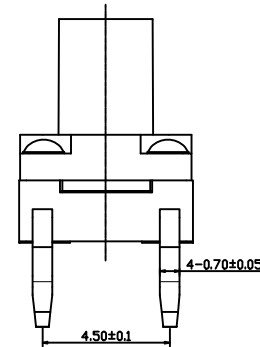
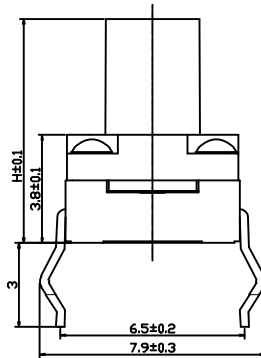
TS-G003



电路图



PCB. 焊接图



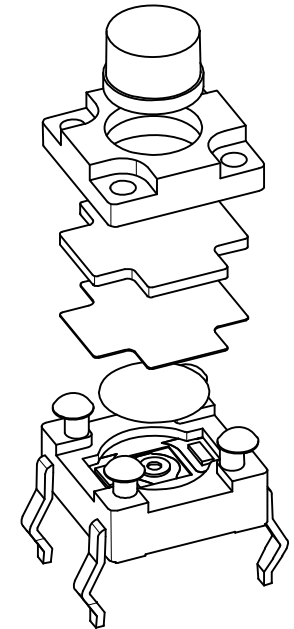
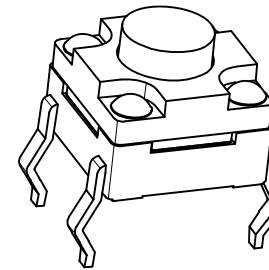
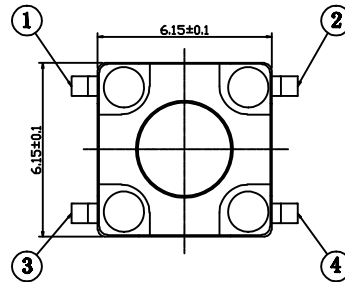
H	H
4.3	4.5
5.0	5.5
6.0	6.5
7.0	7.5
8.0	8.5
9.0	9.5

主要技术规格:

1. 额定值: 50mA DC12V
2. 接触电阻: $\leq 100m\Omega$
3. 操作力: $250 \pm 40gf$
4. 行程: $0.25 \pm 0.1mm$
5. 绝缘电阻: $\geq 100M\Omega$
6. 抗电强度: 250V 50HZ 1Min.
7. 寿命: 100,000 Cycles

材料:

- | | | |
|---------|-----|-------|
| 1. 本体: | PPA | (黑色) |
| 2. 按钮: | PPA | (黑色) |
| 3. 卡件: | 黄铜 | (镀银) |
| 4. 弹片: | 不锈钢 | (复银) |
| 5. 盖板: | PPA | (黑色) |
| 6. 防水层: | PE | (橙黄色) |
| 7. 防尘胶: | 硅胶 | (黑色) |



					第一视角		名称: 轻触开关	
							型号: KAN0616-0501C-C15/449	
标记	处数	更改文件号	签名	日期	比例	一般公差		
设计		盛方坤		2016.05.08	单位	mm	>0.5-2 ±0.10	
审核		孙斌		2016.05.10	重量		>2-5 ±0.25	
批准		吴观江		2016.05.12			>5-10 ±0.30 角度 ±0.5°	