

Product change notification

PCN13-12 – PTS635

Document revision

Revision	Date	Description	Author
A	October 22, 2013	Creation	J. Smolinski

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1. Purpose

C&K components, as design and manufacturing company for micro-miniature tact switches, is constantly looking to improve the manufacturing means and processes in order to continue serving its customers with the highest performance level

As part of this continuous improvement policy, C&K Components is streamlining its PTS635 SMT J lead version in 2.5 mm height

2. Overview

The PTS635 SX25 SMTR LFS production is being streamlined with other similar products and is being replaced by the C&K Huizhou series RS-285G05AX-U RT

3. Part numbers affected

- PTS635 SL25 SMTR LFS – Y96L251B1FP LFS
- PTS635 SK25 SMTR LFS – Y96L254B1FP LFS

Details and cross reference are in Annex 1

4. Reason for Change

Combination of production units and rationalization of product range for the most efficient and qualitative tooling

5. Date of application

- Last time buy: April 30, 2014
- Last time delivery: 12 weeks after reception of last order

6. Acknowledgement

We kindly ask you to acknowledge this information to your Sales Representative

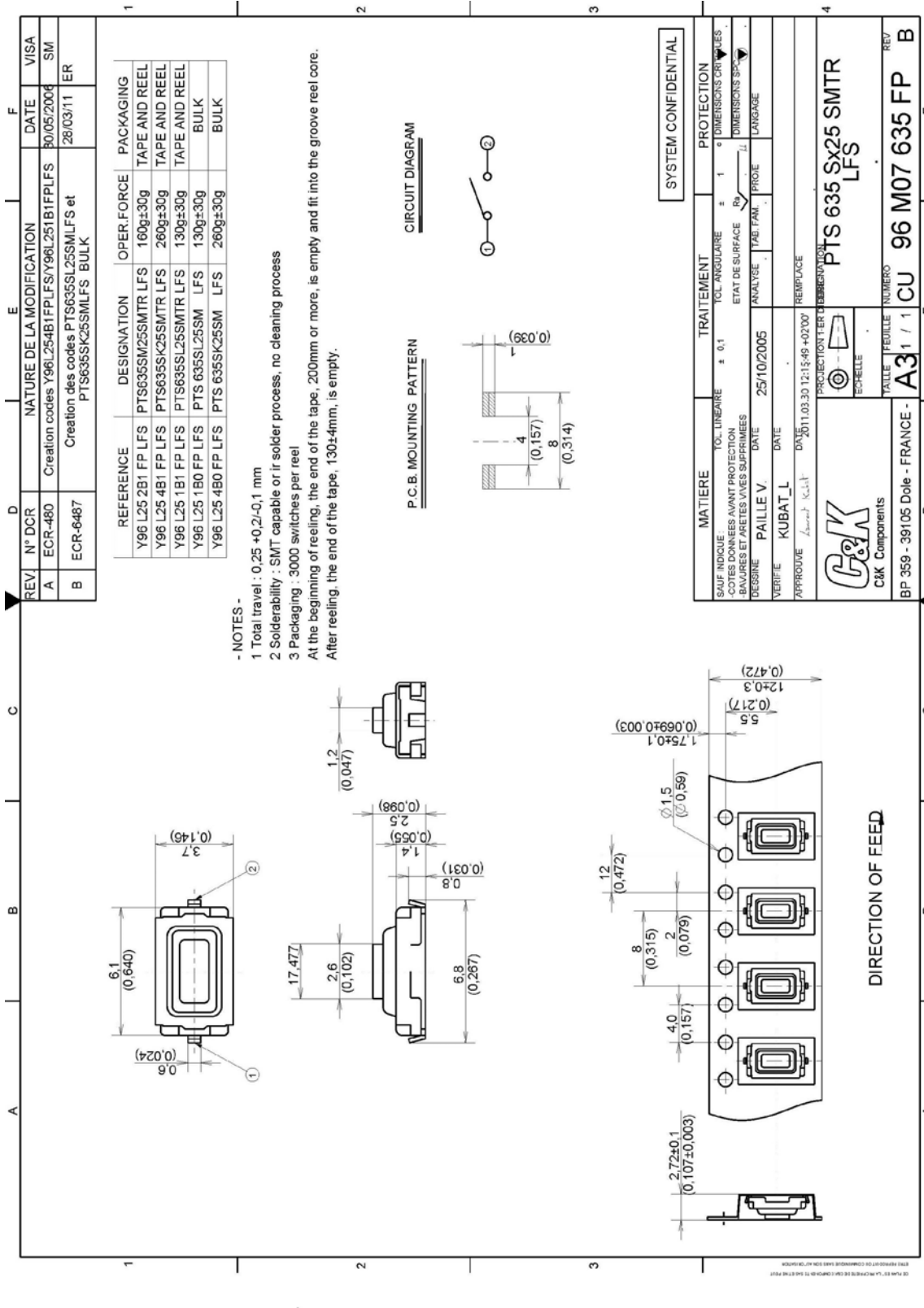
7. Support

For any question, feel free to contact: jerome.smolinski@coactive-tech.com

ANNEX 1

Old C&K part Number	Old C&K description	New C&K Description
Y96L251B1FP LFS	PTS635 SL25 SMTR LFS	RS-285G05A2-U RT
Y96L254B1FP LFS	PTS635 SK25 SMTR LFS	RS-285G05A3-U RT

Annex 2



ANNEX 3 – Drawing and Specifications RS-285G05AX-U RT



产品规格书

Product Specification

编 号 No.: SPC-5019-02
版 本 Version: A
页 码 Page: 1 of 9
发出日期 Issued on: 2013-9-16

客户名称 Customer: _____
客户部件号 Customer Part No: _____
高铭产品名称 Comax Product Name: 触摸开关 Tact Switch
高铭产品型号 Comax Item No: RS-285G05A2-U RT

规格书确认 Specification For Approval

确认者 Approval by

备注 Remark:

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This Product Specification is considered as the technical agreement on product between the receiving customer and Comax. Any information on the Product Catalogue which is in conflict with or different from the corresponding information of this document is considered as invalid.

2. 如果顾客收到规格书后没有信息反馈而直接向我公司订货, 我们将认为贵客已接受此规格书。

If customer issue purchase orders without confirmation by signature of this specification after receipt, such confirmation will be considered as granted upon receipt of the first purchase order.

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若确认此规格书, 请签复此页. Please return this copy as a certification of your approval.

规格书更改记录 Record of Change Specification

版本	修改总项	明细	日期	拟制
Version	History×Count	Details	Date	Pred

生产地: 中国 Country of Origin: China

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审核 Checked by: 王光云 2013-9-16

批准 Approved by: 廖铁军 2013-9-16

1. 一般特性 General Characteristics:

1.1 适用范围 Application	该规格书指触摸开关的一般使用范围 This specification is applied to the tact switch for general applications
1.2 使用温度范围 Operating Temperature Range	-30℃ 到 +90℃ -30℃ to +90℃
1.3 使用相对湿度范围 Operating Relative Humidity Range	≤96%RH, +40℃ ≤96% at +40℃
1.4 保存温度范围 keep Temperature Range	-40℃ 到 +90℃ -40℃ to +90℃
1.5 实验条件 Test Conditions	若没有特别说明，则试验大气条件如下 Unless otherwise specified the atmospheric conditions for making measurements and tests are as follows 环境温度 Ambient Temperature: 5-35℃ 大气压力 Air Pressure: 86-106Kpa (860-1060mbar) 相对湿度 Relative Humidity: 45-85%RH
1.6 回路数 Function	1 回路 1 接点 1 Pole 1 Throw
1.7 切换类型 Change Over Timing	先断开后导通 Non-shorting

2. 外观，结构及尺寸 Appearance Structure and Dimensions

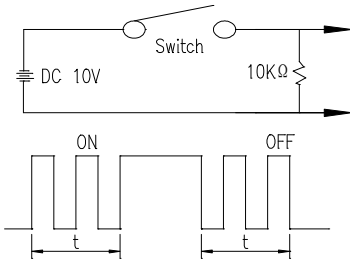
2.1 外观 Appearance	产品外观良好，无锈蚀、裂纹和镀层缺陷。 The switch shall have good finishing, and no rust, crack or plating Defects.
2.2 结构及尺寸 Structure & Dimensions	参见产品图纸 ITEM3079-01 Refer to individual product drawing ITEM3079-01
2.3 标识 Markings	参见产品图纸 ITEM3079-01 Refer to individual product drawing ITEM3079-01

3. 额定负荷及寿命 Ratings & Life

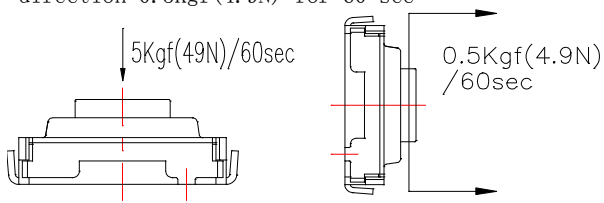
额定负荷 Ratings	DC 12V 50mA Max. DC 1V 10μA Min.
负荷寿命 Operating life with load	100,000 次 cycles

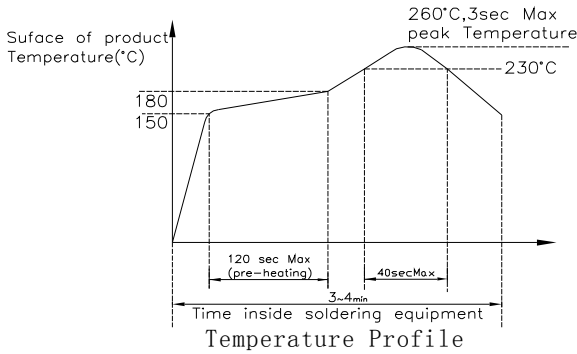
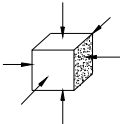
4. 电气性能 Electrical Characteristics

	项目 Item	实验方法 (Test Method)	标准 Criteria
4.1	初期接触电阻 Initial Contact Resistance	以 1KHz±200Hz (20mV Max, 50mA Max) 或采用低电阻测试仪测量。 Shall be measure at 1KHz±200Hz (20mV Max, 50mA Max) or measure by low ohm meter.	100mΩ Max.
4.2	绝缘电阻 Insulation Resistance	在相互绝缘的所有端子之间及各接线端子与金属外壳之间加载 DC100V，持续时间 60±5 秒。 A voltage of DC100V shall be applied between open Terminals, and between the terminal and the metal frame for 60±5Sec.	100MΩ Min.
4.3	抗电强度 Dielectric Voltage	在相互绝缘的所有接线端子之间及各接线端子与金属外壳之间加载 AC250V (50-60Hz) 泄漏电流 10mA，持续时间 60±5 秒 A voltage of AC250V (50-60HZ), 10mA trip current Shall be applied between open terminals, and between The frame and the terminal for 60±5Sec.	无击穿现象发生。 No dielectric breakdown shall occur.

4.4	触点跳跃 Bounce	<p>操作速度：每秒 3~4 次 Operate second:3~4 times</p> 	<p>ON: 10ms Max. OFF: 10ms Max.</p>
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5. 机械性能 Mechanical Characteristics

项目 Item	实验方法 Test Method	标准 Criteria
5.1 操作力 Operating Force	<p>在操作元件顶端沿操作方向均匀施加载荷，使操作元件转换到动作位置。 A load shall be applied to the tip of actuator in operating direction to change the component to operating position.</p>	160^{+50}_{-30}gf
5.2 回复力 Releasing Force	<p>在操作元件顶端沿操作方向均匀减少载荷，使操作元件从动作位置转换到释放位置。 A load shall be reduced to the tip of actuator in operating direction to change component from operating position to release position.</p>	$\geq 50\text{gf}$
5.3 行程 Travels	<p>从自由位置到动作位置的距离。 The distance from initial position to operating Position.</p>	$0.25^{+0.2}_{-0.1}\text{ mm}$
5.4 接线端强度 Terminal strength	<p>以 500gf/4.9N 静载荷作用于接线端末端任一方向，保持 60 秒，每个接线端子测量一次。 A static load of 500gf/4.9N shall be applied to The Top of terminal in a desired direction for 60 Sec. The test shall be done once per terminal.</p>	<p>端子无松动，损坏及绝缘层的破裂。 Shall be free from terminal looseness damage and insulator breakage. 电气性能应符合第 4 部分的要求。 The electrical performance requirements specified in section 4 shall be satisfied.</p>
5.5 胶柄强度 Actuator strength	<p>在胶柄顶部沿操作方向施力 5Kgf/49N 静负载持续 60 秒，在胶柄沿操作反方向施加静负载 0.5Kgf(4.9N) 持续 60 秒 A static load of 5.1Kgf/50N shall be applied in the operating direction at the top of knob for 60 sec ,A static load to the Knob in the operating opposite direction 0.5Kgf(4.9N) for 60 sec</p> 	<p>无外观及功能损坏，电气性能应符合第 2.1~2.3 部份的要求 No abnormalities shall be observed in appearance and operation. The electrical Performance Requirements specified in item 4.1~4.3 shall be satisfied</p>
5.6 可焊性 Solder Ability	<p>开关在下述参数条件下进行试验 Switch shall be checked after following test (1) 焊料 Solder: Sn-3Ag-0.5Cu (2) 焊剂 Flux: Rosin Flux JIS K 5902 (3) 焊接温度: $245\pm 3^{\circ}\text{C}$ 焊接时间: $3\pm 0.5\text{ Sec}$ Soldering Temperature: $245\pm 3^{\circ}\text{C}$ Immersing Time: $3\pm 0.5\text{ Sec}$</p>	<p>超过 90%的焊锡面积被焊料所覆盖。 More than 90% of immersed part shall be covered with solder.</p>

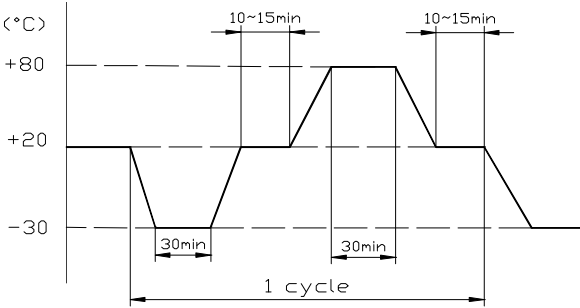
5.7	耐焊性 Solder Heat Resistance	<p>回流焊接条件 Reflow soldering conditions</p> <p>预热:被焊接部品进入焊接设备之后的 120±18 秒, 铜片表面的温度可达到 180℃</p> <p>Preheat: Temperature on the copper foil surface Should reach 180℃, 120±18 second after the P.W.B entered into the soldering equipment.</p> <p>焊接温度:被焊接部品进入焊接区的 40 秒内, 铜片表面温度最高可达 260℃。</p> <p>Soldering heat: Temperature on the copper foil surface should reach the peak temperature of 260℃ within 40 seconds after the P.W.B enter into soldering heat zone.</p>  <p>Temperature Profile</p>	<p>产品两次回流焊后无外观及功能损坏, 电气性能应符合第 4.1~4.3 部份的要求</p> <p>No abnormalities shall be observed in appearance and operation.</p> <p>The electrical Performance Requirements specified in item 4.1~4.3 shall be satisfied . After the secondly solder.</p>
5.8	耐振性 Vibration	<p>开关采用常规的安装方法牢固地安装在试验设备上, 并在下述参数条件下进行试验:</p> <p>Switch shall be secured to a testing machine by a normal mounting device and method. Switch shall be measured after following test.:</p> <p>(1) 振频(Vibration frequency range)=10~55Hz</p> <p>(2) 振幅(Total amplitude)=1.5mm</p> <p>(3) 振动变化速率(Sweep ratio): 10~55-10Hz 大约 1 分钟(Approx. 1 min.)</p> <p>(4) 变频方法: 对数或线性形式 (Method of changing the sweep vibration frequency: logarithmic or linear)</p> <p>(5) 振动方向: 三个相互垂直的方向, 其中一个方向应是促动元件运动的方向 (Direction of vibration: Three perpendicular directions including actuating direction.)</p> <p>(6) 时间: 每个方向 2 小时(共 6 小时)</p> <p>Duration : 2 hours / direction (6 hours in total)</p>	<p>电气性能应符合第 4 部份的要求</p> <p>Electrical characteristics of items 4.1~4.3 shall be satisfied.</p> <p>机械性能应符合 5.1~5.3 项要求</p> <p>Mechanical characteristics of items 5.1~5.3 shall be satisfied.</p>
5.9	耐冲击性 Shock	<p>试件在下述参数条件下进行试验:</p> <p>Switch shall be measured after following test:</p> <p>(1) 安装方法: 常规方法(Mounting Method: Normal)</p> <p>(2) 加速度(Acceleration): 784m/s²(80G)</p> <p>(3) 时间(Duration): 11±1ms</p> <p>(4) 实验方向: 图示 6 方向(Test Direction: 6 directions)</p> <p>(5) 冲击次数: 每个方向 3 次(总共 18 次)</p> <p>Number of shocks: 3 times per direction (18 times in total)</p> 	<p>电气性能应符合第 4 部份的要求</p> <p>Electrical characteristics of items 4.1~4.3 shall be satisfied.</p> <p>机械性能应符合 5.1~5.3 项要求</p> <p>Mechanical characteristics of items 5.1~5.3 shall be satisfied.</p>

6. 寿命试验Durability Characteristics

	项目 Item	实验方法 Test Method	标准 Criteria
6.1	负荷寿命 Operating Life With Load	在带负荷 DC12V 50mA 的条件下，在寿命试验设备上连续转换 100,000 次. (120-180 次/分). 100,000 cycles of operation shall be performed continuously at a rate of 120-180 cycles per minute with DC12V 50mA load.	实验后 After test: 接触电阻: 200mΩ Max. Contact resistance: 200mΩ Max. 绝缘电阻: 10MΩ Min. Insulation resistance: 10MΩ Min. 抗电强度应符合第 4.3 项的要求。 Electrical performance Requirements specified in item 4.3 shall be satisfied. 操作力变化范围:规格值±30% Operating force range: ±30% Specified value 开关外观及结构应无损坏。 The switch shall be free from Abnormalities in appearance & construction.

7. 耐候性能 Weather Proof Characteristics:

	项目 Item	实验方法 Test Method	标准 Criteria
7.1	低温 Cold Proof	开关在-40±2℃的温控箱内保持 250 小时，然后在正常温度和湿度下恢复 2 小时，并在此后 1 小时内对开关进行测量，水滴应消失。 After testing at -40±2℃ for 250 hours the switch Shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that Water drops shall be eliminated.	实验后 After test: 接触电阻: 200mΩ Max. Contact resistance: 200mΩ Max. 绝缘电阻: 10MΩ Min. Insulation resistance: 10MΩ Min. 抗电强度应符合第 4.3 项的要求 Electrical performance requirements specified in item 4.3 shall be satisfied
7.2	高温 Hot Proof	开关在 90±2℃的温控箱内保持 250 小时，然后在正常温度和湿度下恢复 2 小时，并在此后 1 小时内对开关进行测量。 After testing at 90±2℃ for 250 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1hour after that.	操作力变化范围:规格值±10% Operating force range: ±10% Specified value 开关外观及结构应无损坏 The switch shall be free from abnormalities in appearance and construction.
7.3	恒定湿热 Moisture Resistance	开关在 60±2℃，90-95%RH 的温控箱内保持 250 小时然后在正常温度和湿度下恢复 2 小时，并在此后 1 小时内对开关进行测量，水滴应消失。 After testing at 60±2℃ ,90-95% RH for 250 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that Water drops shall be eliminated .	

7.4	温度转换 Temperature Cycling	<p>开关按下述实验条件试验 50 个循环,然后在正常温度和湿度下恢复 2 小时,并在此后 1 小时内对开关进行测量,水滴应消失。 After 50 cycles of following conditions the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that. Water drops shall be eliminated .</p> 	<p>实验后 After test: 接触电阻: 200mΩ Max. Contact resistance: 200mΩ Max. 绝缘电阻: 10MΩ Min. Insulation resistance: 10MΩ Min. 抗电强度应符合第 4.3 项的要求 Electrical performance requirements specified in item 4.3 shall be satisfied 操作力变化范围: 规格值±10% Operating force range: ±10% Specified value 开关外观及结构应无损坏 The switch shall be free from abnormalities in appearance and construction.</p>
7.5	耐硫化性 Resistance to sulfuration	<p>硫化氢浓度 H₂S Concentration: 3ppm 温度 Temperature: 40℃ 相对湿度 Relative Humidity: 80%RH 时间 Time: 96h</p>	<p>实验后 After test: 接触电阻: 200mΩ Max. Contact resistance: 200mΩ Max. 其它电气性能应符合 4.2~4.3 项的要求 Other electrical characteristics of items 4.2~4.3 shall be satisfied. 机械性能应符合 5.1~5.3 项要求 Mechanical characteristics of items 5.1~5.3 shall be satisfied.</p>
7.6	盐雾实验 Salt mist	<p>温度 temperature: 35±2℃ 浓度 salt solution concentration: 5±1% 时间 time: (8h spray + 16h not spray) * 3 cycles</p>	<p>Without excessive rust 无明显锈迹</p>

8. 包装要求: (Packing requirement)

	项目 Item	实验方法 Test Method	标准 Criteria
8.1	包装振动 Vibration	<p>(1) 振幅(Total amplitude)=1.5mm (2) 振动变化速率(Sweep ratio): 10-55-10Hz 大约 1 分钟(Approx. 1 min.) (3) 振动方向: 三个相互垂直的方向, 其中一个方向应是促动元件运动的方向 (Direction of vibration: Three perpendicular directions including actuating direction.) (4) 时间: 每个方向2小时 Duration : 2 hours</p>	<p>包装卷轮无损伤, 产品编带完整。 Packaging material must not have any damage 开关正常 The normal switch</p>
8.2	包装跌落实验 Packaging Drop Test	<p>(1) 1 角 3 边 6 面各测试一次 Free fall test will be applied to each surface and edge and corner from a specified height. (2) 边和底面跌落高度为 75CM, 其他为 60CM(10KG 以下) The package is below 10kg, with drop heights as follows: - bottom surface and edge, 75cm - all other, 60 cm</p>	

9. 本产品规格书适用范围The applied scope of the specification

序号 No.	适用范围 Applies the scope	序号 No.	适用范围 Applies the scope
1	RS-285G05A2-U RT	2	
3		4	

注意事项 Precautions for use:

1. 一般事项 General:

本产品主要用于自动化装置, 视像装置, 家用电器, 信息装置及通讯装置等常用电子设备中;如果该产品要用于其它具有更高安全性及可靠性的耐久性设备中(如生命维持装置, 宇宙航空装置, 防灾及安全性装置)时, 请确认是否合用, 或者同我方了解详细情况

The product is used mainly in electronic devices such as automotive devices, visual devices, home electrical appliances, information devices and communication settings. If the products is intended to be used for other endurance equipments requiring higher safety and reliability such as life support system, space and aviation devices, disaster and safety system, it' s necessary to make verification of conformity or contact us for the details before using

2. 焊接安装 Soldering and assembly:

- (1) 如果焊锡时, 有施力在端子部位的话, 则端子可能会变形且易出现电气性能不良
- If there is force applied on the terminal during soldering, the terminal may deform and the electrical characteristics may not be satisfied
- (2) 焊锡条件应按照实际的对应条件予以确认
- The soldering conditions should be confirmed according to the actual production environment
- (3) 焊锡工序完成后, 不要尝试用溶剂或类似物品清洗开关
- Don' t try to clean the switch with a solvent or similar substance after the soldering process
- (4) 开关焊锡后, 还有热量时, 请不要操作开关
- Don' t operate the switch if it still has heat after soldering
- (5) 如使用水溶性助焊剂, 可能会导致开关破损, 因此应确保不要用这种助焊剂
- The switch might be damaged if using the water-soluble flux, so make sure not to use such kind of flux

3. 安装构造, 机械设计 Assembly structure and Mechanical design:

- (1) 线路板上安装孔及安装图示的尺寸都须参照工程图中所建议的尺寸
- The dimensions for the holes and the pattern on PCB should refer to the recommended dimensions on the engineering drawing
- (2) 操作条件 Operating Conditions
- 打键部件的许可倾斜角度为 90±3°
- The allowable inclination of keying section is 90±3°
- (3) 如果施超出规定值的较大重力于开关上, 会导致开关破损, 所以应特别小心防止开关承受超出规定值的较大重力
- The switch might be broken if there is stress stronger than the specified is given on it. Take special care not to stress the switch beyond its specification
- (4) 把本公司的产品和其它产品配合使用时, 请客户确认必须适合的规格、法规或规定。另请客户自身确认本公司产品装到客户使用的系统、机械、装置上的适用性. 如果想变更开关使用条件, 请预先与本公司进行协商
- If the switch is being used together other products, please confirm the compatibility of the specification, laws and regulations. Please also confirm the compatibility of switch to be installed in the systems, machines and devices

used by customer. If you want to change the operating conditions of the switch, please consult with us in advance

4. 使用环境 Operating Environment

(1) 如果该产品常用于产生硫化气体的硫性热源周围或有汽车废气存在的地方, 应特别留意, 因为开关性能可能会受到影响;

If the product is always used near sulfurate hot spring where sulfide gas is generated or in a place where exhaust gas from automobiles exists, it's necessary to pay more attention because the switch performance may be affected.

(2) 如果在安装开关的模组内有以下所描述的部件材料, 需遵循以下要求:

If the below parts or materials are used in the module where the switch is installed, directions below should be followed:

① 部品、橡胶材料、粘合剂、包装材料及用于装置内机械部件上的润滑油剂等, 不要使用那些可能会产生硫化气体或氧化气体的材料

For parts, rubber materials, adhesive agents, packing material and grease used for the mechanical part of the device, don't use any material that may generate gas of sulfurization or oxidization.

② 当有用到磷橡胶、润滑油、粘合剂及油脂时, 应使用不会产生低分子磷氧烷气体的材料, 因为低分子磷氧烷气体会在开关接触部位形成二氧化磷层而引起接触不良, 如有用到(如涂料剂等化学溶剂), 请预先告知我方

If silicon rubber, grease, adhesive agents and oil are used, choose the material that will not generate low molecular siloxane gas, because the low molecular siloxane gas may form silicon dioxide coat on the switch contact part, resulting of failing contact.

(3) 不要将开关用于高湿或有沾湿可能性的环境中, 因这样的环境可能会引起端子间电流泄漏

Don't use the switch in the environment with high humidity or other bedewing possibility, as it may cause leaking among the terminals

(4) 外部浸入物的影响 The effect caused by outer immersed dust:

由于该开关无密封机构, 因此可能会由于外部环境中浸入的尘埃而引起接触失效, 在使用该开关时, 应采取防尘措施, 以下是尘埃浸入的范例, 使用时请注意防止:

Because the switch was designed without dust-proof structure, it may have failing contact due to the immersed dust from the outer environment. When using the switch, it's necessary to take dust-proof actions. Examples of immersed dust, which should be prevented during the operation:

① 加工过程中切口处及 PCB 孔处产生碎屑, 或 PCB 防护材料, (如报纸、发泡、聚苯乙烯材料等)产生的废弃物等浸入开关内

The scraps being generated during PCB processing, or other waste from the protective material for PCB such as newspaper, foam, polystyrene materials, may immerse inside the switch.

② 在堆叠 PCB 时产生的助焊剂或粉末状焊剂浸入开关内

The flux or solder powder being generated when stacking the PCB may immerse inside the switch.

5. 保存方法 Storage Method:

(1) 为防止本产品的性能劣化和耐焊性等性能受到影响, 建议保管在以下的条件和环境下

In order to protect the switch performance and the soldering conditions, advice it should keep the switch under the following conditions

① 避免保存在含有腐蚀性气体等的空气中

Avoid storing in the environment containing corrosive gas

② 产品购入后, 不可超过 6 个月以上长期保管

After purchasing, the storage period should not exceed 6 months

③ 避免保存在日光能直射的场所

Avoid keeping it in the location with direct sunlight

RD41 版本 B02

(保存期限: 至该产品停产)

产品型号 Item. #	RS-285G05A2-U RT	编号 No.	SPC-5019-02	版本 VER	A	页码 Page	9 of 9
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(2)在不施加负重外力的包装状态下进行保管, 自锁开关应是解锁状态下保存

Store using the standard packing without exerting force, self-lock switch should be kept as released function

(3)打开包装后, 请尽早使用, 有剩余品时, 应将剩余部分以胶袋包装好以同外界隔离, 请进行合适的防湿, 防腐蚀气体等处理后进行保管

After opening the package, preferably to be used as soon as possible, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas

6. 其它 Others

请特别注意严格遵守以下的禁止事项及注意事项:

Please take good care to comply with the following guidelines:

(1)关于火灾, 冒烟的禁止事项 The prohibited practices where there is fire and fume:

① 超过额定负荷使用时, 有发生火灾的可能性, 故请勿超负荷使用

It might catch fire if the rating exceeds the specifications. Never use the switch beyond the rating.

② 如果有误使用、异常使用等有可能超过额定电流的话, 请采取对策. 如:通过设置保护电路等切断电流

If the rating may exceed due to some abuse or abnormal usage, please take protective measures such as protective circuit to shut down the circuit

③ 本产品使用的非金属材料, 其抗燃等级是根据 UL94 的判定基准, 若有使用 94HB 等级的材料, 则禁止使用在有可能产生漫延燃烧的地方, 或采取延烧防止对策

The fire-resistance grade of the resin used in the switch meets UL94HB rating, according to the UL94 Standard for burning test of plastics. Do not use the switch where there may be danger of getting fire, or take protective measures to prevent from catching fire

(2)对于追求安全性产品的注意事项 Precautions to the products requiring special safety:

① 对于产品品质我以期万全, 但有可能发生寿命等故障形式, 如性能劣化、短路、常开等。因此, 在设计追求安全性产品的时候: “对于零件单一故障, 产品会出现什么故障”。请进行事前检讨

Though we are confident in switch quality, we can't deny the possibility that there could be failure due to inferior performance, short or open circuit. Therefore, when designing the product requiring special safety, please verify in advance what effects would show on your product in case the switch alone may fail

② 准备保护电路、保护装置的系统以谋求安全

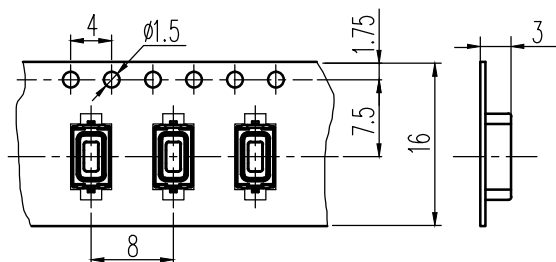
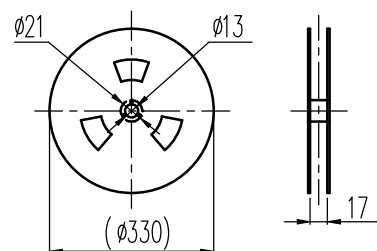
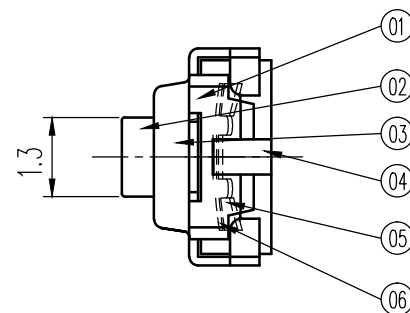
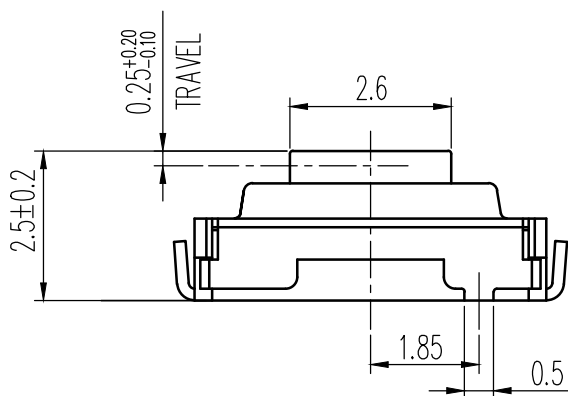
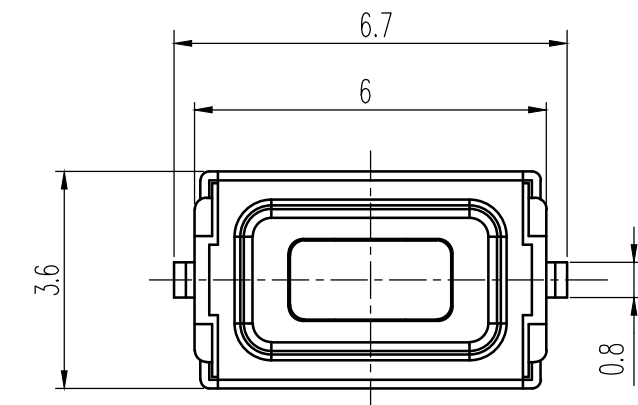
Prepare the system with protective circuit and protective devices for safety purposes

③ 准备安全备用电路, 使单一的故障不会导致整体系统的失效, 以确保安全性

Prepare safety standby circuit to preclude the whole system failure that may result from specific failure

(3)不能将开关外壳的插脚作为电气接线端使用

Can not use the insert of switch housing as the electrical wiring terminal



Total 3,000 pcs for one Reel.

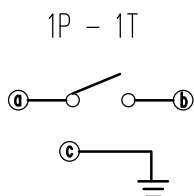
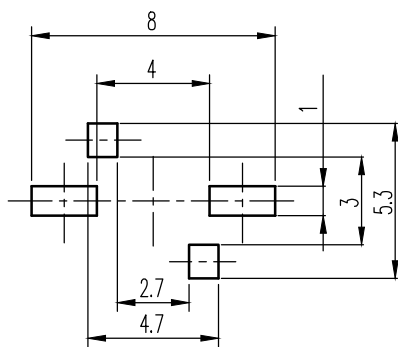


示意图 SCHEMATIC



P.C.B.安装位置尺寸 P.C.B. LAND DIMENSION

规格Specifications

额定负荷 Ratings	DC 12 V 50 mA Max. DC 1 V 10 µA Min.
初期接触电阻 Initial Contact Resistance	100 mΩ Max.
绝缘电阻 Insulation Resistance	DC 100 V 60 Sec. 100 MΩ Min.
抗电强度 Dielectric Voltage	AC 250 V (50~60HZ) 60 Sec.
操作力 Operating Force	160 ⁺⁵⁰ / ₃₀ gf
负荷寿命 Operating Life With Load	100,000 次 Cycles

06	防尘膜 DUST COVER	PI TAPE	1	NATURAL				
05	弹片 SPRING PLATE	SUS	1	Ag CLAD				
04	端子 TERMINAL	C2680R	2	Ag PLATED				
03	盖片 COVER	SUS	1	Ag PLATED				
02	胶柄 KNOB	PA	1	BLACK				
01	胶壳 HOUSING	PA	1	BLACK				
序号 NO.	零件 PART	材料 MATERIAL	数量 QTY	备注 REMARKS	标号 REV	内容 DESCRIPTION	签名 SIGN.	日期 DATE
					DWG NO. ITEM3079-01			
TOLERANCES UNLESS OTHERWISE SPEC.				TITLE	TACT SWITCH		ITEM NO	RS-285G05A2-U RT
	UNDER	±0.10	DRAWN	张渠江	2013-9-16	VERSION	A	PAGE 1 OF 1
	1 -- 10	±0.30	RECEIVED	王光云	2013-9-16	SCALE	—	UNIT mm
	OVER 10	±0.50	APPROVED	廖铁军	2013-9-16	PROJECTION		



产品规格书

Product Specification

编 号 No. : SPC-5339

版 本 Version: A

页 码 Page: 1 of 8

发出日期 Issued on: 2013-9-16

客户名称 Customer: _____

客户部件号 Customer Part No: _____

高铭产品名称 Comax Product Name: 触摸开关 Tact Switch

高铭产品型号 Comax Item No: RS-285G05A3-U RT

规格书确认 Specification For Approval

确认者 Approval by _____

备注 Remark:

1. 该规格书为客户与高铭公司在产品单品技术方面的共识, 其它相关数据上与该规格书不一致的内容都是无效的。

This Product Specification is considered as the technical agreement on product between the receiving customer and Comax. Any information on the Product Catalogue which is in conflict with or different from the corresponding information of this document is considered as invalid.

2. 如果顾客收到规格书后没有信息反馈而直接向我公司订货, 我们将认为贵客已接受此规格书。

If customer issue purchase orders without confirmation by signature of this specification after receipt, such confirmation will be considered as granted upon receipt of the first purchase order.

3. 本产品规格书从生效日起 1 年后, 如果没有订货返回或再次申请最新规格书时请作无效处理。

If there is no order or no request for new specification after 1 year upon this specification is issued, the specification will be regarded as invalid.

签名或盖章 Signature: _____

日期 Date: _____

若确认此规格书, 请签复此页. Please return this copy as a certification of your approval.

规格书更改记录 Record of Change Specification

版本	修改总项	明细	日期	拟制
Version	History×Count	Details	Date	Pred

生产地: 中国 Country of Origin: China

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拟制 Prepared by: 张渠江 2013-9-16

审核 Checked by: 王光云 2013-9-16

批准 Approved by: 廖铁军 2013-9-16

1. 一般特性 General Characteristics:

1.1 适用范围 Application	该规格书指触摸开关的一般使用范围 This specification is applied to the tact switch for general applications
1.2 使用温度范围 Operating Temperature Range	-20℃到+70℃ -20℃ to +70℃
1.3 使用相对湿度范围 Operating Relative Humidity Range	≦96%RH, +40℃ ≦96%RH at +40℃
1.4 保存温度范围 Keep Temperature Range	-20℃到+70℃ -20℃ to +70℃
1.5 实验条件 Test Conditions	若没有特别说明, 则试验大气条件如下 Unless otherwise specified, the atmospheric conditions for making measurements and tests are as follows 环境温度 Ambient Temperature: 5-35℃ 大气压力 Air Pressure: 86-106kPa (860-1060mbar) 相对湿度 Relative Humidity: 45-85%RH
1.6 回路数 Function	1 回路 1 接点 1 Pole 1 Throw
1.7 切换类型 Change Over Timing	先断开后导通 Non-shorting

2. 外观, 结构及尺寸 Appearance Structure and Dimensions

2.1 外观 Appearance	产品外观良好, 无锈蚀、裂纹和镀层缺陷。 The switch shall have good finishing, and no rust, crack or plating Defects.
2.2 结构及尺寸 Structure & Dimensions	参见产品图纸 ITEM3430 Refer to individual product drawing ITEM3430
2.3 标识 Markings	参见产品图纸 ITEM3430 Refer to individual product drawing ITEM3430

3. 额定负荷及寿命 Ratings & Life

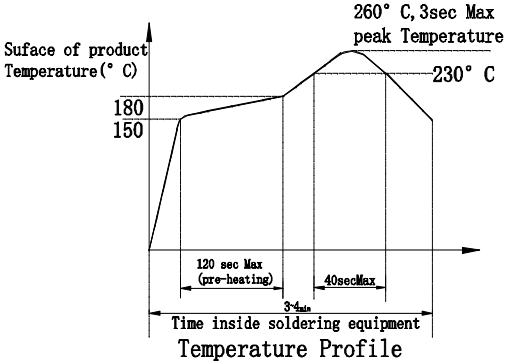
额定负荷 Ratings	负荷寿命 Operating life with load
DC12V 50mA	100, 000 次 cycles

4. 电气性能 Electrical Characteristics

	项目 Item	标准 Criteria	实验方法 Test Method
4.1	初期接触电阻 Initial Contact Resistance	100mΩ Max.	以 1A 5V DC 或在 1kHz±200Hz 20mV Max, 50mA Max 采用智能低电阻测试仪测量 Shall be measured at 1kHz±200Hz 20mV Max, 50mA Max or 1A, 5V DC by auto low ohm meter
4.2	绝缘电阻 Insulation Resistance	100MΩ Min.	在相互绝缘的所有端子之间及各接线端子与外壳之间加载 DC100V, 持续时间 60±5 秒 A voltage of DC100V shall be applied between open terminals, and between the terminal and the metal frame for 60±5 sec.
4.3	抗电强度 Dielectric Voltage	无击穿现象发生 No dielectric breakdown shall occur	在相互绝缘的所有接线端子之间及各接线端子与外壳之间加载 AC250V (50-60Hz) 泄漏电流 10mA, 持续时间 60±5 秒 A voltage of AC250V (50-60Hz), 10mA trip current shall be applied between open terminals, and between the frame and the terminal for 60±5 sec.

5. 机械性能 Mechanical Characteristics

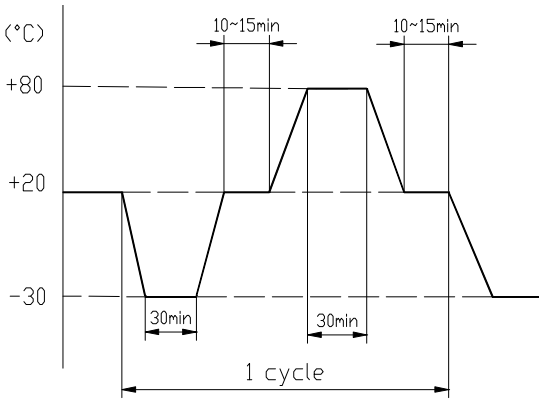
	项目 Item	标准 Criteria	实验方法 Test Method
5.1	操作力 Operating Force	250±50gf (2.45±0.49N)	<p>在操作元件顶端沿操作方向均匀施加载荷, 使操作元件转换到动作位置</p> <p>A load shall be applied to the tip of actuator in Operating direction to change the component to operating position</p>
5.2	回复力 Releasing Force	50gf Min. (0.49N Min.)	<p>在操作元件顶端沿操作方向均匀减少载荷, 使操作元件从动作位置转换到释放位置</p> <p>A load shall be reduced to the tip of actuator in operating direction to change component from operating position to release position</p>
5.3	行程 Travels	0.25 ^{+0.2} _{-0.1} mm	<p>从自由位置到动作位置的距离</p> <p>The distance from initial position to operating position.</p>
5.4	接线端强度 Terminal strength	<p>端子无松动, 损坏及绝缘层的破裂</p> <p>Shall be free from terminal looseness damage and insulator breakage.</p> <p>电气性能应符合第 4 部分的要求</p> <p>The electrical performance requirements specified in section 4 shall be satisfied.</p>	<p>以 500gf/4.9N 静载荷作用于接线端末端任一方向, 保持 60 秒, 每个接线端子测量一次</p> <p>A static load of 500gf/4.9N shall be applied to the top of terminal in a desired direction for 60 sec. The test shall be done once per terminal.</p>
5.5	可焊性 Solder Ability	<p>超过 90%的焊锡面积被焊料所覆盖</p> <p>More than 90% of immersed part shall be covered with solder</p>	<p>开关在下述参数条件下进行试验</p> <p>Switch shall be checked after following test</p> <p>(1) 焊料 Solder: Sn-3Ag-0.5Cu</p> <p>(2) 焊剂 Flux: Rosin Flux JIS K 5902</p> <p>(3) 焊接温度: 245±3℃</p> <p>焊接时间: 3±0.5 sec</p> <p>Soldering Temperature: 245±3℃</p> <p>Immersing Time: 3±0.5 sec</p>

5.6	耐焊性 Solder Heat Resistance	无外观及功能损坏, 电气性能应符合第 4 部份的要求 No abnormalities shall be observed in appearance and operation. The electrical Performance Requirements specified in item 4 shall be satisfied	回流焊接条件 Reflow soldering conditions 预热:被焊接部品进入焊接设备之后的 2±0.3 分钟, 铜片表面的温度可达到 180℃ Preheat: Temperature on the copper foil surface should reach 180℃, 2±0.3 minutes after the P.W.B entered into the soldering equipment 焊接温度:被焊接部品进入焊接区的 40 秒内, 铜片表面温度最高可达 260℃ Soldering heat: Temperature on the copper foil surface should reach the peak temperature of 260℃ within 40 seconds after the P.W.B enter into soldering heat zone 
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6. 寿命试验 Durability Characteristics

	项目 Item	标准 Criteria	实验方法 Test Method
6.1	负荷寿命 Operating Life With Load	实验后 After test: 接触电阻: 200mΩ Max. Contact resistance: 200mΩ Max. 绝缘电阻: 10MΩ Min. Insulation resistance: 10MΩ Min. 抗电强度应符合第 4.3 项的要求。 Electrical performance requirements specified in item 4.3 shall be satisfied 操作力变化范围:规格值±30% Operating force range:±30% specified value 开关外观及结构应无损坏 The switch shall be free from abnormality in appearance & construction.	在带负荷 DC12V 50mA 的条件下, 在寿命试验设备上连续转换 100,000 次. (120-180 次/分). 100,000 cycles of operation shall be performed continuously at a rate of 120-180 cycles per minute with DC12V 50mA load.

7. 耐候性能 Weather Proof Characteristics:

	项目 Item	标准 Criteria	实验方法 Test Method
7.1	低温 Cold Proof	<div>实验后 After test:</div> <div>接触电阻: 200mΩ Max.</div> <div>Contact resistance: 200mΩ Max.</div> <div>绝缘电阻: 10MΩ Min.</div> <div>Insulation resistance: 10MΩ Min.</div> <div>抗电强度应符合第 4.3 项的要求</div> <div>Electrical performance requirements specified in item 4.3 shall be satisfied</div> <div>操作力变化范围: 规格值±10%</div> <div>Operating force range: ±10% specified value</div> <div>开关外观及结构应无损坏</div> <div>The switch shall be free from abnormalities in appearance and construction</div>	开关在-30±2℃的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 2 小时, 并在此后 1 小时内对开关进行测量, 水滴应消失 After testing at -30±2℃ for 96 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that Water drops shall be eliminated
7.2	高温 Hot Proof		开关在 80±2℃的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 2 小时, 在此后 1 小时内对开关进行测量 After testing at 80±2℃ for 96 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 our after that.
7.3	恒定湿热 Moisture Resistance		开关在 40±2℃, 90-95%RH 的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 2 小时, 在此后 1 小时内对开关进行测量, 水滴应消失 After testing at 40±2℃, 90-95%RH for 96 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that Water drops hall be eliminated
7.4	温度转换 Temperature Cycling		<div>开关按下述实验条件试验 5 个循环, 然后在正常温度和湿度下恢复 2 小时, 并在此后 1 小时内对开关进行测量, 水滴应消失</div> <div>After 5 cycles of following conditions the switch shall be allowed to stand under normal temperature and humidity conditions for 2 hours and measurement shall be made within 1 hour after that. Water drops shall be eliminated.</div> <div></div>

8. 开关材料表 BOM

序号 No.	零部件名称 Parts Name	数量 Quantity	材料, 规格 Material And Specifications	防火等级 Prevent fire grade	备注 Remarks
01	胶壳 HOUSING	1	PA	UL94 V-0	
02	胶柄 KNOB	1	PA	UL94 V-0	
03	盖片 COVER	1	SUS		Ag PLATED
04	端子 TERMINAL	2	C2680R		Ag PLATED
05	弹片 SPRING PLATE	2	SUS		Ag CLAD
06	防尘膜 DUST COVER	1	POLYIMIDE TAPE		NATURAL

9. 本产品规格书适用范围The applied scope of the specification

序号 No.	适用范围 Applies the scope	序号 No.	适用范围 Applies the scope
1	RS-285G05A3-U RT	2	
3		4	

注意事项 Precautions for use:

1. 一般事项 General:

本产品主要用于自动化装置, 视像装置, 家用电器, 信息装置及通讯装置等常用电子设备中;如果该产品要用于其它具有更高安全性及可靠性的耐久性设备中(如生命维持装置, 宇宙航空装置, 防灾及安全性装置)时, 请确认是否合用, 或者同我方了解详细情况

The product is used mainly in electronic devices such as automotive devices, visual devices, home electrical appliances, information devices and communication settings. If the products is intended to be used for other endurance equipments requiring higher safety and reliability such as life support system, space and aviation devices, disaster and safety system, it' s necessary to make verification of conformity or contact us for the details before using

2. 焊接安装 Soldering and assembly:

- (1) 如果焊锡时, 有施力在端子部位的话, 则端子可能会变形且易出现电气性能不良

If there is force applied on the terminal during soldering, the terminal may deform and the electrical characteristics may not be satisfied
- (2) 焊锡条件应按照实际的对应条件予以确认

The soldering conditions should be confirmed according to the actual production environment
- (3) 焊锡工序完成后, 不要尝试用溶剂或类似物品清洗开关

Don' t try to clean the switch with a solvent or similar substance after the soldering process
- (4) 开关焊锡后, 还有热量时, 请不要操作开关

Don' t operate the switch if it still has heat after soldering
- (5) 如使用水溶性助焊剂, 可能会导致开关破损, 因此应确保不要用这种助焊剂

The switch might be damaged if using the water-soluble flux, so make sure not to use such kind of flux

3. 安装构造, 机械设计 Assembly structure and Mechanical design:

- (1) 线路板上安装孔及安装图示的尺寸都须参照工程图中所建议的尺寸

The dimensions for the holes and the pattern on PCB should refer to the recommended dimensions on the engineering drawing
- (2) 操作条件 Operating Conditions

打键部件的许可倾斜角度为 90±3°

The allowable inclination of keying section is 90±3°
- (3) 如果施超出规定值的较大重力于开关上, 会导致开关破损, 所以应特别小心防止开关承受超出规定值的较大重力

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The switch might be broken if there is stress stronger than the specified is given on it. Take special care not to stress the switch beyond its specification

(4) 把本公司的产品和其它产品配合使用时, 请客户确认必须适合的规格、法规或规定。另请客户自身确认本公司产品装到客户使用的系统、机械、装置上的适用性. 如果想变更开关使用条件, 请预先与本公司进行协商

If the switch is being used together other products, please confirm the compatibility of the specification, laws and regulations. Please also confirm the compatibility of switch to be installed in the systems, machines and devices used by customer. If you want to change the operating conditions of the switch, please consult with us in advance

4. 使用环境 Operating Environment

(1) 如果该产品常用于产生硫化气体的硫性热源周围或有汽车废气存在的地方, 应特别留意, 因为开关性能可能会受到影响:

If the product is always used near sulfurate hot spring where sulfide gas is generated or in a place where exhaust gas from automobiles exists, it's necessary to pay more attention because the switch performance may be affected.

(2) 如果在安装开关的模组内有以下所描述的部件材料, 需遵循以下要求:

If the below parts or materials are used in the module where the switch is installed, directions below should be followed:

① 部品、橡胶材料、粘合剂、包装材料及用于装置内机械部件上的润滑油剂等, 不要使用那些可能会产生硫化气体或氧化气体的材料

For parts, rubber materials, adhesive agents, packing material and grease used for the mechanical part of the device, don't use any material that may generate gas of sulfurization or oxidization.

② 当有用到磷橡胶、润滑油、粘合剂及油脂时, 应使用不会产生低分子磷氧烷气体的材料, 因为低分子磷氧烷气体会在开关接触部位形成二氧化磷层从而引起接触不良, 如有用到(如涂料剂等化学溶剂), 请预先告知我方

If silicon rubber, grease, adhesive agents and oil are used, choose the material that will not generate low molecular siloxane gas, because the low molecular siloxane gas may form silicon dioxide coat on the switch contact part, resulting of failing contact.

(3) 不要将开关用于高湿或有沾湿可能性的环境中, 因这样的环境可能会引起端子间电流泄漏

Don't use the switch in the environment with high humidity or other bedewing possibility, as it may cause leaking among the terminals

(4) 外部浸入物的影响 The effect caused by outer immersed dust:

由于该开关无密封机构, 因此可能会由于外部环境中浸入的尘埃而引起接触失效, 在使用该开关时, 应采取防尘措施, 以下是尘埃浸入的范例, 使用时请注意防止:

Because the switch was designed without dust-proof structure, it may have failing contact due to the immersed dust from the outer environment. When using the switch, it's necessary to take dust-proof actions. Examples of immersed dust, which should be prevented during the operation:

① 加工过程中切口处及 PCB 孔处产生碎屑, 或 PCB 防护材料, (如报纸、发泡、聚苯乙烯材料等)产生的废弃物等浸入开关内

The scraps being generated during PCB processing, or other waste from the protective material for PCB such as newspaper, foam, polystyrene materials, may immerse inside the switch.

② 在堆叠 PCB 时产生的助焊剂或粉末状焊剂浸入开关内

The flux or solder powder being generated when stacking the PCB may immerse inside the switch.

5. 保存方法 Storage Method:

(1) 为防止本产品的性能劣化和耐焊性等性能受到影响, 建议保管在以下的条件和环境下

In order to protect the switch performance and the soldering conditions, advice it should keep the switch under the following conditions

① 避免保存在含有腐蚀性气体等的空气中

Avoid storing in the environment containing corrosive gas

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② 产品购入后, 不可超过 6 个月以上长期保管

After purchasing, the storage period should not exceed 6 months

③ 避免保存在日光能直射的场所

Avoid keeping it in the location with direct sunlight

(2) 在不施加负重外力的包装状态下进行保管, 自锁开关应是解锁状态下保存

Store using the standard packing without exerting force, self-lock switch should be kept as released function

(3) 打开包装后, 请尽早使用, 有剩余品时, 应将剩余部分以胶袋包装好以同外界隔离, 请进行合适的防湿, 防腐蚀气体等处理后进行保管

After opening the package, preferably to be used as soon as possible, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas

6. 其它 Others

请特别注意严格遵守以下的禁止事项及注意事项:

Please take good care to comply with the following guidelines:

(1) 关于火灾, 冒烟的禁止事项 The prohibited practices where there is fire and fume:

① 超过额定负荷使用时, 有发生火灾的可能性, 故请切勿超负荷使用

It might catch fire if the rating exceeds the specifications. Never use the switch beyond the rating.

② 如果有误使用、异常使用等有可能超过额定电流的话, 请采取对策. 如: 通过设置保护电路等切断电流

If the rating may exceed due to some abuse or abnormal usage, please take protective measures such as protective circuit to shut down the circuit

③ 本产品使用的非金属材料, 其抗燃等级是根据 UL94 的判定基准, 若有使用 94HB 等级的材料, 则禁止使用在有可能产生漫延燃烧的地方, 或采取延烧防止对策

The fire-resistance grade of the resin used in the switch meets UL94HB rating, according to the UL94 Standard for burning test of plastics. Do not use the switch where there may be danger of getting fire, or take protective measures to prevent from catching fire

(2) 对于追求安全性产品的注意事项 Precautions to the products requiring special safety:

① 对于产品品质我以期万全, 但有可能发生寿命等故障形式, 如性能劣化、短路、常开等. 因此, 在设计追求安全性产品的时候: “对于零件单一故障, 产品会出现什么故障”。请进行事前检讨

Though we are confident in switch quality, we can't deny the possibility that there could be failure due to inferior performance, short or open circuit. Therefore, when designing the product requiring special safety, please verify in advance what effects would show on your product in case the switch alone may fail

② 准备保护电路、保护装置的系统以谋求安全

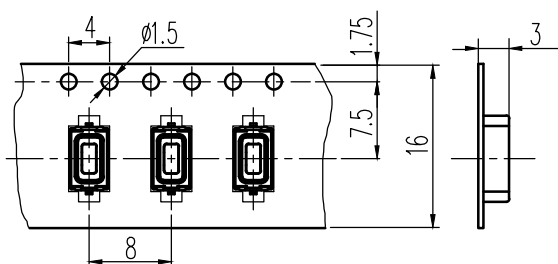
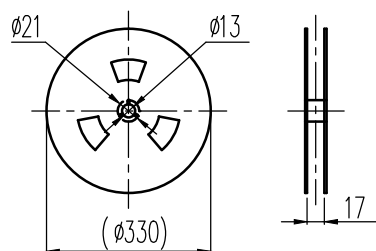
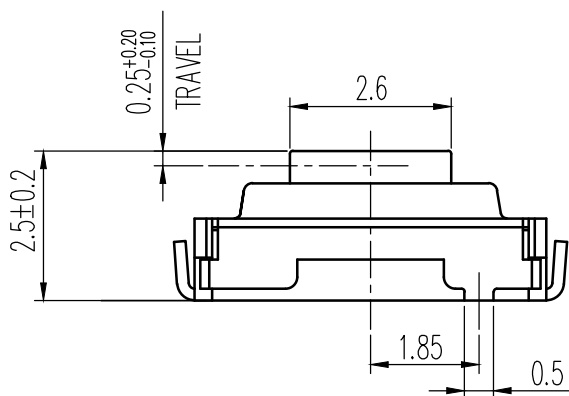
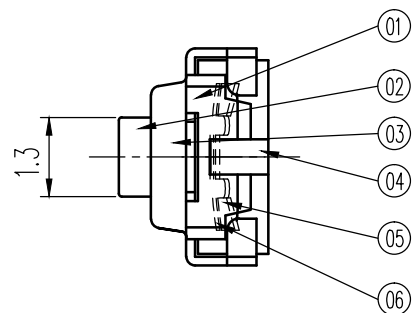
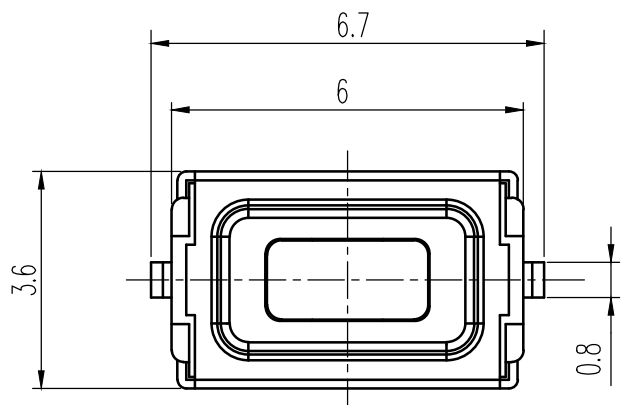
Prepare the system with protective circuit and protective devices for safety purposes

③ 准备安全备用电路, 使单一的故障不会导致整体系统的失效, 以确保安全性

Prepare safety standby circuit to preclude the whole system failure that may result from specific failure

(3) 不能将开关外壳的插脚作为电气接线端使用

Can not use the insert of switch housing as the electrical wiring terminal



Total 3,000 pcs for one Reel.

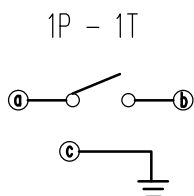
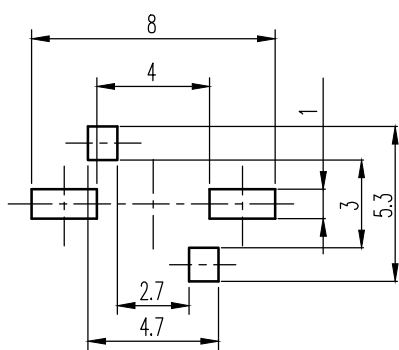


示意图 SCHEMATIC



P.C.B.安装位置尺寸 P.C.B. LAND DIMENSION

规格 Specifications

额定负荷 Ratings	DC 12 V 50 mA Max.
初期接触电阻 Initial Contact Resistance	100 mΩ Max.
绝缘电阻 Insulation Resistance	DC 100 V 60 Sec. 100 MΩ Min.
抗电强度 Dielectric Voltage	AC 250 V (50~60 Hz) 60 Sec.
操作力 Operating Force	250±50 gf
负荷寿命 Operating Life With Load	100,000 次 Cycles

06	防尘膜 DUST COVER	PI TAPE	1	NATURAL				
05	弹片 SPRING PLATE	SUS	2	Ag CLAD				
04	端子 TERMINAL	C2680R	2	Ag PLATED				
03	盖片 COVER	SUS	1	Ag PLATED				
02	胶柄 KNOB	PA	1	NATURAL				
01	胶壳 HOUSING	PA	1	BLACK				
序号 NO.	零件 PART	材料 MATERIAL	数量 QTY	备注 REMARKS	标号 REV	内容 DESCRIPTION	签名 SIGN.	日期 DATE
					DWG NO. ITEM3430			
TOLERANCES UNLESS OTHERWISE SPEC.				TITLE	TACT SWITCH		ITEM NO	RS-285G05A3-U RT
	UNDER	±0.10	DRAWN	张渠江	2013-9-16	VERSION	A	PAGE 1 OF 1
	1 -- 10	±0.30	RECEIVED	王光云	2013-9-16	SCALE	—	UNIT mm
	OVER 10	±0.50	APPROVED	廖铁军	2013-9-16	PROJECTION		

Mouser Electronics

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