

APPROVAL SPECIFICATIONS

Title. DETECTOR SWITCH

Product Model. KAM7538-S1

Customer's Part NO. _____

Customer's Model: _____

Customer's Approval Requested.

Please return this copy as a certification of your approval.

Checked by: _____ Date: _____

Approved by: _____ Date: _____

APPROVE	REVIEW	POLT
Jack Wu	孙斌	刘玉祥

Shenzhen Gangyuan Microkey Technology Co.;ltd



CUSTOMER	CUSTOMER'S P/N	GYE'S P/N	PRODUCT	REVISION
		KAM7538-S1	DETECTOR SWITCH	A

1、概述
GENERAL

1.2 适用范围
APPLICATION
 此规格书适用于检测开关的相关要求
 This specification is applied to the requirements for DETECTOR SWITCH.

1.3 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)

1.4 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)

1.5 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

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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；

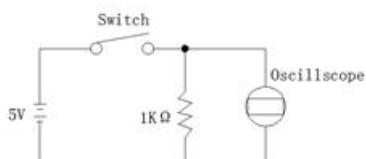
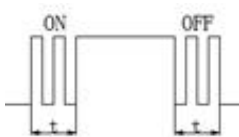
Style and dimension: shall conform to the assemble drawings.

2.4 工作额定值：DC 5V, 0.1~5 mA

Ratings: DC 5V, 0.1~5 mA

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测量 Measurements shall be made by 5V DC 10mA or more than 1KHz AC small-current contact resistance meter.	$\leq 300m\Omega$
2	绝缘电阻 Insulation Resistance	在端子之间施加 DC 250V /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 250V DC potential, across terminals, and across terminals and cover, for one minute.	$\geq 100M\Omega$
3	介质耐压 Dielectric voltage proof	在端子之间施加 100V AC (50Hz 或 60Hz) /1min 100V 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
4	触点抖动 Bounce	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" 	ON - 10 msec.max OFF- 10 msec.max 



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项目 ITEM	试验条件 TEST CONDITIONS			要求 REQUIREMENTS						
4. 机械性能: MECHANICAL SPECIFICATION										
1	操作力 Operating Force	操作位置 (OP) 见图纸 Operating position(OP) saw as the drawing		0.25±0.15 N						
2	端子强度 Terminal Strength	静载荷为 4.9 N 在任何方向施加到端子上 60 秒。每个端子一个周期。 A static load of 4.9N shall be applied to the tip of the terminals for 60 seconds in any direction. 1cycle shall be made per 1 terminal.		电气性能满足要求， 端子无松动 Electrical performance shall be satisfied, without damage of excessive looseness of terminals						
3	停止强度 Stop Strength	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.		无机械和电气损坏 There shall be no sign of damage mechanically and electrically.						
4	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 75%以上 Except for the edge, the coating should cover a minimum 75%						
5	Soldering Heat Resistance 耐热焊接	The test is conducted under the following condition. 在下列条件下进行测试。 <table border="1" data-bbox="373 1783 1115 1872"> <thead> <tr> <th></th> <th>Temperature(°C)</th> <th>Time (sec)</th> </tr> </thead> <tbody> <tr> <td>Manual Soldering</td> <td>350±10</td> <td>3</td> </tr> </tbody> </table>			Temperature(°C)	Time (sec)	Manual Soldering	350±10	3	Shall be free from a remarkable change in Appearance. 外观有明显的变化 The electrical performance requirement specified in item 3 shall be met. 电气性能需求指定的3项得到满足。
	Temperature(°C)	Time (sec)								
Manual Soldering	350±10	3								



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项目 ITEM	试验条件 TEST CONDITIONS		要求 REQUIREMENTS	

5、极限电气性能： ENVIRONMENTAL SPECIFICATION

1	低温测试 Resistance to low temperature	<p>样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：-30±2℃ Temperature : -30±2℃ (2) 时间：48h Time: 48h</p>	<p>接触电阻：≤300mΩ Contact resistance: ≤300mΩ 项目 3,4.1 Item 3,4.1</p>												
2	高温测试 Heat resistance	<p>样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：80±2℃ Temperature:80±2℃ (2) 时间：48h Time: 48h</p>	<p>接触电阻：≤300mΩ Contact resistance: ≤300mΩ 项目 3,4.1 Item 3,4.1</p>												
3	温度周期性测试 Change of temperature	<p>根据下面的测试要求进行 5 次循环的温度周期性测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试。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 water drops shall be removed.</p> <table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td rowspan="4">1cycle</td> <td>-30±3℃</td> <td>30m</td> </tr> <tr> <td>常温</td> <td>15m</td> </tr> <tr> <td>80±3℃</td> <td>30m</td> </tr> <tr> <td>常温</td> <td>15m</td> </tr> </tbody> </table>		Temperature	Time	1cycle	-30±3℃	30m	常温	15m	80±3℃	30m	常温	15m	<p>接触电阻：≤300mΩ Contact resistance: ≤300mΩ 项目 3,4.1 Item 3,4.1</p>
	Temperature	Time													
1cycle	-30±3℃	30m													
	常温	15m													
	80±3℃	30m													
	常温	15m													
4	湿温测试 Moisture resistance	<p>样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：60±2℃ Temperature: 60±2℃ (2) 相对湿度：90%~95% Relative humidity:90% to 95% (3) 时间：96h Time: 96h</p>	<p>接触电阻：≤300mΩ Contact resistance: ≤300mΩ 绝缘电阻：≥50MΩ Insulation resistance: ≥50MΩ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3</p>												



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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	<p>根据下面的测试要求进行测试： Measurement shall be made following the test set forth below:</p> <p>(1) DC 5V, 5 mA 带负载 DC 5V, 5 mA resistive load</p> <p>(2) 操作动速率：30 次/分 Rate of operation: 30 times/min.</p> <p>(3) 寿命 Life : 100,000 次</p>	<p>接触电阻 $\leq 1000\text{m}\Omega$ Contact resistance $\leq 1000\text{m}\Omega$</p> <p>按力：初值的 $\pm 30\%$ Operating Force: initial value $\pm 30\%$</p> <p>项目 3,4.1 Item 3,4.1</p>
2 振动 Vibration	<p>根据以下给定条件进行测试： Measurement shall be made following the test set forth below:</p> <p>(1) 振动频率范围：10~55~10Hz Vibration frequency range: 10 to 55 to 10Hz</p> <p>(2) 振幅（峰—峰）：1.5mm Amplitude: 1.5mm</p> <p>(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</p> <p>(4) 测试时间：每次 2hours . Duration: Each 2hours.</p>	<p>项目 3,4.1 Item 3,4.1</p>
3 冲击 Shock	<p>开关应在实验后测量 Switch shall be measured after following test.</p> <p>1.安装方法：正常安装 Mounting method: Normal mounting method</p> <p>2.加速 490 m/s² (50G) Acceleration: 490 m/s² (50 G)</p> <p>3.持续时间：11 ms Duration: 11 ms</p> <p>4.测试方向：6 个方向 Test direction: 6 directions</p> <p>5.冲击次数：每个方向 3 次（18 次计） Number of shocks: 3 times per direction (18 times in total)</p>	<p>项目 3,4.1 Item 3,4.1</p>

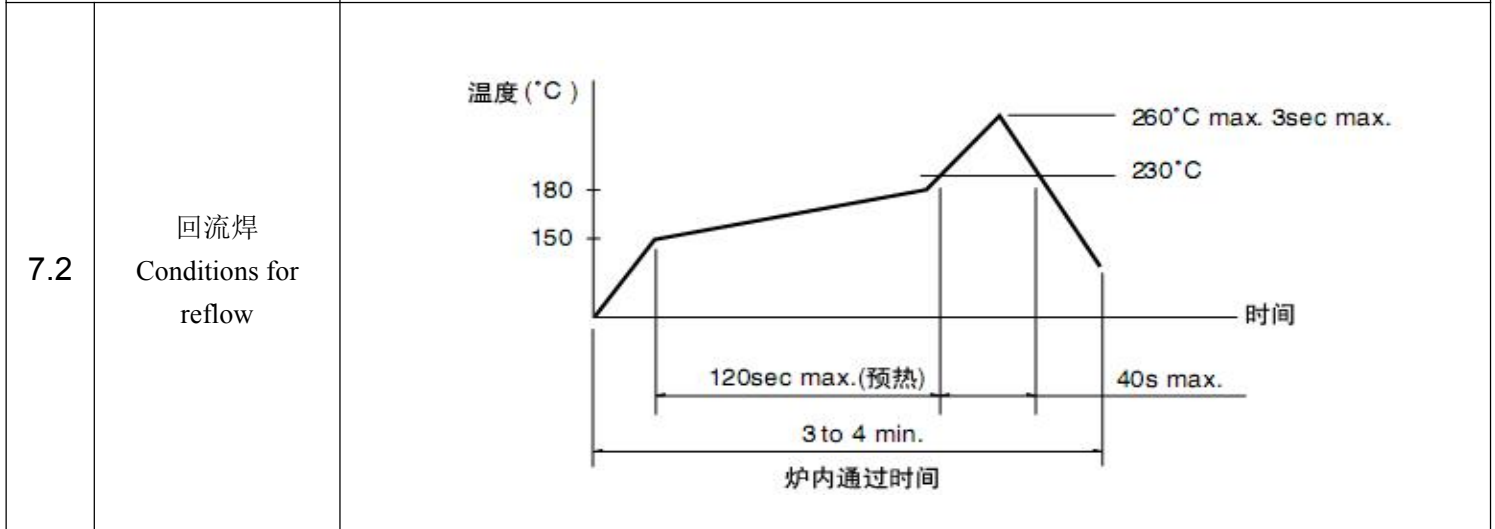


7. 焊接条件:

SOLDERING CONDITIONS:

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项目 ITEM	推荐条件 Recommended conditions
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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 350°C 以下、3 秒以内。
In the case of using soldering iron, soldering conditions shall be 350°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):

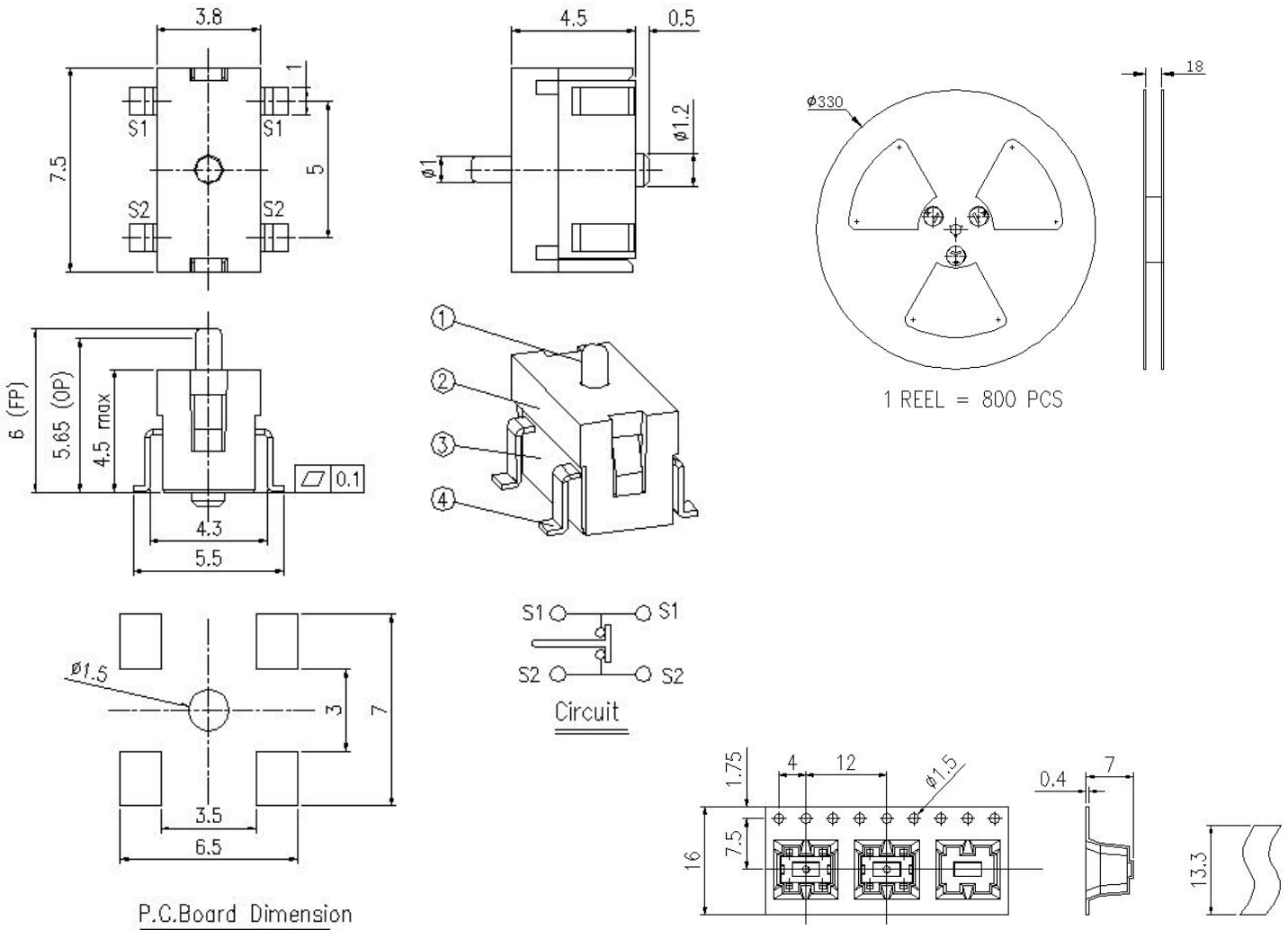
- 3.1 注意不要施加超负荷的压力或晃动开关
Please be cautions not to give excessive static load or shock to swiches.
- 3.2 开关浸焊后, 印刷基板注意不要叠放。
Please be careful not to pile up P.W.B.after switches were soldered
- 3.3 保管时尤其应注意避开高湿高温和有腐蚀性气体的环境。如需要长时间保存, 请不要打开包装箱。
Preservation under high temperature and high high humidity 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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General tolerance: $\pm 0.2\text{mm}$

NO.	NAME	MATERIAL	QTY	FINISHING
1	TERMINAL	Brass	4	Ag plated
2	CASE	PA	1	GREY
3	CONTACT	C5191	1	Ag plated
4	COVER	PA	1	GREY
5	STEM	PA	1	GREY