



深圳明佳创新电子有限公司

Shenzhen MingJia Chuangxin Electronics Co., Ltd



ISO9001/TS16949 Certificated

承 认 书 FOR APPROVAL

客户名称:

Customer:

伟易达

客户料号:

Customer, s NO:

42-000987-000-R000

客户机型:

Product:

客户确认回复:
Customer Approval Status:

接受 PASSED

拒收 REJECTED

签 核:
Signature:

: : : : : : : : : 明佳资料 MingJia INFORMATION : : : : : : :

产品类别:

Product:

检测开关

品号:

Part No:

SD5. 5*3. 5W1-2. 5D-000

规格:

Specification:

图号:

Drawing No:

摘要:

Note:

经 办 Prepared	核 对 Checked By	工程部核 准 Approved
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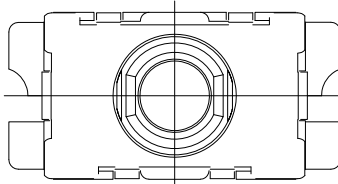
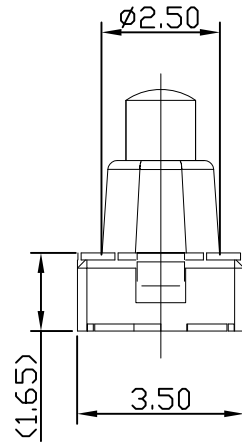
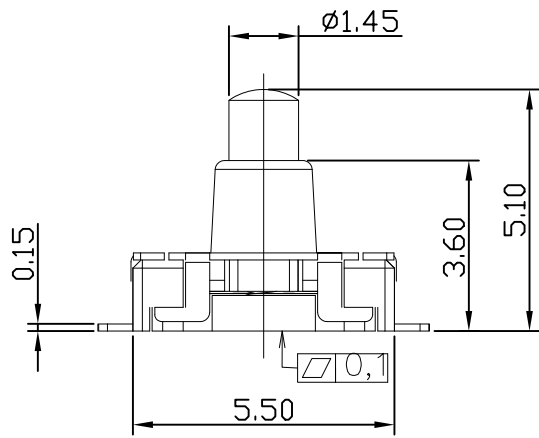
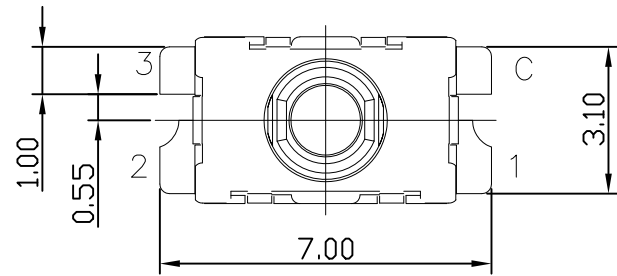
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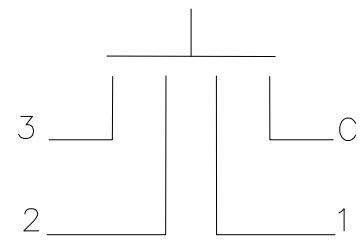
承认书编号Spec. No

MJ-XXX-01-A

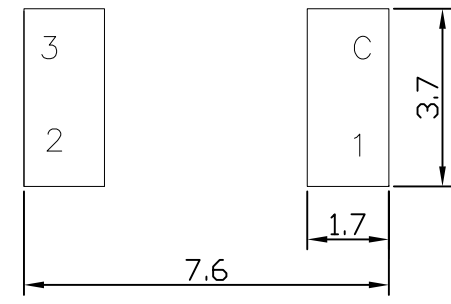
HF 无卤标准



Schematic



PCB LAYOUT



Specifications


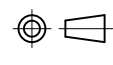
Function: Momentary action.
 Contact TYPE: SPST Normally open.
 Terminals: Gullwing type for SMT.

Mechanical

Actuating Force: 1.1 N ±0.8 N
 Maximum Force at max travel 1.8 N
 Travel to make: 0.65^{+0.25}_{-0.45} mm
 Mechanical travel: 1.5 ±0.2 mm
 Operating life: 100,000 cycles

NOTE:

Gold contacts
 Operating Temperature: -40°C to +125°C
 Storage Temperature: -55°C to +125°C

 深圳明佳创新电子有限公司		TOL. UNLESS OTHRWISE SPEC.		ISSU.	DATE	REVISION	DESIGN
		BASIC DIMENSIONS	TOL.	0	2024. 05. 08	初始制做	LJK
	SCALE	UNIT	L ≤ 10	±0.2	1		
	6:1	mm	10 < L	±0.3	2		
			100 ≤ L	±0.5	3		
			ANGLE	±5°	4		
MODEL: SD5. 5X3. 5W1-2. 5D-000				VERSION	DRAW	CHKD	APPD
DRAWING NO: RD-SD5535-0001				A	LJK	JKUN. LU	JKUN. LU

1. 一般事项 General specification

1-1. 适用规格 Scope

此规范适用于顶部驱动的微小型探测开关。

This specification applies to a top actuated ultraminiature detector switch.

1-2. 标准状态 Standard atmospheric conditions

除另有规定外，测量应在以下状态下进行：

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and test is as following limits:

温度 Ambient temperature : 15°C to 35°C

相对湿度 Relative humidity : 25% to 75%

气压 Air pressure : 86kpa to 106kpa

如果对在上述所提到的条件中所做的实测值有疑问的话，应使用以下条件进行测量：

If doubt arises on the decision based on the measured values under the above-mentioned conditions, the following conditions shall be employed:

温度 Ambient temperature : 20±2°C

相对湿度 Relative humidity : 60% to 70%

气压 Air pressure : 86kpa to 106kpa

1-3. 使用温度范围

Operating temperature range : -40°C to +125°C

1-4. 保存温度范围

Storage temperature range : -55°C to +125°C

2. 构造 Construction

2-1. 尺寸 Dimensions

见所附成品图 Refer to attached drawing

3. 额定值 Rating

3-1. 最大额定电压 Maximum Rated voltage: DC 50V

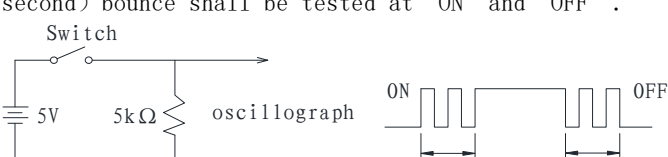
3-2. 最大额定电流 Maximum operating current: 0.01A

3-3. 最小额定电压 Minimum Rated voltage: DC 20mV

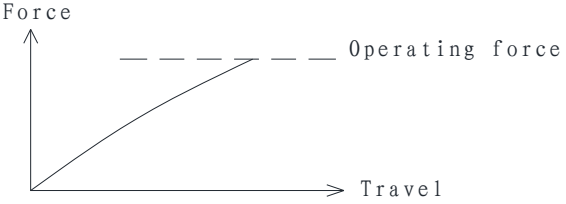
3-4. 最小额定电流 Minimum operating current: 0.01mA

3-5. 最大功率 Maximum power: 0.2 VA

4. 开关电气性能 Switch Electrical Characteristics

项目	条件	规格
ITEM	CONDITIONS	SPECIFICATIONS
4-1. 接触阻抗 Contact resistance	建议以开关操作力的2倍来按压开关，用1KHz低电阻测试仪测量。 Push by recommended operating condition. $F = (\text{Operation force}) \times 2$; with 1 kHz small-current contact resistance meter.	100mΩ 以下 100mΩ max
4-2. 绝缘阻抗 Insulation resistance	在端子和支架之间施加电压 100V DC 1分钟。 Measurement shall be made under following application of DC 100V potential across terminals and frame for one minute.	1000MΩ 以上 1000MΩ min
4-3. 耐电压 Dielectric withstand in voltage	在端子和端子之间，端子和支架之间施加AC 250V (50Hz或者60Hz) 电压1分钟。 Apply AC 250V (50Hz or 60Hz) between the terminals and between the terminals and between the terminals and the bracket for 1 minute.	不得有绝缘破坏 Without arcing or breakdown.
4-4. 突跳 Bounce	以正常使用的按压速度 (3~4次/秒) 轻按按钮的中心，在ON与OFF状态下测试突跳。 Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 operations per second) bounce shall be tested at "ON" and "OFF". 	<3ms 3ms or less

5. 机械性能 Mechanical Property

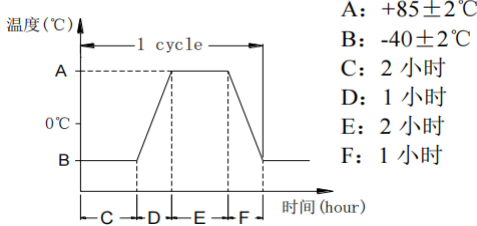

5-1. 动作力 Operation force	操作力应垂直按压按键，测量其最大值为标准值。 Operating force should be applied vertical of the stem gradually when actuate the stem, the maximum force should be measured. 	操作力： Operating force: Actuating Force: 1.1 N ± 0.8 N 操作力: 1.1 N ± 0.8 N MAXIMUM FORCE at max travel 1.8 N 最大行程时操作力为1.8N
5-2. 移动量 Travel of switch	建议以开关操作力的2倍来按压开关。 Push by recommended operating condition. $F = (\text{Operation force}) \times 2$	全行程: Total Travel: 1.5±0.2mm 导通行程: Conduction stroke: +0.25mm -0.45mm
5-3. 回返力 Return Force	开关被完全按压后，测量其释放到自由位置的力。 A static load is applied to the switch to its full stroke and measurements shall be made by releasing the force to return to its free position.	回返力: 0.2N min. 0.2N 以上.
5-4. 止动强度 End stop strength	垂直方向负荷20N力，停留60秒时间。 A static load of 3kgf is applied to vertical direction for a period of 60 seconds.	电气及机械没有损害的迹象。 No damage(Electrical and mechanical)

6. 耐久性能 Endurance Characteristics

项目 ITEM	条件 CONDITIONS	规格 SPECIFICATIONS
6-1. 按压寿命 Load Push-life	1、操作速度: 1~2次/秒。 Operation speed : 1~2 cycles/second. 2、推动力: 操作力的最大规格值的1.3倍。 Push force : 1.3 times the maximum specification value of the operating forcetwice.	100,000次以上. 100,000cycles Min 接触阻抗: 100mΩ 以下 突跳: ≤3ms 绝缘阻抗: 1000MΩ 最小。 动作力的变化范围在要求规格内，应满足第4-2到4-3和5-2项目规格。 contact resistance:100mΩ max bounce :3ms or less Insulation resistance:1000MΩ Min. The range of variation in action force is within the required specifications and should meet the specifications of items 4-2 to 4-3 and 5-2.
6-2. 高温高湿测试 high humidity test	温度55±2℃，湿度90~96%的恒温恒湿槽中放置240小时以上在常温、常湿中放置1小时后测试。 The switch shall be stored at temperature of 55±2℃ with relative humidity of 90% to 96% for 240H Min in a thermostatic chamber. And then the switch shall be subjected to standard atmospheric conditions for 1H, After which measurements shall be made.	接触阻抗: 100mΩ 以下。 contact resistance:100mΩ max. 绝缘阻抗: 10MΩ 最小。 Insulation resistance:10MΩ Min. 应满足第4-2到4-4和5-1到5-2项目规格。 No 4-2 to 4-4 and 5-1 to 5-2 shall be satisfied.
6-3. 耐热性 Heat test	温度125±2℃的恒温箱中放置504小时以上，在常温、常湿中放置1小时后测试。 The switch shall be stored at a temperature of 125±2℃ for 504H Min in a thermostatic chamber. And then the switch shall be subjected to standard atmospheric conditions for 1H, After which measurements shall be made.	接触阻抗: 100mΩ 以下。 contact resistance:100mΩ max. 应满足第4-2到4-4和5-1到5-2项目规格。 No 4-2 to 4-4 and 5-1 to 5-2 shall be satisfied.

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<p>6-4. 低温特性 Cold test</p>	<p>温度$-55\pm 2^{\circ}\text{C}$的恒温箱中放置240小时以上, 在常温、常湿中放置1小时后测试。 The switch shall be stored at a temperature of $-40\pm 2^{\circ}\text{C}$ for 500H Min in a thermostatic chamber. And then the switch shall be subjected to standard atmospheric conditions for 2H, After which measurements shall be made.</p>	<p>接触阻抗: $100\text{m}\Omega$ 以下。 contact resistance:$100\text{m}\Omega$ max. 应满足第4-2到4-4和5-1到5-2项目规格。 No 4-2 to 4-4 and 5-1 to 5-2 shall be satisfied.</p>
<p>6-5. 循环温度 Temperature Cycle</p>	<p>经以下条件循环试验后, 在常温常湿中放置1小时测定, 表面水滴擦拭干净。 After below cycles of following conditions, the switch shall be allowed to standard normal room temperature and humidity conditions for 1 h before measurements are made, Take off a drop water.</p> <div style="text-align: center;">  <p>A: $+85\pm 2^{\circ}\text{C}$ B: $-40\pm 2^{\circ}\text{C}$ C: 2 小时 D: 1 小时 E: 2 小时 F: 1 小时</p> <p>Cycling: Five cycles 周期: 5 次</p> </div>	<p>接触阻抗: $200\text{m}\Omega$ 以下。 contact resistance:$200\text{m}\Omega$ max. 应满足第4-2到4-4和5-1到5-2项目规格。 No 4-2 to 4-4 and 5-1 to 5-2 shall be satisfied.</p>
<p>6-6. 盐雾实验 Salt Spray</p>	<p>暴露温度为35°C以及浓度为5%的盐液喷雾环境下, 48小时, 取出清洗干净后并在常温环境下晾干。 48 hours exposure to a salt spray from the $5\pm 1\%$ solution at $35\pm 2^{\circ}\text{C}$, after washing, keep in normal condition.</p>	<p>接触阻抗: $100\text{m}\Omega$ 以下。 contact resistance:$100\text{m}\Omega$ max. 在金属件上没有腐蚀斑点。 No remarkable corrosion shall be recognized in metal part.</p>
<p>6-7. 防护等级 Protection grade</p>	<p>1、防尘等级: 4: 防止1.0mm直径物体进入 2、防水等级: 0: 无防护 1、Dustproof grade: 4: Prevent objects with a diameter of 1.0mm from entering 2、Waterproof grade: 0: Unprotected</p>	<p>IP40</p>
<p>6-8. 耐振性 Vibration resistance</p>	<p>按以下条件完成测试后再测定。Measurements shall be made following the test set forth below. (1) 振动频率范围: $10\sim 500\text{Hz}$ Vibration frequency range (2) 全振幅Total amplitude : 1.5mm Max (3) 扫描速率Sweep ratio : $10\sim 500\sim 10\text{Hz}$ Approx. 1 min (4) 改变扫描振动频率的方法Method of changing the sweep vibration frequently:对数或统一 Logarithmic or uniform (5) 振动方向Direction of vibration: 三个相互垂直的方向, 包括按压行程的方向three mutually perpendicular directions, including the direction of the travel (6) Number of cycles 试验次数: 每个方向23分钟, 计69分钟. 23 min per direction, 69 min.</p>	<p>接触阻抗: $100\text{m}\Omega$ 以下。 contact resistance:$100\text{m}\Omega$ max. 应满足5-1到5-2项目规格。 No 5-1 to 5-2 shall be satisfied.</p>
<p>6-9. 冲击试验 Shock test</p>	<p>按以下条件完成测试后再测定。Measurements shall be made following the test set forth below. (1) Impulse: 1/2 sinusoidal. Acceleration: 500 m/sec. 脉冲: 1/2正弦。加速度: 500米/秒。 (2) Acting time 作用时间: 11 msec 11毫秒 (3) Test direction 试验方向: 3 directions 3个方向 (4) Number of shocks 试验次数: 3 times per direction (9 times in total) 每个方向3次 (共计9次)</p> <div style="text-align: center;">  </div>	<p>接触阻抗: $100\text{m}\Omega$ 以下。 contact resistance:$100\text{m}\Omega$ max. 应满足5-1到5-2项目规格。 No 5-1 to 5-2 shall be satisfied.</p>

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6-10. 流动混合气体试验 Flowing mixed gas corrosion test	试验环境: H2S/N02/C12/S02。温度: 25度; 相对湿度: 75%; 持续时间: 10天。 Test atmosphere: H2S / N02 / C12 / S02. Temperature: 25 degree; Relative humidity: 75%; Duration: 10 days.	接触阻抗: 100mΩ 以下。 contact resistance: 100mΩ max. 无视觉缺陷。 No visual defect.
6-11. 湿敏等级 MSL level	根据标准JEDEC J-STD-020. 湿度敏感等级: 1级 According to standard JEDEC J-STD-020, humidity sensitivity level: Level 1	一般防护 General protection

7. 流焊条件 Flow welding conditions

项目 Item	焊锡条件 Soldering Conditions	
7-1. 可焊性试验 Solderability test	1、端子在260℃±5℃温度的焊锡槽内浸锡3秒±0.5秒。 1、The terminals shall be immersed into solder bath at 260℃±5℃ for 3S±0.5S. 2、手工焊锡温度: 350℃ Max 时间3±1秒。 2、Manual Soldering: 350℃ Max Time 3±1S.	浸渍面须有90%以上焊锡附着 More than 90% of the dipped part shall recovered by solder.
7-2. Automatic flow soldering 自动焊接	<p>For the product of SMT ,type solder according to the following conditions 对于 SMT 产品, 请按以下条件进行焊接</p> <p>surface of product temperature 部品表面温度 (°C)</p> <p>230°C 180°C 150°C 室温</p> <p>120sec max. pre-heating (预热) 3 ~ 4min. max. time inside soldering equipment 炉内通过时间 40s max. peak temperature 260°C max. 3sec max.</p> <p>time 时间(秒)</p> <p>Caution: the condition mentioned above is a emperature on the PWB surface on which parts are mounted. There are cases where PWB temperature greatly differs from switch's surface temperature depending on PWB aterial, size, thickness, etc. The switch's surface temperature shall not allowed to exceed 260°C. 注意: 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产不同, 因此, 千万小心不要让开关表面温度超过 260°C。</p>	
7-3. 允许焊锡过程次数 Allowable frequency of Soldering Process	2次以下。 2 times max.	

8. 焊锡注意事项 Soldering Precaution specification

8-1、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. 8-2、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°C max and 3 sec max. 8-3、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 on the knobs of switches. 8-4、请不要施加超负荷的压力或晃动开关。 Please be cautious not to give excessive static load or shock to switches. 8-5、开关焊接以后, 请不要叠放印刷基板。 Please be careful not to pile up P. C. B. after switches were soldered.
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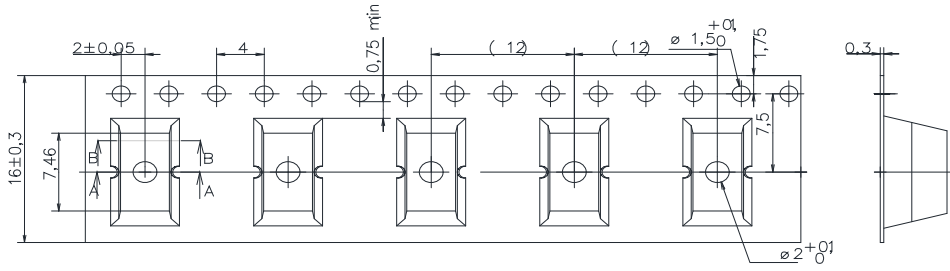
9. 包装部分 Packing Portion

9-1. 包装单位 Packaging Quantity 开关数量 The number of the switches 一卷1000 pcs开关 A roll of 1000 PCS switches.

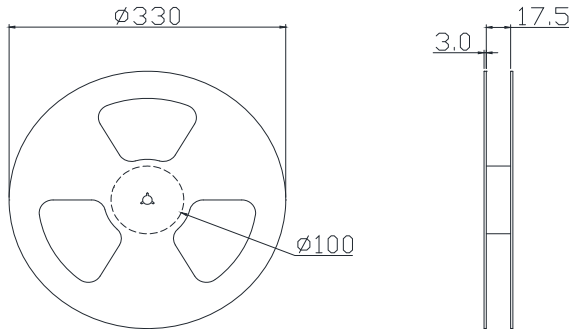
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9-2. 卷带形状尺寸 Tape form and Dimensions



9-3. 卷盘形状尺寸 Reel form and Dimensions



10. 贮存 Storage

10-1. 保管时尤其应注意避开高湿高温和有腐蚀性气体的环境. 如需长时间保存, 请不要打开包装箱.

Preservation under high temperature and high humidity or corrosive gas should be avoided especially. When you need to preserve for a long period, do not open the carton.

10-2. 保存期 Storage Period

出厂后12个月以内.

Maximum of 12 months after the date of delivery.

签收部门 Receiving Dept	GC1/1	PZ1/1			
回收 Reclamation	<input type="checkbox"/> 回收 Reclamation 份 PCS 日期 Date:	<input type="checkbox"/> 回收 Reclamation 份 PCS 日期 Date:			
受控编号 Document No.	修订 Revision	日期 Date	批准 Approved by	审查 Checked by	制定 Prepared by
SPEC-SD5535-0001	初始发行	2024.05.09			
文号 File No.					
检测开关系列规格书					
版本 VERSION: AO					