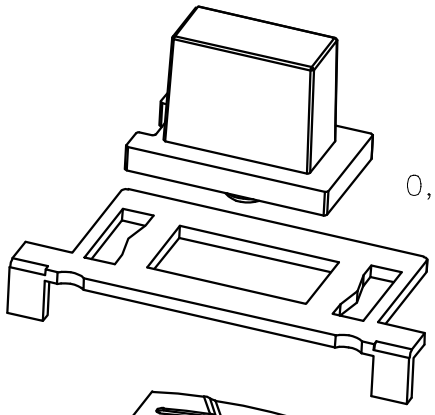
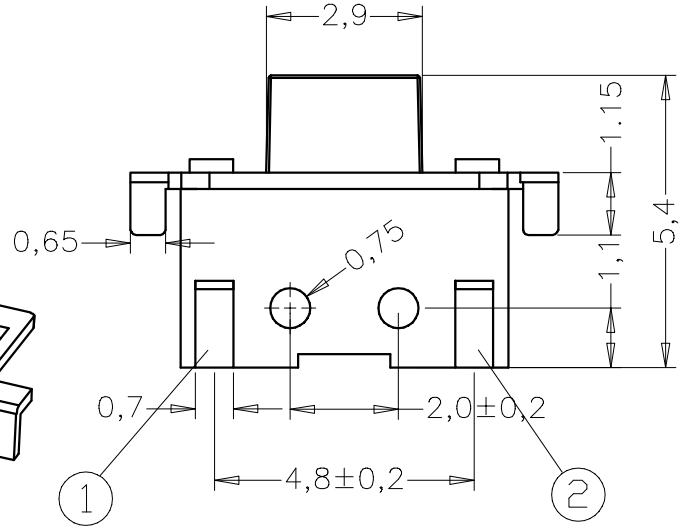
ACAD GENERATED DRAWING. DON'T CHANGE BY HAND.

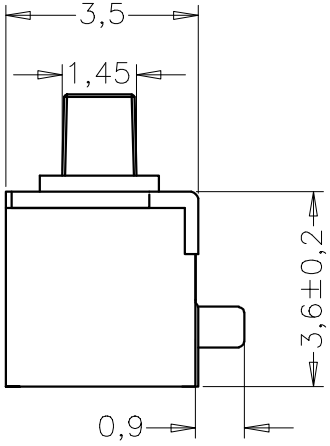
| REV | ECN NO. | APPD |
|---|---|---|
| A | HC240143 | PRIOJOM |

## 规格 Specifications

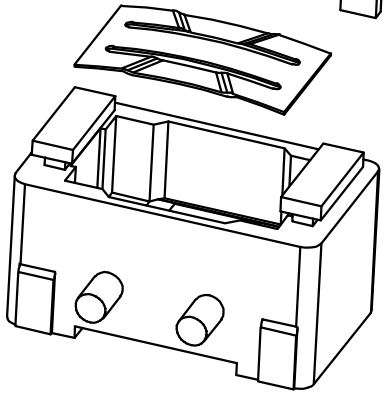
| | |
|---|---|
| 额定负荷 Rating | DC 12V/50mA |
| 接触电阻Contact Resistance | 100mΩ max. |
| 绝缘电阻Insulation resistance | DC100V 60S 100MΩ min. |
| 抗电强度Dielectric strength | AC250V(50~60HZ) 60S min. |
| 操作力Operation force | 160±30gf |
| 寿命试验Operating Life | 50,000 cycles |
| 行程Travels | 0.2±0.1mm |

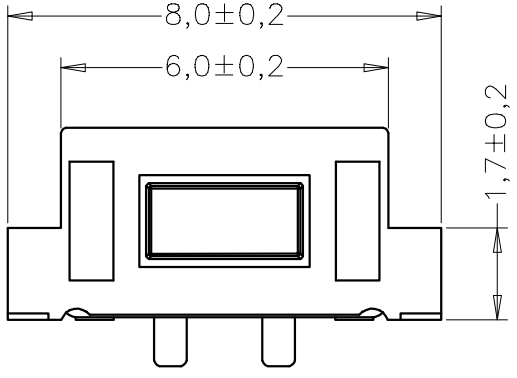


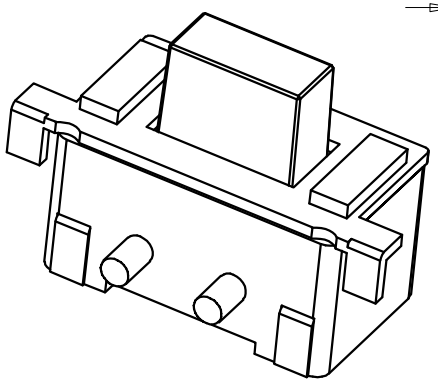


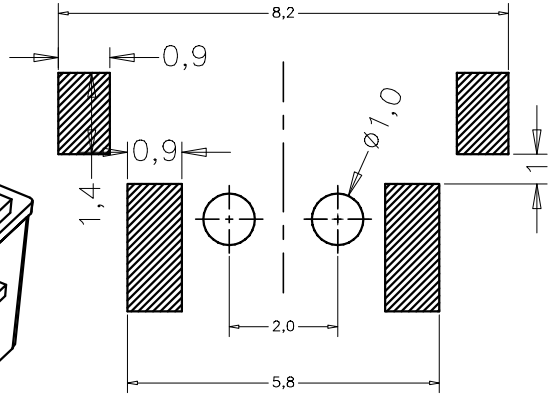




CIRCUIT DIAGRAM
回路图








安装参考图

PRODUCT NO.: 1TS002U****-*****-*****CP - CT

- 轻触开关
- 3X6系列
- 外形:
  - A=插脚
  - B=贴片
  - C=贴片带柱
  - G=侧按带柱
  - U=侧按长脚带柱
- 按钮颜色:
- 底座颜色:
- 盖板颜色:
  - 初始颜色 则不启用
- 操作力度:
  - 160=160gf
  - 250=250gf
- 手感:
  - 0=常规
  - 1=大手感
  - 2=小手感
  - 3=特殊手感
- 产品高度(H):
  - 430=4.3mm
  - 500=5.0mm
  - 530=5.3mm
  - 580=5.8mm
  - 600=6.0mm
  - 630=6.3mm
- 材质:
  - 0=初始材质
  - 1=新增材质 依次增加
- 编带
  - 非编带,不启用

| ITEM | PART NAME | QUANTITY | MATERIAL | FINISH |
|---|---|---|---|---|
| 5 | ACTUATOR | 1 | PPA | WHITE |
| 4 | COVER | 1 | BRASS | Zn-PLATED |
| 3 | DOME | 1 | STAINLESS STEEL | Ag-PLATED |
| 2 | HOUSING | 1 | PPA | BLACK |
| 1 | TERMINAL | 2 | BRASS | Ag-PLATED |

| | | | |
|---|---|---|---|
| X. ± 0.3 | X.° ± 3° | UNITS | MM |
| .X ± 0.2 | .X° ± 2° | MAT'L | |
| .XX ± 0.1 | .XX° ± 1° | FINISH | |
| .XXX ± 0.05 | .XXX° ± 0.5° | Q'TY | |

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NAME(INTENDED USE)
3X6 SMT SERIES
TACT SWITCH

PART NO.(INTENDED USE)
1TS002U-1600-4300CP-CT

APPD: W.P.Lu 2024.08.09
CHKD: S.L.Li 2024.08.09
DR: C.Li 2024.08.09

**HON YUAN**
HON YUAN PRECISION TECHNOLOGY. CO.,LTD.
GAUNGDONG, CHINA.

TITLE: PRODUCT DRAWING

DWG NO.: 1TS002U-1600-4300CP-CT

| SCALE | SHEET | REV. |
|---|---|---|
| 10/1 | 1/1 | A |

| 文件名称<br>**DOCUMENT NAME：**<br>PRODUCT SPECIFICATION | 主 题 SUBJECT：<br>3X6 TACT SWITCH<br>1TS002U-1600-4300CP-CT | 文件编号 DOCUMENT NO.：<br>EBG-AS1C-195 | | | |
|---|---|---|---|---|---|
| | | PAGE | 1 OF 12 | REV. | A |

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| | APPROVED | CHECKED | PREPARED | ISSUED BY: |
|---|---|---|---|---|
| BY | W.P.Lu | S.L.Li | C.Li | |
| DATE | 2024.08.08 | 2024.08.08 | 2024.08.08 | |

一.修订履历

| 版次 | ECN NO. | 修订页次 | 备注 |
|---|---|---|---|
| A | HC240143 | 初版发行 | |
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# 1. 通则 General Characteristics

## 1.1 应用范围 Application range:

此产品规格书适用于轻触开关 1TS002U-1600-4300CP-CT。

This product specification is applied to the 1TS002U-1600-4300CP-CT push-on type tact switch.

## 1.2 使用环境条件 Acclimatization:

使用温度范围 Operating Temperature range: -20℃~70℃

保存温度范围 Preservative Temperature range: -40℃~85℃

## 1.3 测试条件 Test Conditions:

若没有特别说明,则试验条件如下：

Unless otherwise specified, the atmospheric conditions for making measurements and tests are as follows:

温度 Temperature: 5~35℃

相对湿度 Relative Humidity:45~85%

气压 Air pressure:86~106Kpa

如对判定产生疑义，则试验按以下条件进行：

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

温度 Temperature:20±2℃

相对湿度 Relative Humidity:65±5%

气压 Air pressure:86~106Kpa

# 2. 外观和安装尺寸 Appearance & Mounting Dimensions:

## 2.1 外观 Appearance:

产品外观良好,无破损、锈蚀、裂纹和镀层缺陷。

The switch shall have good finishing，and no rust, crack or plating defects.

## 2.2 安装尺寸 Mounting dimensions:

应符合产品外形图 1TS002U-1600-4300CP-CT 的要求。

Refer to product appearance drawing No.: 1TS002U-1600-4300CP-CT.

# 3. 驱动方式 Operate Mode:

按钮式 Push-on types.

# 4. 回路方式 Circuit Mode：

如成品图 1TS002U-1600-4300CP-CT 所示(as assembly drawing 1TS002U-1600-4300CP-CT).

# 5. 额定负荷及寿命 Rating and Operating life.

额定负载 Rating: DC12V，50mA max.

负荷寿命 Operate Life With Load: 50,000cycles.

# 6. 电气性能 Electrical Characteristics

## 6.1 表观检查 Visual Examination

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 产品在未受力的情况下进行表观检查。<br>By Visual Examination choke without any out Pressure & testing. | 产品无明显缺陷,不影响使用<br>There shall be no defects that affect the serviceability of the product. |

## 6.2 接触电阻 Contact Resistance

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 开关在无电气负荷状态下，动作 3 次以上后，用接触电阻测试仪器测量各接点的接触电阻。<br>Switch without load, operate more than 3 times, use contact resistance testing apparatus to test the contact resistance of each point of contact. | 常态 Normal<br>100mΩ max<br>气候及寿命试验后 after weather and life proof:<br>200mΩ max |

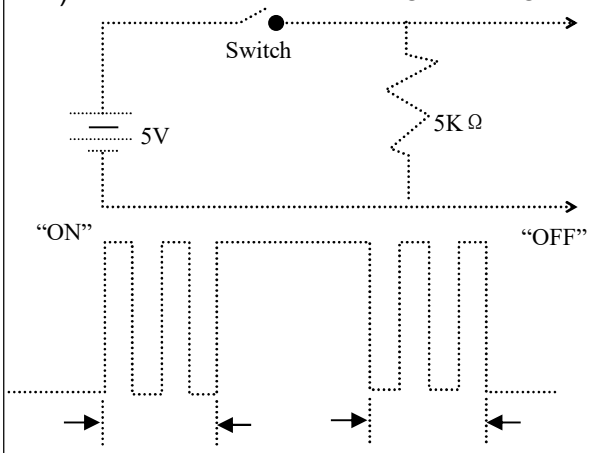
## 6.3 绝缘电阻 Insulation resistance

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 在相互绝缘的所有端子之间及各接线端子与外露的非载流金属零件之间加载 100VDC ，持续时间 60 ±5 S。<br>100VDC Voltage is applied between each pair of terminals and between the terminal and the metal frame for 60±5S. | 常态 Normal<br>100MΩ min<br>气候及寿命试验后 after weather and life proof:<br>10MΩ min |

## 6.4 抗电强度 Dielectric strength

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 在相互绝缘的所有接线端子之间加载 250VAC （泄漏电流应不超过 0.5mA ）的交流电,持续时间 60±5 S。<br>250VAC (leak current 0.5mA max ) alternate current load is applied between open terminals connected with wires, for 60±5S | 无击穿和飞弧现象。<br>No dielectric breakdown shall occur. |
| 各接线端子与金属铁壳之间加载 250VAC （泄漏电流应不超过 0.5mA ） 交流电,持续时间 60±5 S。<br>250VAC (leak current 0.5mA max )alternate current load is applied between terminal and metal cover, for 60±5S. | 无击穿和飞弧现象。<br>No dielectric breakdown shall occur. |

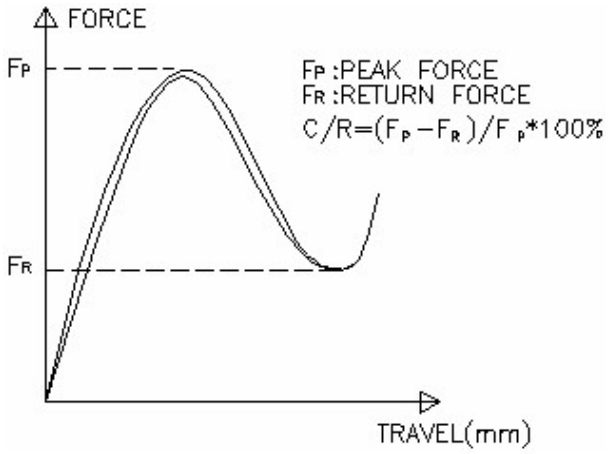
## 6.5 弹跳 Bounce

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 开关在正常的操作条件下（3~4 次/秒），测试通断弹跳时间。<br>Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 operations per sec.) bounce shall be tested at ‘ON’ and ‘OFF’.<br>  <br> | 5 m seconds max |

## 7. 机械性能 Mechanical Characteristics

### 7.1 操作力&回弹力 Operation force & Return force

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 在操作按钮末端沿操作方向均匀施加静载荷至行程末端,量测最大力度<br>A static load shall be applied to the tip of actuator in operating direction. Measure the maximum force during all the travel. | FP =160±30gf |
| 在操作按钮末端沿操作方向均匀施加静载荷,量测按钮返回过程中最小力度<br>A static load shall be applied to the tip of actuator in operating direction. Measure the minimum force during actuator return. | FR =40gf min. |




### 7.2 行程 Travels

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 开关发生转换后,操作组件末端与初始位置之间的距离。<br>Distance from the end of operating component to the start position when switch is being transformed | 0.2±0.1mm |

### 7.3 操作件强度 Operating Part Strength

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 置开关于正常安装位置，在操作件中心施加与操作件动作相反方向的 30N 静负荷，时间为 60 S。<br>Put the switch in the normal gearing position, Bring 300gf pressure which direction is opposite to the actuator operates direction in the tip of the actuator center, time is 60S. | 无机械和电气损伤。符合第 7.1 & 7.2 项要求。<br>The switch shall be free from abnormalities in electric and mechanism. According to item 7.1 & 7.2 to examine. |

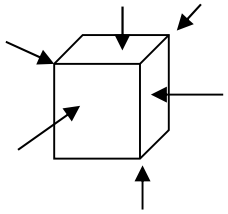
### 7.4 耐焊接热 Solder Heat Resistance

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 试件在下述条件下进行试验：焊槽试验: 1) 焊接温度:245±5℃; 2) 焊接时间:2±0.5 S; 3) 熔锡面积：PCB 板厚度的一半 PCB: t=1.6) 。<br>Switch shall be checked after following test: Solder trough test: 1) Soldering temperature: 245±5℃; 2) Soldering time:2±0.5S; 3) Soldering area, t/2 of PCB thickness（PCB: t=1.6) | 无机械和电气损伤。符合第 6.5 项要求。<br>The switch shall be free from abnormalities in electric and mechanism. According to item 6 .5 to examine. |

### 7.5 振动 Vibration Proof

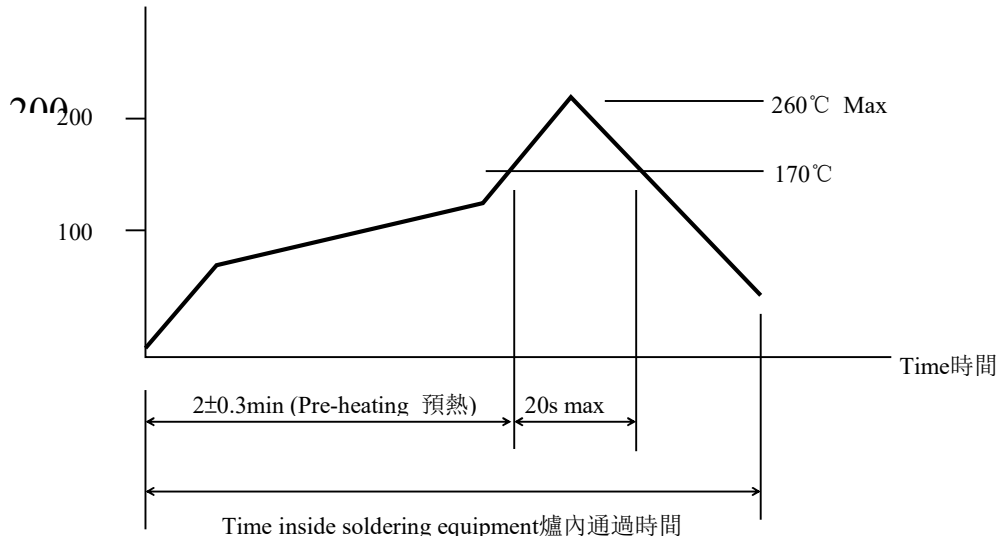
| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 开关采用常规安装方法牢固地安装在试验设备上，按下述参数进行试验: 1） 振频:10~55HZ 2） 振幅:1.5 mm 3） 振动变化速率:10~55~10HZ 大约 1 分钟 4） 变频方法:线形方式 5) 振动方向:三个互相垂直的方向，其中一个方向为操作元件运动的方向。Switch shall be secured to a testing machine by a normal mounting device and method, Switch shell be measured after following test: 1) Vibration frequency range:10~5HZ 2) Total amplitude:1.5mm 3) Sweep ratio:10~55~10Hz,Approx 1 minute 4) Method of changing the sweep vibration frequency : linear 5) Direction of vibration : Three perpendicular directions including actuating direction. | 符合第 6、第 7.1、7.2 条要求。<br>According to item 6 and 7.1 、7.2 to examine. |

### 7.6 冲击 Impact shock test

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 1) 加速度 Acceleration: 80G<br>2) 冲击次数：六个方向 3 次，共 18 次<br>1) Acceleration: 80G<br>2) Cycle of test: 3 cycles each in 6 directions, for a total 18 cycles.<br>  | 符合第 6、第 7.1、7.2 条要求。<br>According to item 6 and 7.1 、7.2 to examine. |

### 7.7 可焊性 Solder Ability

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 焊接温度参考如下 IR 图表<br>TL(L)-6□□ Soldering Temperature: SEE IR chart | 超过 90%的焊锡面积被焊料覆盖。<br>More than 66% of surface area of the portion immersed shall be covered with solder. |



# 8 耐久性试验 Durability Characteristics

## 8.1 寿命试验 Operating Life

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 在额定负荷的条件下，在寿命测试设备上连续转换 50,000 次，频率:60 次/分钟。操作力为规格值的最大值<br>50,000 cycles of operation shall be performed continuously cycles with load at a rate of 60 cycles per minute. Push force: Maximum value of operation force. | 1) 动作力: 初始值的±30%。<br>Operating force : within **±30%** initialization value.<br>2) 接触电阻: 200 mΩ Max Contact resistance 200 mΩ Max<br>3) 绝缘电阻: 10MΩ min Insulation Resistance: 10MΩ min<br>4) 弹跳 10 ms max<br>Bounce 10 m sec max |

# 9 耐侯试验 Weather Proof Characteristics

## 9.1 耐低温 Resistance Low Temperature

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 试件在-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 1 小时，并在此后的 1 小时内对试件进行测量，水滴应消失。<br>After testing at -30±2℃for 96hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour，and measurement shall be made with 1 hour after that, water drops shall be eliminated. | 符合第 7.1 项要求<br>As shown in item 7.1 |

## 9.2 耐热性 Heat Resistance

| 测试条件 Test Method/Condition | 标准 Criteria |
|---|---|
| 试件在 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 1 小时，并在此后的 1 小时内对试件进行测量，水滴应消失。<br>After testing at 80±2℃ for 96 hours the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour and measurement shall be made with 1 hour after that, water drops shall be eliminated. | 符合第 7.1 项要求<br>As shown in item 7.1 |

## 9.3 恒定湿热 Humility Resistance

| Test Method/Condition | Requirement |
|---|---|
| 试件在 60±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 1 小时，并在此后的 1 小时内对试件进行测量，水滴应消失。<br>After testing at 60±2℃,90-95%RH for 96 hours ,the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that .Water drops shall be eliminated. | 1) 符合第 7.1 项要求<br>As shown in item 7.1<br>2) 接触电阻: 200 mΩ Max Contact resistance 200 mΩ Max<br>3) 绝缘电阻: 10MΩ min Insulation Resistance: 10MΩ min |

## 10 测试顺序 Test Sequence

| 测试项目 Test Description | 测试组别 Test Group | | | | | | | | Samples (n) |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | Defective(C) |
| 1.表观检查 Visual examination | 1,10 | 1,9 | 1,13 | 1,13 | 1,13 | | | | n=5,C=0 |
| 2.操作力 Operating force | 2,9 | 2,8 | 2,12 | 2,12 | 2,12 | | | | n=5,C=0 |
| 3. 回弹力 Return force | 3,8 | 3,7 | 3,11 | 3,11 | 3,11 | | | | |
| 4.接触电阻 Contact resistance | 4,7 | 4,6 | 4,10 | 4,10 | 4,10 | | | | n=5,C=0 |
| 5.抗电强度 Dielectric strength | | | 5,9 | 5,9 | 5,9 | | | | n=5,C=0 |
| 6.绝缘电阻 Insulation resistance | | | 6,8 | 6,8 | 6,8 | | | | n=5,C=0 |
| 7.寿命试验 Operating Life | | 5 | | | | | | | n=5,C=0 |
| 8.振动 Vibration Proof | 6 | | | | | | | | n=5,C=0 |
| 9.冲击 Impact shock test | 5 | | | | | | | | n=5,C=0 |
| 10.耐低温 Resistance Low Temperature | | | 7 | | | | | | n=5,C=0 |
| 11.耐热性 Heat Resistance | | | | 7 | | | | | n=5,C=0 |
| 12.恒定湿热 Humility Resistance | | | | | 7 | | | | n=5,C=0 |

## 11. 有害物质管控 Harmful material control

环保要求 ENVIRONMENT SPECIFICATION

下列 8 种环境危害物质禁止使用，其前处理方式及测试方法依据客户规定办理

| | |
|---|---|
| 1 | 鎘及其化合物 (Cadmium and cadmium compounds) |
| 2 | PBB (多溴聯苯)類 & PBDE (多溴化二苯醚)類<br>PBB (Polybrombiphenyl ) category<br>PBDE (PolyBrominated biphenyl ethers) category |
| 3 | 多氯聯苯 (PCB)類 PCB (Polychlorinated biphenyl) category |
| 4 | 多氯化奈類 Polychlorinated naphthalene categor |
| 5 | 有機錫化合物 (三丁基錫類 & 三苯基錫類) Organic tin compounds (Tributyl tin category & Triphenyl tin category) |
| 6 | 石棉 (Asbestos) |
| 7 | 偶氮化合物 (Azo compounds ) (可能分解<br>生成揮發胺, 不允許使用於與人體持續接觸之部位) |
| 8 | FR-720 等溴素系難燃劑(CAS No. 21850-44-2)(FR-720 and similar flame retardant classified as CAS No. 21850-44-2) |