

## 4 代板端座子规格书

### (A-IPEX4-0.6A)

#### 1. Application (应用) :

This SMT type Micro coaxial RF Rec.products are designed for Mobile phones, Wireless LAN, Mini-PCI, Bluetooth, PDA, GPS, electronic measuring instruments, etc

该系列产品设计用于移动电话, 无线LAN, Mini-PCI, 蓝牙,PDA, GPS, 电子测量仪器等等.

#### 2.Scope(范围):

This specification covers the requirements for product performance, test methods and quality assurance provisions of USS RF Receptalce(IV Generation )Connectors.

本规范内容包括 USS RF 母座(第四代)射频同轴连接器的产品性能、测试方法及品质保证方面的要求。

#### 3. Technology Parameters (技术参数)

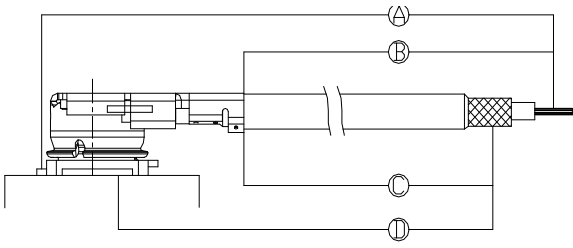
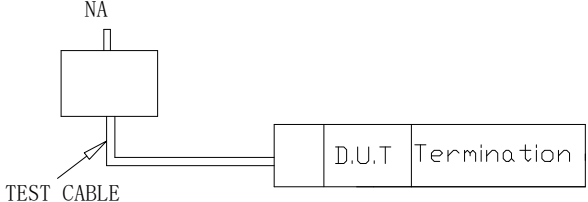
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|---------------------------------------------|---------------|
| 3.1 Voltage Rating (额定电压)                   | 60VAC (R.M.S) |
| 3.2 Frequency Range (频率范围)                  | DC~6G Hz      |
| 3.3 Nominal Characteristic Impedance (特征阻抗) | 50±5 Ohm      |
| 3.4 Operating Temperature Range (工作温度范围)    | -40℃~+85℃     |
| 3.5 Operating Humidity (工作湿度)               | 95% R.H.MAX   |

#### 4. Ratings (额定性能要求)

|                                          |                                                                     |
|------------------------------------------|---------------------------------------------------------------------|
| 4.1 Initial Insulation Resistance (绝缘电阻) | 500 M Ohm                                                           |
| 4.2 Contact Resistance (接触电阻)            |                                                                     |
| 4.2.1 Inner Contact (内导体)                | 20 milliohm Max. (Initial初始值)<br>20 milliohm Max. (After tested试验后) |
| 4.2.2 Outer Contact (外导体)                | 20 milliohm Max. (Initial初始值)<br>20 milliohm Max. (After tested试验后) |
| 4.3 Withstand Voltage (耐电压)              | 200V AC 1 Min.                                                      |
| 4.4 V .S .W. R* (电压驻波比)                  | 1.3Max.( DC~3GHz);1.4Max.(3~6GHz)                                   |

#### 5. Electrical Performance(电性性能)

| No  | Items<br>(项目)                   | Test Condition<br>(测试条件)                                                                                                                                                                                                                                                                                                       | Specifications<br>(规格)                                                                                                      |
|-----|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 5.1 | Contact<br>Resistance<br>(接触电阻) | ( IEC512-2-1(2a) )<br>Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in figure 1 by the four terminal method.<br>将母座焊接在测试板上,并且将公头插入在焊好的母座上,采用四种端接方式(如下图 1)依次测量电阻值.<br>Open circuit voltage/放电压: 20mV MAX<br>Circuit current/电流: 10mA MAX | Inner contact(中心导体):<br>Initial: 20mΩ MAX<br>After: 20mΩ MAX<br>Ground contact(外导体)<br>Initial: 20mΩ MAX<br>After: 20mΩ MAX |

|     |                                          |                                                                                                                                                                                                                                                              |                                                                                                  |
|-----|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|     |                                          |  <p>Inner Contact/中心导体<br/>A - B<br/>Ground Contact/外导体<br/>D - C</p> <p><b>Figure 1</b></p>                                                                               |                                                                                                  |
| 5.2 | Insulation Resistance<br>(绝缘电阻)          | <p>Mate the plug and receptacle connector together, and then, apply DC 200 V Voltage between the inner contact and the ground contact in accordance with IEC 512-4-1(3a)</p> <p>按照 IEC 512-4-1(3a),将公母头配合在一起,然后在内导体和拉地端之间施加 200V DC 的电压,然后,进行相关的测试。</p>      | <p>Initial 初始值:<br/>500 MΩ Min.<br/>After 测试后:<br/>100 MΩ Min.</p>                               |
| 5.3 | Dielectric withstanding voltage<br>(耐电压) | <p>Mate the plug and receptacle connector together, and then apply AC 200 V between the inner contact and the ground contact in accordance with IEC 512-4-1(4a)</p> <p>按照 IEC 512-4-1(4a)标准,将公母头配合在一起,然后在内导体和接地外导体之间施加 200V AC 的电压,并进行相关测试。</p>              | <p>No flashover,<br/>No sparkover,<br/>No excess leakage,<br/>No breakdown<br/>无瞬断、熔闪、漏电、击穿。</p> |
| 5.4 | V.S.W.R<br>(电压驻波比)                       | <p>Measure the V.S.W.R as shown in figure 2 by the network analyzer<br/>Frequency: DC~11GHz</p> <p>通过网络分析仪测试 V.S.W.R, 频率范围为 DC~6GHz.如图 1 所示。</p> <p><b>Figure 2</b></p>  | <p>1.3 Max.<br/>(DC~3GHz);</p> <p>1.4Max.<br/>(3~6GHz);</p>                                      |

## 6. Mechanical Performance(机械性能)

| No  | Items<br>(项目)            | Test Condition<br>(测试条件)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Specifications<br>(规格)                                                                                                                                                                                                           |
|-----|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1 | Un-mating Force<br>(拔出力) | <p>IEC 512-15-4(15d)<br/>Solder the receptacle connector to the test board and mate the plug connector, then measure the un-mating force at speed <math>25 \pm 3</math> mm/minutes along by the push-push machine</p> <p>将公母座完全配合到位后,将公母座分离到完全分开位置并测试要求的拔出力,<br/>速率: 每分钟 <math>25 \pm 3</math> 毫米。</p>                                                                                                                                                                                                                                                                                           | <p>1.Initial(初值):<br/>4N (0.4Kgf) Min.<br/>2.After 30 Cycle<br/>(30 次插拔后):<br/>2N(0.2Kgf) Min.</p>                                                                                                                               |
| 6.2 | Durability<br>(机械寿命)     | <p>Mate and un-mate the receptacle connector(soldered to the test board) and plug connector 100 cycles at the speed of <math>25 \pm 3</math> mm/minutes along the mating direction by the push-push machine</p> <p>将母座焊接在测试板上, 然后, 通过插拔力测试仪沿配合方向以每分钟 <math>25 \pm 3</math> 毫米的速度插拔公母头 30 个循环, 然后测试参数。</p>                                                                                                                                                                                                                                                                                        | <p>Appearance: No abnormality<br/>Contact Resistance:<br/>Shall meet 5.1<br/>外观: 无损伤<br/>接触电阻:<br/>满足节 5.5.1 要求</p>                                                                                                              |
| 6.3 | Vibration<br>(振动)        | <p>IEC 512-6-4(6d)<br/>Apply the following vibration to the mating connector.<br/>During the testing,run 100mA DC to check electrical discontinuity.<br/>Frequency:10Hz→ 100Hz→ 10Hz/approx 20minutes.<br/>Half amplitude,Peak value of acceleration: 1.5mm or <math>59 \text{ m/s}^2</math> (6G)<br/>Directions,cycle:3 mutually perpendicular direction,<br/>3 cycles about each direction<br/>将公母头配合在一起, 并施加如下振动条件测试。<br/>在测试期间,施加 100mA DC 电压,并检验电不连续性。<br/>频率: 10Hz→ 100Hz→ 10Hz/约 20minutes.<br/>半振幅、加速度: 1.5mm、<math>59 \text{ m/s}^2</math> (6G)<br/>方向和循环次数:<br/>每个互相垂直方向上进行 3 次测量。</p> | <p>Appearance: No abnormality<br/>Contact Resistance:<br/>Shall meet 5.5.1<br/>No discontinuities of <math>1 \mu\text{s}</math> or longer duration<br/>外观: 无损伤<br/>接触电阻: 满足节 5.5.1 的要求, 电不连续性不超过 <math>1 \mu\text{s}</math>。</p> |
| 6.4 | Shock<br>(机械冲击)          | <p>IEC 512-6-3(6c)<br/>The object of this test procedure is to detail a standard method to assess the ability of a connector to withstand specified severity of mechanical shock.<br/>此测试程序的目的是要作一详细标准以评估连接</p>                                                                                                                                                                                                                                                                                                                                                                                  | <p>Appearance: No abnormality<br/>Contact Resistance:<br/>Shall meet 5.5.1</p>                                                                                                                                                   |

|  |  |                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                      |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
|  |  | <p>器能承受特定严格机械冲击的能力。</p> <p>Peak value of acceleration:735m/s<sup>2</sup> (75G)</p> <p>Duration :11ms</p> <p>Wave form : half sinusoidal</p> <p>Directions,cycle : 6 mutually perpendicular direction, 3cycles about each direction</p> <p>振幅峰值, :735m/s<sup>2</sup> (75G)</p> <p>持续时间: 11 毫秒</p> <p>波型: 半正弦波</p> <p>方向和循环次数: 每 6 个相互垂直方向上各进次 3 次。</p> | <p>No discontinuities of 1 μ s or longer duration</p> <p>外观: 无损伤</p> <p>接触电阻: 满足节 5.5.1 要求</p> <p>电不连续性不超过 1 μ s</p> |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|

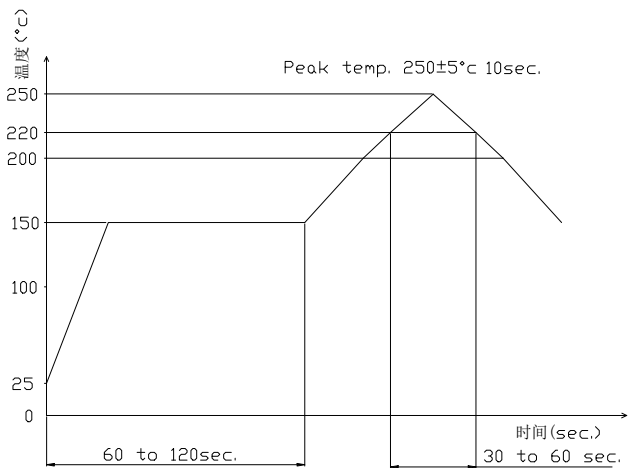
## 7. Environmental Performance(环境性能)

| No  | Items<br>(项目)           | Test Condition<br>(测试条件)                                                                                                                                                                                                                                                                                       | Specifications<br>(规格)                                                                                                                                                                                                                                                                 |
|-----|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.1 | Humidity<br>(湿度试验)      | <p>Apply the following environment to the mating connector in accordance with IEC 512-11-3(11c)</p> <p>Temperature : 25~65℃</p> <p>Humidity : 90~95%R.H</p> <p>Duration: 96 hours</p> <p>根据 IEC 512-11-3(11c)试验方法,对已配合的连接<br/>器施加下列条件测试.</p> <p>温度: 25~65℃</p> <p>湿度: 90~95%R.H</p> <p>持续时间: 96 小时</p>         | <p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 5.5.1</p> <p>Insulation Resistance: Shall meet 5.5.2</p> <p>Dielectric withstanding voltage Shall meet 5.5.3</p> <p>外观: 无损伤</p> <p>接触电阻: 满足 5.5.1</p> <p>绝缘电阻: 满足 5.5.2</p> <p>耐电压: 满足 5.5.3</p>                   |
| 7.2 | Thermal Shock<br>(冷热冲击) | <p>Apply the following environment to the mating connector in accordance with IEC 512-11-4(11d)</p> <p>Temperature : -55~85℃</p> <p>Transition time: : 5min. MAX</p> <p>Cycles: 5 Cycles</p> <p>根据 IEC 512-11-4(11d)方法,对已配合的连接<br/>器施加下列条件测试.</p> <p>温度: -55~85℃</p> <p>转换时间: 5 min Max.</p> <p>循环次数: 5 次数</p> | <p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 5.5.1</p> <p>Insulation Resistance: Shall meet 5.5.2</p> <p>Dielectric withstanding voltage Shall meet 5.5.3</p> <p>外观: 无损伤</p> <p>接触电阻: 满足节 5.5.1 中的要求</p> <p>绝缘电阻: 满足节 5.5.2 中的要求</p> <p>耐电压: 满足节 5.5.3 中的要求</p> |

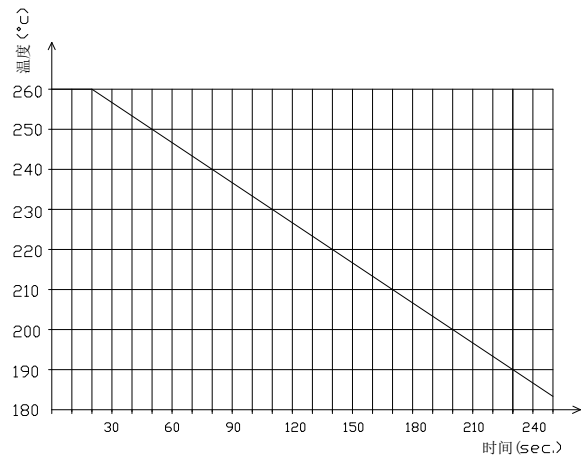
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|-----|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.3 | Resistance to soldering heat<br>(耐焊接热试验) | <p>According to 8.8.1, Apply reflow soldering condition.<br/>Measurement after 24h+/-2h.</p> <p>按 8.8.1 中曲线条件进行回流焊接,并在 24 小时后进行相关测试.</p>                                                                                                                                                                                                                                                                                      | <p>Appearance: No abnormality<br/>Contact Resistance: Shall meet 5.5.1<br/>Insulation Resistance: Shall meet 5.5.2<br/>Dielectric withstanding voltage Shall meet 5.5.3</p> <p>外观: 无损伤<br/>接触电阻: 满足节 5.5.1 中的要求<br/>绝缘电阻: 满足节 5.5.2 中的要求<br/>耐电压: 满足节 5.5.3 中的要求</p> |
| 7.4 | Salt Spray<br>(盐雾测试)                     | <p>IEC 512-11-6(11f)<br/>Apply the following environment to the mating connector<br/>Temperature : <math>35\pm 2^{\circ}\text{C}</math><br/>Relative Humidity : 90~98%R.H<br/>Salt water density: <math>5\pm 1\%</math><br/>Duration : 48 hours</p> <p>根据 IEC 512-11-6(11f)试验条件中的要求,对已配合的连接器施加下列条件测试.<br/>温度: <math>35\pm 2^{\circ}\text{C}</math><br/>相对湿度: 90~98%R.H<br/>盐水浓度: <math>5\pm 1\%</math><br/>持续时间: 48 hours</p> | <p>Appearance: No abnormality<br/>Contact Resistance: Shall meet 5.5.1</p> <p>外观: 无损伤<br/>接触电阻: 满足节 5.5.1 中的要求</p>                                                                                                                                                   |
| 7.5 | solderability<br>(可焊试验)                  | <p>Apply the following environment to the mating connector<br/>Temperature : <math>245\pm 2^{\circ}\text{C}</math><br/>Duration : 3~5 second<br/>Test sample should be observed by the magnification of 10times after the test.</p> <p>按下列条件对已配合的连接器进行测试.<br/>温度: <math>245\pm 2^{\circ}\text{C}</math><br/>持续时间: 3~5 秒钟.<br/>观测: 10 倍放大镜</p>                                                                                 | <p>At least 95% covered by a continuous new solder coating.<br/>吃锡面积大于 95%以上。</p>                                                                                                                                                                                    |

8、SMT Temperature Curve （SMT 温度曲线图）

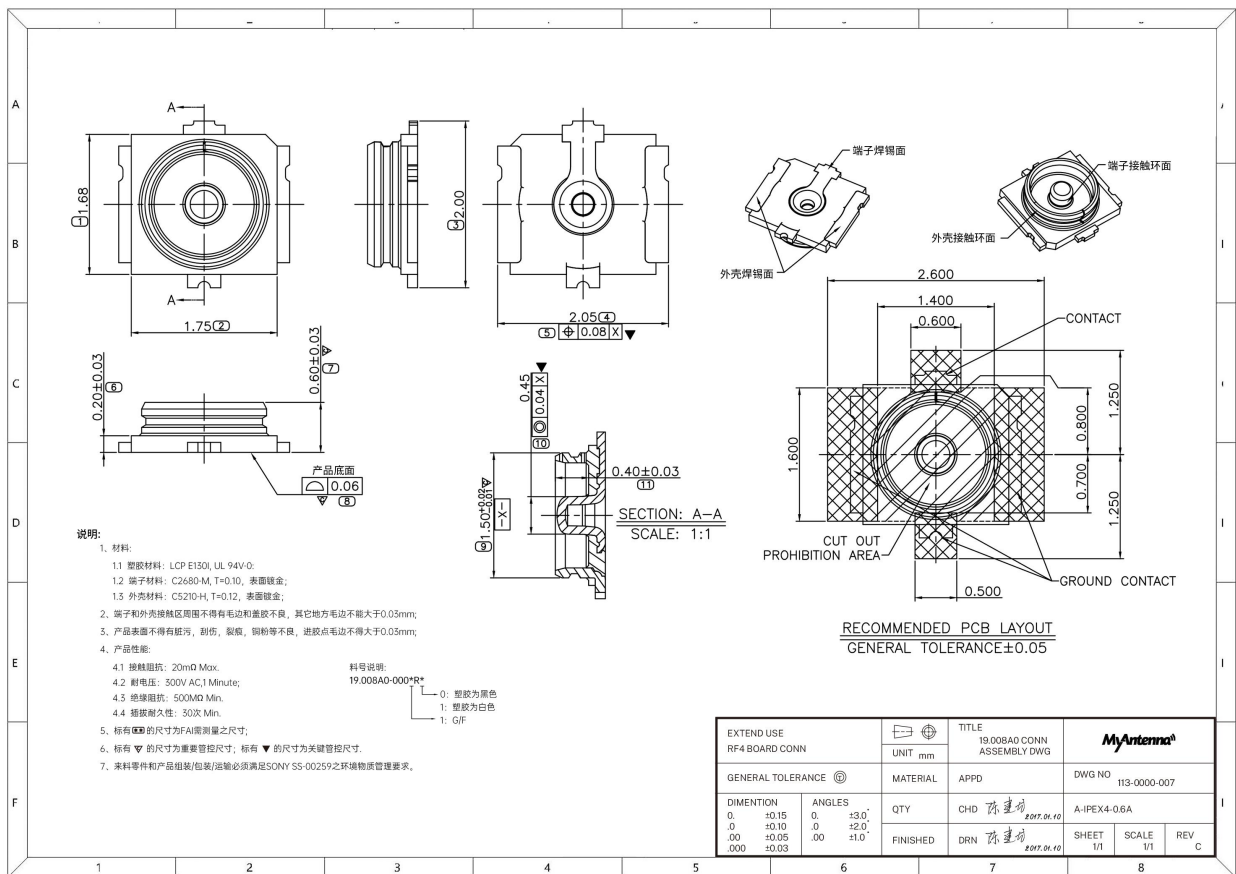
8.1 Recommended Tem.&time relative curve of Re-flow.  
建议回流焊温度与时间条件



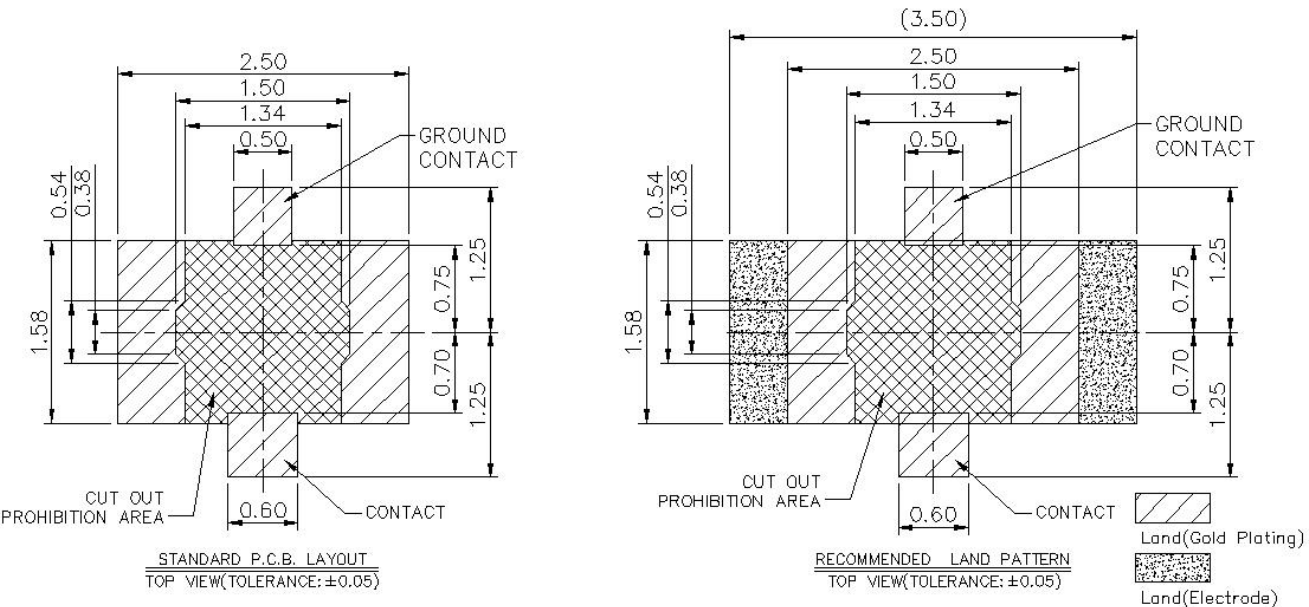
8.2 Extremed Tem.&time curve of Re-flow  
回流焊极限温度与时间条件



9. Profile Dimensions(外形规格)



10.Recommanded PCB LAYOUT(推荐的 PCB 安装焊盘规格)



11.Packaging (包装)

11.1 上带的剥离力度: 300mm/min 的速度进行剥离, 力度最大应该是 1.3N  
Peeling off Force of Cover Tape: When cover tape is peeled off as in right figure by a speed of 300mm/minute.The peeling off force should be 1.3N maximum.

| No   | Items<br>(项目)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Test Condition<br>(测试条件) | Specifications<br>(规格) |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------|
| 12.1 | <p>PCB 板设计时极性要求注意事项<br/>(Note polarity requirements of the PCB design)</p> <p>配合高度较小的 USS 系列产品中<br/>PCB 设计过程中,应避免 RECE Contact 与 Plug Ground Contact 卷边同向,以防止不小心有按压旋转时 Plug Ground Contact 与 RECE Contact 短接.<br/>With the height of the smaller USS range of products<br/>PCB design process, you should avoid the the RECE Contact and Plug Ground Contact curling in the same direction to prevent the careless press rotating Plug Ground Contact and RECE Contact shorted.</p> |                          |                        |





