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|  <b>XB Connectivity</b> | Doc. No.     | X-A0162-19 | Page No.    | 1/9       |
|  | Date Issued  | 2020-04-06 | Prepared by | Josephine |
|  | Date revised | 2020-11-23 | checked by  | Jay       |
| <b>Product Specification</b>   | Rev. No.     | 01         | Approved by | Mei Chen  |
| <b>Title:</b> 1.5mm Pitch X1515-A Series Connector   |              |            |             |           |

## 1. SCOPE ( 适用范围 )

This specification covers the performance , tests and quality requirements for the **1.5mm** series wire to board connector. ( XB Connectivity 本规范涵盖了盖 **1.5mm** 系列线对板连接器性能、测试和质量要求 )

## 2. PRODUCT DESCRIPTION ( 产品描述 )

| DESCRIPTION ( 描述 )                      | Part Number ( 料号 ) |
|---|--------------------|
| 1.5mm 线对板连接器(Molex 503154)针座,立贴,双排,LCP料 | X1515WVS-2xXX-LPSW |
| 1.5mm 线对板连接器(Molex 503148)针座,卧贴,双排,LCP料 | X1515WRS-2xXX-LPSW |
| 1.5mm 线对板连接器(Molex 503149)HSG,双排        | X1515H-2xXX-PT     |
| 1.5mm 线对板连接器(Molex 502579)端子,磷铜先冲后镀     | X1515T-PXX         |
|   |                    |
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|   |                    |


## 3. APPLICABLE DOCUMENT ( 适用文件 )

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence. ( XB Connectivity 下列文件构成本规范的一部分，在此规定的范围内。本规范要求与产品图纸有冲突时，以产品图纸为准。如果本规范的要求与参考文件发生冲突，应以本规范为准。 )

## 4. REQUIREMENTS ( 要求 )

### 4.1. Design and Structure ( 设计和结构 )

Product shall be of the design, structure and physical dimensions specified on the applicable product drawing. ( XB Connectivity 产品的设计、结构和物理尺寸参考所适用的产品图纸 )

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#### 4.2. Materials/ Finish (材料/表面处理)

| Specification<br>规格内容 |      | Materials<br>材质    | Disposal of Surface<br>表面处理             |
|-----------------------|------|--------------------|---|
| Terminal 端子           |      | Phosphor Bronze 磷铜 | Tin Plated: 70μ. Nickel: Over 30μ"      |
| Housing 胶壳            |      | PBT                | UL 94V-2/UL94V-0                        |
| Wafe<br>针座            | Base | LCP                | UL 94V-2/UL94V-0                        |
|                       | PIN  | Phosphor Bronze 磷铜 | Over Tin 70μ" Plated ; Over 30μ" Nickel |

Please Refer to the Project drawing for the above Specification. (上述参数请以工程图为准)

#### 4.3. Ratings (额定功率)

| XB Connectivity Item (项目)                           | Standard (标准)                                    |       |
|---|--|-------|
| Rated Voltage (Maximum) 额定电压                        | 100V   | AC/DC |
| Rated Current (Maximum) 额定电流                        | 1.5A   |       |
| Ambient temperature Range 使用温度范围                    | -40℃~+105℃<br>From -40 to +105 degree centigrade |       |
| Applicable wire insulation O.D 适用线径                 | AWG 24#~28#                                      |       |
| NOTE备注 : Including terminal temperature rise 升温时含端子 |  |       |

### 5. TEST STANDARD (测试条件)

5.1 Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows (除另有说明外,用以进行测量和测试的标准环境条件范围如下)

Ambient temperature (环境温度) : 5℃ to 35℃

Normal humidity (正常湿度) : 45% to 85%

Air pressure (气压) : 86Kpa to 106Kpa

5.2 However if doubt arises on the decision based on the measured Values under the above-mentioned Conditions. The following conditions shall be employed: (但是在对判定产生疑问时,按下述状态实施)

Temperature (温度) : 20±2℃

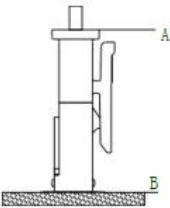
Relative humidity (相对湿度) : 65±5%

Air pressure (气压) : 86Kpa to 106Kpa

**Product Specification****Title:** 1.5mm Pitch X1515-A Series Connector**8. PERFORMANCE AND TEST DESCRIPTION (性能和测试类型)****8.1 APPEARANCE (外观)**

| ITEM | DESCRIPTION (类型)          | TEST CONDITION (测试条件) | REQUIREMENT (要求)   |
|------|---------------------------|-----------------------|--|
| 1    | <b>Appearance</b><br>(外观) | <b>Visual.</b> (目视)   | <b>Should not have any flaw<br/>Scratch discoloration and<br/>crushed</b> (无任何裂痕、刮伤、<br>污染和变形) |

**8.2 ELECTRICAL (电气)**

| ITEM | DESCRIPTION (类型)                    | TEST CONDITION (测试条件)  | REQUIREMENT (要求)   |
|------|-------------------------------------|--|--|
| 1    | <b>contact resistance</b> (接触阻抗)    | <b>Based upon EIA-364-06A.</b><br><b>Mate connectors, measure by dry circuit, 20mV MAX, 10mA.</b> (公母配合, 开放电压 20mV 以下, 电流 10mA 检测连接器 A~B 区)<br> | <b>Initial (初始): 10 milliohms<br/>Max.</b><br><b>After Test (测试后): 20<br/>milliohms Max.</b> |
| 2    | <b>Insulation Resistance</b> (绝缘阻抗) | <b>Based upon EIA-364-21B/MIL-STD-202 Method 302 Cond. B</b><br><b>Mate connectors, apply 500V DC between adjacent terminal or ground.</b><br>(公母配合, 在相邻端子, 端子与地片之间, 使用 500V 的直流电, 检测连接器)  | <b>1000 MΩ min.</b>  |
| 3    | <b>Dielectric strength</b> (耐电压)    | <b>Based upon EIA-364-20A/MIL-STD-202 Method 301</b><br><b>Mate connectors, apply 1000V AC for 1 minute between adjacent terminal or ground.</b> (公母配合, 在相邻端子, 端子与地片之间, 使用 1000V 的交流电 1 分钟, 检测连接器)                                 | <b>There shall be no breakdown.</b><br>(无击穿、闪烁现象)  |



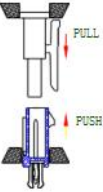
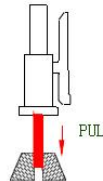
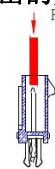
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|   |  |  |                     |
|---|--|--|---------------------|
| 4 | <b>Contact resistance on crimped portion (柳线后端子接触阻抗)</b> | <b>Crimp the applicable wire on to the terminal measure by dry circuit 20mV MAX, 10mA. (柳线后之端子, 开放电压 20mV 以下, 电流 10mA 检测连接器)</b> | <b>10 milliohms</b> |
|---|--|--|---------------------|

**8.3 MECHANICAL (机械)**

| ITEM            | DESCRIPTION (类型)                                    | TEST CONDITION (测试条件)   | REQUIREMENT (要求)  |     |     |     |     |                 |     |     |     |
|-----------------|---|---|---|-----|-----|-----|-----|-----------------|-----|-----|-----|
| 1               | <b>Insertion &amp; Retention Force (插拔力)</b>        | <p><b>Insert and withdraw Connectors at the speed rate of 25.4±3mm/minute. (以每分钟 25.4±3mm 的速率插入和拔出)</b></p>   | <p>Refer to paragraph 6<br/>参照第 10 项</p>  |     |     |     |     |                 |     |     |     |
| 2               | <b>Terminal/ Housing Retention Force (端子保持力)</b>    | <p><b>Apply axial pull out force at the speed rate of 25.4±3mm/minute on the terminal assembled in the housing. (以每分钟 25.4±3mm 的速率, 将端子从 Housing 内轴向拔出的力量。)</b></p>  | <b>24.5N {2.5kgf}Min.</b>   |     |     |     |     |                 |     |     |     |
| 3               | <b>Terminal Insertion Force (端子插入力)</b>             | <p><b>Insert the crimped terminal into the housing. (柳线后之端子插入 Housing 所需最大力量)</b></p>   | <b>14.7N {1.5kgf} Max.</b>  |     |     |     |     |                 |     |     |     |
| 4               | <b>PIN Retention Force (PIN 针保持力)</b>               | <p><b>Apply axial push force at the speed rate of 25.4±3mm/minute. (以每分钟 25.4±3mm 的速率, 将 PIN 针从 Wafer 内轴向拔出的力量)</b></p>    | <b>13.7N {1.4kgf} min.</b>  |     |     |     |     |                 |     |     |     |
| 5               | <b>Tensile strength (Crimped connections) (端子压)</b> | <b>Fix the crimped terminal, apply axial pull out force on the wire. (Do not crimp insulation part). (固定柳线后的端子, 使</b>   | <table border="1"> <tr> <td>AWG</td> <td>#20</td> <td>#22</td> <td>#24</td> </tr> <tr> <td>Spec. kgf. Min.</td> <td>6.0</td> <td>4.0</td> <td>2.0</td> </tr> </table> | AWG | #20 | #22 | #24 | Spec. kgf. Min. | 6.0 | 4.0 | 2.0 |
| AWG             | #20   | #22   | #24   |     |     |     |     |                 |     |     |     |
| Spec. kgf. Min. | 6.0   | 4.0   | 2.0   |     |     |     |     |                 |     |     |     |



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|   |  |   |   |
|---|--|---|---|
|   | 着强度)   | 电线与端子分离时所需的最小力量)  | <b>Note&gt; As for unspecified wire sizes in this specification define values with clients</b>                                    |
| 6 | <b>Repeated Insertion/<br/>Withdrawal<br/>(重复插拔)</b> | <b>When mated up to 30 cycles repeatedly by the rate of 10 cycles per minute. (以每分锺不超过 10 次的速率, 将公母插拔 30 次.)</b>  | <b>Contact Resistance (接触阻抗): 20 milliohms Max.</b>   |
| 7 | <b>Vibration (耐振动性)</b>                              | <b>Based upon<br/>EIA-364-28B/MIL-STD-202 Method 213B Cond.A<br/>Amplitude (振幅): 1.5mm P-P<br/>Sweep time (频率): 10~55~10 HZ in 1 minute<br/>Duration (持续时间): 2 hours in each X.Y.Z axials. (每轴向 2 小时)</b>                   | <b>Appearance 外观:<br/>No Damage 无异状<br/>Contact Resistance 接触阻抗: 20 milliohms Max.<br/>Discontinuity 瞬断: 1 micro- second Max.</b> |
| 8 | <b>Shock (耐冲击性)</b>                                  | <b>Based upon<br/>EIA-364-27B/MIL-STD-202 Method 213B Cond.A<br/>Pulse width (冲击时间): 11 msec.,<br/>Waveform (波形): half sine,<br/>490m/s<sup>2</sup>{50G}, 3 strokes in each X.Y.Z. axes.<br/>(加速度最大 50G, 沿 3 个互相垂直达的方向)</b> | <b>Appearance 外观:<br/>No Damage 无异状<br/>Contact Resistance 接触阻抗: 20 milliohms Max.<br/>Discontinuity 瞬断: 1 micro- second Max.</b> |

**8.4 ENVIRONMENTAL (环境)**

| ITEM | DESCRIPTION (类型)               | TEST CONDITION (测试条件)   | REQUIREMENT (要求)   |
|------|--------------------------------|---|--|
| 1    | <b>Temperature Rise (温升测试)</b> | <b>Carrying rated current load. (UL 1977) (公母对插后, 在通过额定电流下, 所测定的温度)</b> | <b>30°C Max.</b>   |
| 2    | <b>Heat Resistance (耐热性)</b>   | <b>Based upon MIL-STD-202 Method 108A Cond.A<br/>85±2°C, 96 hours.</b>  | <b>Appearance 外观:<br/>No Damage 无异状<br/>Contact Resistance 接触阻抗: 20 milliohms Max.</b> |

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|   |                                   |   |   |
|---|-----------------------------------|---|---|
| 3 | <b>Cold Resistance</b> (耐寒性)      | <b>Based upon EIA-364-105</b><br><b>-25±5°C, 96 hours.</b>  | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触阻抗: 20 milliohms Max.</b>  |
| 4 | <b>Humidity</b> (耐湿性)             | <b>Based upon</b><br><b>EIA-364-31A/MIL-STD-202</b><br><b>Method 103B Cond.B</b><br><b>Temperature (温度): 40±2°C</b><br><b>Relative Humidity (湿度): 90~95%</b><br><b>Duration (持续时间): 96 hours</b>  | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触阻抗: 20 milliohms Max.</b><br><b>Insulation Resistance 绝缘阻抗: 1000 MΩ min.</b> |
| 5 | <b>Temperature Cycling</b> (温度变化) | <b>Based upon EIA-364-32B</b><br><b>5 cycles of:</b><br><b>a) -40°C 30 minutes.</b><br><b>b) +105°C 30 minutes.</b><br><br>(从-40°C持续 30 分钟升至+105°C持续 30 分钟, 循环 5 次)   | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触阻抗: 20 milliohms Max.</b>  |
| 6 | <b>Salt Spray</b> (盐水喷雾)          | <b>Based upon</b><br><b>EIA-364-26A/MIL-STD-202</b><br><b>Method 101D Cond.B</b><br><b>24±1 hours exposure to a salt spray</b><br><b>from the 5±1% solution at 35±2°C.</b><br>(在温度 35±2°C, 盐水浓度 5±1%下, 盐水喷雾 24±1 小时)<br>注: 此项测试只针对先冲后镀端 | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触阻抗: 20 milliohms Max.</b>  |
| 7 | <b>Solder-ability</b> (焊锡附着性)     | <b>Based upon EIA-364-52</b><br><b>Soldering Time 焊接时间: 3±0.5second.</b><br><b>Solder Temperature 焊接温度: 245±5°C.</b>  | <b>Immersed area must show</b><br><b>no voids, pin holes. 浸渍面积需95%以上</b>  |
| 8 | <b>Solder- Resistance</b> (焊锡耐热性) | <b>Based upon EIA-364-56A</b><br><b>Soldering time 焊接时间: 3~5 sec</b><br><b>Solder Temperature 焊接温度: 250±5°C.</b>  | <b>Appearance 外观:</b><br><b>No Damage 无异状</b>   |

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## 9. PACKAGING 包装

Please refer to the packing drawing. 请参考产品包装图纸

## 10. INSERTION/WITHDRAWAL FORCE 综合插入力及拔出力:

| PIN 数<br>No. of<br>CKT | 初次插入力(最大值)<br>First Insertion<br>(kgf Max.) | 30 次拔出力(最小值)<br>30 <sup>th</sup> Withdrawal<br>(kgf Min.) | PIN 数<br>No. of<br>CKT | 初次插入力(最大值)<br>First Insertion<br>(kgf Max.) | 30 次拔出力(最小值)<br>30 <sup>th</sup> Withdrawal<br>(kgf Min.) |
|------------------------|---|---|------------------------|---|---|
| Single                 | 1.0   | 0.35  | 7                      | 5.6   | 1.75  |
| 2                      | 1.6   | 0.50  | 8                      | 6.4   | 2.00  |
| 3                      | 2.4   | 0.75  | 9                      | 7.2   | 2.25  |
| 4                      | 3.2   | 1.00  | 10                     | 8.0   | 2.50  |
| 5                      | 4.0   | 1.25  | 11                     | 8.8   | 2.75  |
| 6                      | 4.8   | 1.50  | 12                     | 9.6   | 3.00  |
| DOUBLE ROW ( 双排 )      |   |   |                        |   |   |
| 2*02                   | 3.2   | 1.00  | 2*08                   | 12.8  | 4.00  |
| 2*03                   | 4.8   | 1.50  | 2*09                   | 14.4  | 4.50  |
| 2*04                   | 6.4   | 2.00  | 2*10                   | 16.0  | 5.00  |
| 2*05                   | 8.0   | 2.50  | 2*11                   | 17.6  | 5.50  |
| 2*06                   | 9.6   | 3.00  | 2*12                   | 19.2  | 6.00  |
| 2*07                   | 11.2  | 3.50  |                        |   |   |

## 11. SOLDERING 焊接 :



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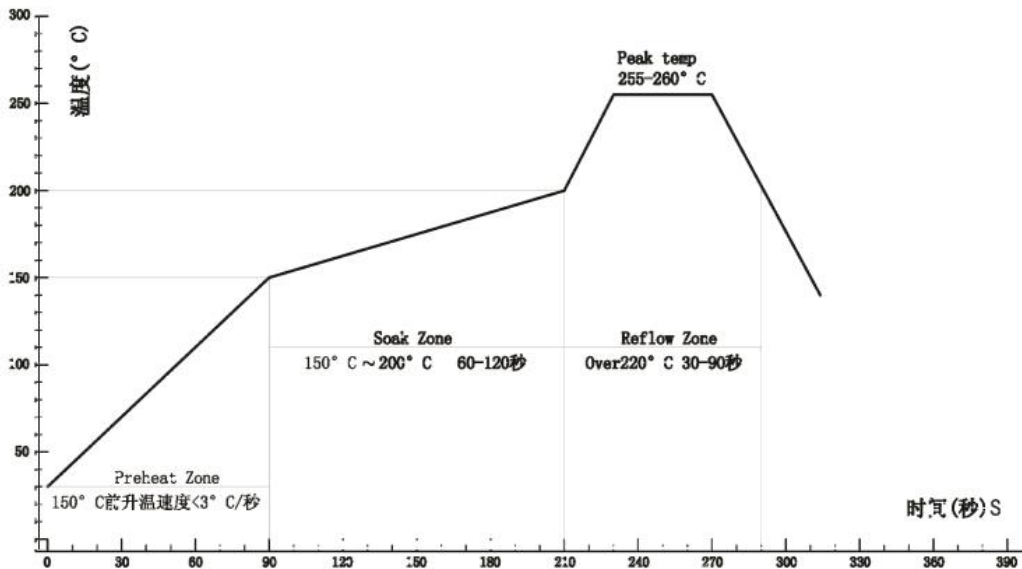
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11.1. Wave soldering( 波峰焊 ): DIP Suggestions solder temperature at 260°C (500°F) max.5 seconds . DIP 型推荐焊接焊锡温度为 260°C ( 500°F) 最多 5 秒

11.2. Hand soldering ( 手焊 ) : Use a soldering iron of 30 watts controlled at 350°C approximately 5 seconds. while applying solder.  
使用 30W 烙铁控制温度在 350°C,焊接时长约 5 秒

11.3. Reflow soldering profile ( 回炉焊 ) :When the maximum temperature of the reflow furnace is 260 °C and the temperature is 260 °c. 10 seconds MAX. (reference) SMT 型回焊炉最高温度为 260°C , 温度为 260°C时 , 最长时间不超过 10 秒 ( 如图 )



| Rev. | Description | Date revised | Created/ Revised by |
|------|-------------|--------------|---------------------|
| 01   | New Release | 2022/05/20   | Josephine Lin       |
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