

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 1/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| Product Specification                                                             | Rev. No.     | 01         | Approved by | Willy    |
| Title : 2.5mm Pitch X2521 Series Connector                                        |              |            |             |          |

1. SCOPE ( 适用范围 )

This specification covers the performance, tests and quality requirements for the 2.5mm series wire to wire connector. ( XKB Connectivity 本规范涵盖了盖 2.5mm 系列线对线连接器性能、测试和质量要求 )

2. PRODUCT DESCRIPTION ( 产品描述 )

| DESCRIPTION ( 描述 )            | Part Number ( 料号 ) |
|-------------------------------|--------------------|
| 2.50mm 线对线连接器(JST SM)公胶壳      | X2521HM-XXG-N0     |
| 2.50mm 线对线连接器(JST SM)母胶壳      | X2521HF-07G-N0     |
| 2.50mm 线对板连接器(SM)端子,公端,磷铜先冲后镀 | X2521TM-PSN-G      |
| 2.50mm 线对板连接器(SM)端子,母端,磷铜先冲后镀 | X2521TF-PSN-G      |
|                               |                    |
|                               |                    |
|                               |                    |
|                               |                    |
|                               |                    |
|                               |                    |
|                               |                    |
|                               |                    |

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.( XKB 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. ( XKB Connectivity 产品的设计、结构和物理尺寸参考所适用的产品图纸 )

4.2. Materials/ Finish (材料/表面处理)

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 2/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01         | Approved by | Willy    |
| <b>Title : 2.5mm Pitch X2521 Series Connector</b>                                 |              |            |             |          |

| 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            | PA66               | UL 94V-2/UL94V-0                   |

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 )

| XKB Connectivity Item ( 项目 )                        | Standard ( 标准 )                                  |       |
|-----------------------------------------------------|--------------------------------------------------|-------|
| Rated Voltage (Maximum) 额定电压                        | 250V                                             | AC/DC |
| Rated Current (Maximum) 额定电流                        | 3A                                               |       |
| 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 28#~22# insulation<br>O.D1.8mm(Max)          |       |
| 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

### 8. PERFORMANCE AND TEST DESCRIPTION ( 性能和测试类型 )

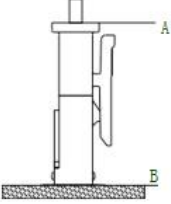
#### 8.1 APPEARANCE ( 外观 )

| ITEM | DESCRIPTION ( 类型 ) | TEST CONDITION ( 测试条件 ) | REQUIREMENT ( 要求 ) |
|------|--------------------|-------------------------|--------------------|
|------|--------------------|-------------------------|--------------------|

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 3/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| Product Specification                                                             | Rev. No.     | 01         | Approved by | Willy    |
| Title : 2.5mm Pitch X2521 Series Connector                                        |              |            |             |          |

|   |                    |              |                                                                                       |
|---|--------------------|--------------|---------------------------------------------------------------------------------------|
| 1 | Appearance<br>(外观) | Visual. (目视) | Should not have any flaw<br>Scratch discoloration and<br>crushed (无任何裂痕、刮伤、<br>污染和变形) |
|---|--------------------|--------------|---------------------------------------------------------------------------------------|

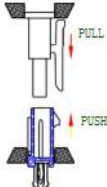
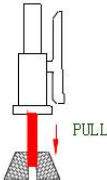
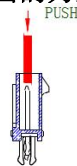
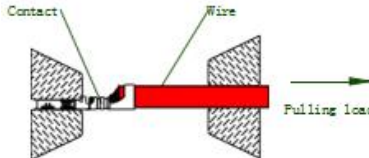
## 8.2 ELECTRICAL (电气)

| ITEM | DESCRIPTION (类型)                                  | TEST CONDITION (测试条件)                                                                                                                                                                                                        | REQUIREMENT (要求)                                                                  |
|------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 1    | contact resistance (接触阻抗)                         | <p>Based upon EIA-364-06A.</p> <p>Mate connectors, measure by dry circuit, 20mV MAX, 10mA. (公母配合, 开放电压 20mV 以下, 电流 10mA 检测连接器 A~B 区)</p>  | <p>Initial (初始): 10 milliohms Max.</p> <p>After Test (测试后): 20 milliohms Max.</p> |
| 2    | Insulation Resistance (绝缘阻抗)                      | <p>Based upon EIA-364-21B/MIL-STD-202 Method 302 Cond. B</p> <p>Mate connectors, apply 500V DC between adjacent terminal or ground. (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)</p>                                          | 1000 MΩ min.                                                                      |
| 3    | Dielectric strength (耐电压)                         | <p>Based upon EIA-364-20A/MIL-STD-202 Method 301</p> <p>Mate connectors, apply 1000V AC for 1 minute between adjacent terminal or ground. (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)</p>                              | There shall be no breakdown. (无击穿、闪烁现象)                                           |
| 4    | Contact resistance on crimped portion (铆线后端子接触阻抗) | <p>Crimp the applicable wire on to the terminal measure by dry circuit 20mV MAX, 10mA. (铆线后之端子, 开放电压 20mV 以下, 电流 10mA 检测连接器)</p>                                                                                             | 10 milliohms                                                                      |

## 8.3 MECHANICAL (机械)

| ITEM | DESCRIPTION (类型) | TEST CONDITION (测试条件) | REQUIREMENT (要求) |
|------|------------------|-----------------------|------------------|
|------|------------------|-----------------------|------------------|

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 4/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| Product Specification                                                             | Rev. No.     | 01         | Approved by | Willy    |
| Title : 2.5mm Pitch X2521 Series Connector                                        |              |            |             |          |

|   |                                                 |                                                                                                                                                                                                                                                |                                                                                      |     |     |     |
|---|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----|-----|-----|
| 1 | Insertion & Retention Force ( 插拔力 )             | <p>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)</p>                                                          | Refer to paragraph 6<br>参照第 10 项                                                     |     |     |     |
| 2 | Terminal/ Housing Retention Force ( 端子保持力 )     | <p>Apply axial pull out force at the speed rate of 25.4±3mm/minute on the terminal assembled in the housing. (以每分 25.4±3mm 的速率, 将端子从 Housing 内轴向拔出的力量.)</p>  | 24.5N {2.5kgf}Min.                                                                   |     |     |     |
| 3 | Terminal Insertion Force ( 端子插入力 )              | <p>Insert the crimped terminal into the housing. (铆线后之端子插入 Housing 所需最大力量)</p>                                                                                                                                                                 | 14.7N {1.5kgf} Max.                                                                  |     |     |     |
| 4 | PIN Retention Force (PIN 针保持力)                  | <p>Apply axial push force at the speed rate of 25.4±3mm/minute. (以每分 25.4±3mm 的速率, 将 PIN 针从 Wafer 内轴向拔出的力量 )</p>                                            | 13.7N {1.4kgf} min.                                                                  |     |     |     |
| 5 | Tensile strength (Crimped connections) (端子压着强度) | <p>Fix the crimped terminal, apply axial pull out force on the wire. (Do not crimp insulation part). (固定铆线后的端子, 使电线与端子分离时所需的最小力量)</p>                      | AWG                                                                                  | #20 | #22 | #24 |
|   |                                                 |                                                                                                                                                                                                                                                | Spec. kgf. Min.                                                                      | 6.0 | 4.0 | 2.0 |
|   |                                                 |                                                                                                                                                                                                                                                | Note> As for unspecified wire sizes in this specification define values with clients |     |     |     |
| 6 | Repeated Insertion/ Withdrawal (重复插拔)           | <p>When mated up to 30 cycles repeatedly by the rate of 10 cycles per minute. (以每分钟不超过 10 次的速率, 将公母插拔 30 次.)</p>                                                                                                                               | Contact Resistance (接触阻抗) : 20 milliohms Max.                                        |     |     |     |

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 5/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01         | Approved by | Willy    |
| <b>Title : 2.5mm Pitch X2521 Series Connector</b>                                 |              |            |             |          |

|   |                  |                                                                                                                                                                                                                                                            |                                                                                                                                                                                |
|---|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | Vibration (耐振动性) | <b>Based upon</b><br><b>EIA-364-28B/MIL-STD-202 Method</b><br><b>213B Cond.A</b><br><b>Amplitude (振幅) : 1.5mm P-P</b><br><b>Sweep time (频率) : 10~55~10 HZ in 1 minute</b><br><b>Duration (持续时间) : 2 hours in each X.Y.Z axials. (每轴向 2 小时)</b>             | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><br><b>Contact Resistance 接触</b><br><b>阻抗:20 milliohms Max.</b><br><br><b>Discontinuity 瞬断:1</b><br><b>micro- second Max.</b> |
| 8 | Shock (耐冲击性)     | <b>Based upon</b><br><b>EIA-364-27B/MIL-STD-202</b><br><b>Method 213B Cond.A</b><br><b>Pulse width (冲击时间) : 11 msec.,</b><br><b>Waveform (波形) : half sine,</b><br><b>490m/s2{50G}, 3 strokes in each X.Y.Z. axes.</b><br><b>(加速度最大 50G, 沿 3 个互相垂直达的方向)</b> | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><br><b>Contact Resistance 接触</b><br><b>阻抗:20 milliohms Max.</b><br><br><b>Discontinuity 瞬断:1</b><br><b>micro- second Max.</b> |

#### 8.4 ENVIRONMENTAL (环境)

| ITEM | DESCRIPTION (类型)        | TEST CONDITION (测试条件)                                                                                                                                                                               | REQUIREMENT (要求)                                                                                                                                                             |
|------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Temperature Rise (温升测试) | <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    | Heat Resistance (耐热性)   | <b>Based upon MIL-STD-202</b><br><b>Method 108A Cond.A</b><br><b>85±2°C,96 hours.</b>                                                                                                               | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触阻</b><br><b>抗:20 milliohms Max.</b>                                                                 |
| 3    | Cold Resistance (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</b><br><b>抗:20 milliohms Max.</b>                                                                 |
| 4    | Humidity (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</b><br><b>抗:20 milliohms Max.</b><br><b>Insulation Resistance 绝缘</b><br><b>阻抗: 1000 MΩ min.</b> |

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 6/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01         | Approved by | Willy    |
| <b>Title :</b> 2.5mm Pitch X2521 Series Connector                                 |              |            |             |          |

|   |                                        |                                                                                                                                                                                                                                           |                                                                                                   |
|---|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 5 | <b>Temperature Cycling</b><br>( 温度变化 ) | <b>Based upon EIA-364-32B</b><br><b>5 cycles of:</b><br><b>a) -55°C 30 minutes.</b><br><b>b) +85°C 30 minutes.</b><br>(从-55°C持续 30 分锺升至+85°C持续 30 分锺, 循环 5 次)                                                                             | <b>Appearance 外观:</b><br><b>No Damage 无异状</b><br><b>Contact Resistance 接触电阻:20 milliohms Max.</b> |
| 6 | <b>Salt Spray</b><br>( 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 接触电阻:20 milliohms Max.</b> |

## 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.) |
|------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------|---------------------------------------------|-----------------------------------------------------------|
|------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------|---------------------------------------------|-----------------------------------------------------------|

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 7/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| Product Specification                                                             | Rev. No.     | 01         | Approved by | Willy    |
| Title : 2.5mm Pitch X2521 Series Connector                                        |              |            |             |          |

|                   |      |      |      |      |      |
|-------------------|------|------|------|------|------|
| 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 |      |      |      |

|                                                                                   |              |            |             |          |
|-----------------------------------------------------------------------------------|--------------|------------|-------------|----------|
|  | Doc. No.     | X-A0162-19 | Page No.    | 8/9      |
|                                                                                   | Date Issued  | 2025-09-30 | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-30 | checked by  | Sangshen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01         | Approved by | Willy    |
| <b>Title :</b> 2.5mm Pitch X2521 Series Connector                                 |              |            |             |          |

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