

|                                                                             |              |             |             |          |
|-----------------------------------------------------------------------------|--------------|-------------|-------------|----------|
| <div>XKL3-星坤</div> <div>Connectivity</div> <div>Product Specification</div> | Doc. No.     | SP-A0162-09 | Page No.    | 1/9      |
|                                                                             | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                             | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                             | Rev. No.     | 01          | Approved by | Mei Chen |
| Title: MINI PCI-E Connector                                                 |              |             |             |          |

1. SCOPE ( 适用范围 )

This specification covers the performance, tests and quality requirements for the MINI PCI-E Connector .(本规范涵盖了 MINI PCI-E 连接器的性能、测试和质量要求。)

2. PRODUCT DESCRIPTION ( 产品描述 )

| DESCRIPTION ( 描述 ) | Part Number ( 料号 ) |
|--------------------|--------------------|
| MINI PCI-E连接器 SMT  | X1304WVS-52A-LPV01 |
|                    | X1304WVS-52B-LPV01 |
|                    | X1304WVS-52C-LPV01 |
|                    | X1304WVS-52D-LPV10 |
|                    | X1304WVS-52E-LPV01 |
|                    | X1304WVS-52F-LPV01 |
|                    | X1304WVS-52G-LPV01 |
|                    | X1304WVS-52H-LPV01 |

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. ( 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. ( 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)

Materials used in the structure of product shall be as specified on the applicable product drawing. (产品结构中使用的材料参考所适用的产品图纸)

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 2/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                                   | Rev. No.     | 01          | Approved by | Mei Chen |
| <b>Product Specification</b>                                                      |              |             |             |          |
| Title: MINI PCI-E Connector                                                       |              |             |             |          |

4.3.Ratings （ 额定功率 ）

| Item （项目）                         | Standard （标准）                                   |
|-----------------------------------|-------------------------------------------------|
| Rated Voltage (Maximum)额定电压       | 50V AC (per pin)                                |
| Rated Current (Maximum)额定电流       | 0.5A (per pin)                                  |
| Operating temperature range工作温度范围 | -40℃～+125℃<br>From -40 to +85 degree centigrade |

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

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 3/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                                   | Rev. No.     | 01          | Approved by | Mei Chen |
| <b>Product Specification</b>                                                      |              |             |             |          |
| Title: MINI PCI-E Connector                                                       |              |             |             |          |

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

6.1 APPEARANCE （外观）

| ITEM | DESCRIPTION （类型）              | TEST CONDITION （测试条件）                                                    | REQUIREMENT （要求）                                  |
|------|-------------------------------|--------------------------------------------------------------------------|---------------------------------------------------|
| 1    | Examination of product （产品检验） | Visual and dimensional inspection per product drawing. （根据产品图纸进行目检和尺寸检验） | Meets requirements of product drawing. （符合产品图纸要求） |

6.2 ELECTRICAL （电气）

| ITEM | DESCRIPTION （类型）                      | TEST CONDITION （测试条件）                                                                                                                                                | REQUIREMENT （要求）                                                                                    |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1    | Low Level Contact resistance （接触电阻）   | EIA-364-23<br>Mate connectors, measure by dry circuit, 20mV MAX.,100mA MAX.（开路电压为 20mV 电流为 100mA 的电路下条件下测试）                                                          | Initial : 55 mΩ max (per pin) （初始电阻 55 mΩ 最大）<br>Final : 20 mΩ max chang Allowed. （测试后 30 mΩ 最大变化量） |
| 2    | Insulation resistance （绝缘电阻）          | EIA-364-21<br>Unmated connectors, apply 500V DC between adjacent terminals. （未配对的连接器，在相互绝缘的端子之间及端子与金属外壳之间施加电流 DC500V）                                                | 500 MΩ min （500 MΩ 最小）                                                                              |
| 3    | Dielectric withstanding Voltage （耐电压） | EIA-364-20<br>300V AC min. at sea level for 1 minute.<br>Test between adjacent terminals of unmated connectors. （未配对的连接器，在相互绝缘的端子之间及端子与金属外壳之间施加电流 DC300V, 持续时间 1 分钟） | No Breakdown. （无击穿现象）<br>Current leakage: 1 mA max. （漏电电流 1 mA）                                     |

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 4/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                                   | Rev. No.     | 01          | Approved by | Mei Chen |
| <b>Product Specification</b>                                                      |              |             |             |          |
| Title: MINI PCI-E Connector                                                       |              |             |             |          |

|   |                          |                                                                                                                                                                                                                 |                                                                                        |
|---|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 4 | Temperature Rise<br>(温升) | <b>EIA-364-70, Method2</b><br><b>Mate connectors: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C.</b> (配对连接器在额定电流下测量温升，直至温度稳定。测试环境条件为 25°C) | <b>0.5A / power contact with 30 °C MAX. Change Allowed.</b> (最大 30 °C 温度变化量，电源电流 0.5A) |
|---|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|

6.3 MECHANICAL (机械)

| ITEM | DESCRIPTION (类型)                     | TEST CONDITION (测试条件)                                                                                                                        | REQUIREMENT (要求)                                                                                                                                         |
|------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Mating/ Unmating force (插拔力)         | <b>EIA-364-13, Method A</b><br><b>Measure the force required to mate/unmate connector.</b> (测量插入/拔出连接器所需要的力)                                 | <b>2.3 Kgf Max.</b> (2. 3Kgf 最大)                                                                                                                         |
| 2    | Reseating (修整)                       | <b>Manually mated/unmated the connector or socket perform 3 cycles.</b> (手动插入/拔出连接器 3 次进行)                                                   | <b>Appearance: No damage.</b> (外观无损伤)                                                                                                                    |
| 3    | Durability (耐久)                      | <b>EIA-364-09</b><br><b>The sample should be mounted in the tester and fully mated and unmated the number of cycles.</b> (将样品安装在测试仪上，进行插拔循环) | <b>60 mate/unmate cycles for 15u" &amp; 30u" Au plating; 25 mate/unmate cycles for gold flash plating.</b> (镀 15u" & 30u" 金，插子耐久 60 次。镀金 G/F，插子耐久 25 次。) |
| 4    | Durability (precondition) (耐久 (预处理)) | <b>EIA-364-09</b><br><b>No evidence of physical damage.</b> (无物理损伤现象发生)                                                                      | <b>Perform 5 mate/unmate Cycles.</b> (5 次插拔)                                                                                                             |

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 5/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                                   | Rev. No.     | 01          | Approved by | Mei Chen |
| <b>Product Specification</b>                                                      |              |             |             |          |
| <b>Title:</b> MINI PCI-E Connector                                                |              |             |             |          |

|   |                              |                                                                                                                                                                                                                                                                                   |                                  |
|---|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 5 | Vibration (震动)               | EIA-364-28 Condition VII Condition letter D 15 minutes in each of 3 mutually perpendicular directions. Both mating halves should be rigidly fixed so as not to contribute to the relative motion of one contact against another. (将配对连接器牢固固定在测试仪上, 以免造成松动, 在 3 个相对垂直的方向各震动 15 分钟) | 1.0 microsecond max. (瞬断 1 微秒最大) |
| 6 | Shock (Mechanical)<br>(机械冲击) | Mate connectors to 250 G (Ultrabook) and 285 G (Tablet) at 2 milliseconds half sine on all six axis. (配对连接器以 250G 和 285G 冲击波形为半正弦波, 在 6 个轴以 2 毫秒的速度冲击)                                                                                                                            | 1.0 microsecond max. (瞬断 1 微秒最大) |

6.4 ENVIRONMENTAL (环境)

| ITEM | DESCRIPTION (类型)                      | TEST CONDITION (测试条件)                                                                                                                                                                                                                                                                                                                                                                                                | REQUIREMENT (要求)                                                       |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1    | Cyclic Temperature & Humidity (温湿度循环) | EIA-364-31, Method III<br>Cycle the connector or socket between 25± 3°C, at 80 ± 3% RH and 65± 3°C at 50 ±3% RH. Ramp times should be 0.5 hours and dwell times should be 1.0 hours. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles. (在温度 25± 3° C, 温度 80±3% RH 和温度 65±3° C, 温度 50±3% RH 之间循环, 转换时间为 0.5 小时, 当温度与湿度稳定后, 停留 1 小时, 这样循环 24 次) | See Product Qualification and Test Sequence Group 2<br>(见产品确认和测试顺序组 2) |

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 6/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                                   | Rev. No.     | 01          | Approved by | Mei Chen |
| <b>Product Specification</b>                                                      |              |             |             |          |
| <b>Title:</b> MINI PCI-E Connector                                                |              |             |             |          |

|   |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                               |
|---|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 2 | <b>Thermal Shock</b> （热冲击）                             | <b>EIA-364-32, method A test condition I</b><br><b>Mate module and subject to follow condition for 10 cycles. 1 cycles:</b><br><b>-55 +0/-3°C, 30 minutes. +85 +3/-0°C, 30 minutes.</b> (配合模块并按条件进行 10 次循环。<br>1 个循环: -55 +0/-3° C, 30 分钟, +85 +3/-0° C, 30 分钟)                                                                                                                                | <b>See Product Qualification and Test Sequence Group 2</b><br>(见产品确认和测试顺序组 2) |
| 3 | <b>Temperature Life</b> （温度寿命）                         | <b>EIA-364-17, method A</b><br><b>Subject mated connectors to temperature life at 105°C for 120 hours.</b><br>(配对连接器置于温度 105° C 下 120 小时)                                                                                                                                                                                                                                                      | <b>See Product Qualification and Test Sequence Group 1</b><br>(见产品确认和测试顺序组 1) |
| 4 | <b>Temperature Life (precondition)</b><br>(温度寿命(前提条件)) | <b>EIA-364-17, method A</b><br><b>Subject mated connectors to temperature life at 105°C for 72 hours.</b><br>(配对连接器置于温度 105° C 下 72 小时))                                                                                                                                                                                                                                                       | <b>No physical damage .</b> （无物理损伤）                                           |
| 5 | <b>MFG</b> （野外寿命）                                      | <b>Per EIA364-65 class IIA 7 days to simulate a 5 year field life.</b> (7 天模拟 5 年野外寿命)                                                                                                                                                                                                                                                                                                         | <b>No physical damage and functional failed.</b> ( 无物理损伤, 功能失效)               |
| 6 | <b>Thermal Disturbance</b><br>(热扰动)                    | <b>Cycle the mated connector between 15 ± 3°C and 85±3°C, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 10 such cycles.</b> (依零件测试值, 在 15±3° C 和 85±3° C 之间配对连接器, 转换时间至少 2° C/分钟, 停留时间应确保触点达到极端温(至少 5 分钟)。湿度不限。这样循环 10 次) | <b>See Product Qualification and Test Sequence Group 8</b><br>(见产品确认和测试顺序组 8) |

|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 7/9      |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01          | Approved by | Mei Chen |
| Title: MINI PCI-E Connector                                                       |              |             |             |          |

|   |                                                   |                                                                                                                                                                                      |                                                                                                                                                                                                             |
|---|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | Solderability (可焊性)                               | <p>EIA-364-52</p> <p>Add then into solder bath, Temperature at 245 ±5°C, for 4-5 sec.</p> <p>(将锡脚置于 245 ±5° C 锡炉中 4-5 秒)</p>                                                         | <p><b>Tin plating: Solder able area shall have min. of 95% solder coverage. Gold plating: Solder able area shall have min. of 75% solder coverage.</b></p> <p>(镀锡: 可焊区焊料覆盖面积 95%至少。镀金: 可焊区焊料覆盖面积 75%至少)</p> |
| 8 | Hand Soldering Temperature Resistance. (耐焊性(手工焊)) | <p>T≥350°C, 3 sec. at least.</p> <p>(温度大于等于 350° C, 3 秒)</p>                                                                                                                         | <p><b>Appearance: No damage</b></p> <p>(外观: 无损伤)</p>                                                                                                                                                        |
| 9 | Resistance to reflow soldering heat. 耐焊性(回流焊))    | <p>Pre Heat(预热): 150~180°C, 60~120 sec.</p> <p>Heat (温度): 230°C Min., 40 sec. Min.</p> <p>Peak Temp. (峰值温度): 260°C Max., 10 sec. Max.</p> <p>Perform 2 reflow cycles. (执行 2 次循环)</p> | <p><b>See Product Qualification and Test Sequence Group 10 (Lead Free).</b> (见产品确认和测试顺序组 10 (无铅))</p>                                                                                                       |

**NOTE: Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.**

(产品需满足外观要求，无物理损坏，并满足图 2 所示产品确认和再确认测试顺序中规定的附加测试要求)

|                                                                             |              |             |             |          |
|-----------------------------------------------------------------------------|--------------|-------------|-------------|----------|
| <div>XKL3-星坤</div> <div>Connectivity</div> <div>Product Specification</div> | Doc. No.     | SP-A0162-09 | Page No.    | 8/9      |
|                                                                             | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                             | Date revised | 2025-09-28  | checked by  | SangShen |
|                                                                             | Rev. No.     | 01          | Approved by | Mei Chen |
| Title: MINI PCI-E Connector                                                 |              |             |             |          |

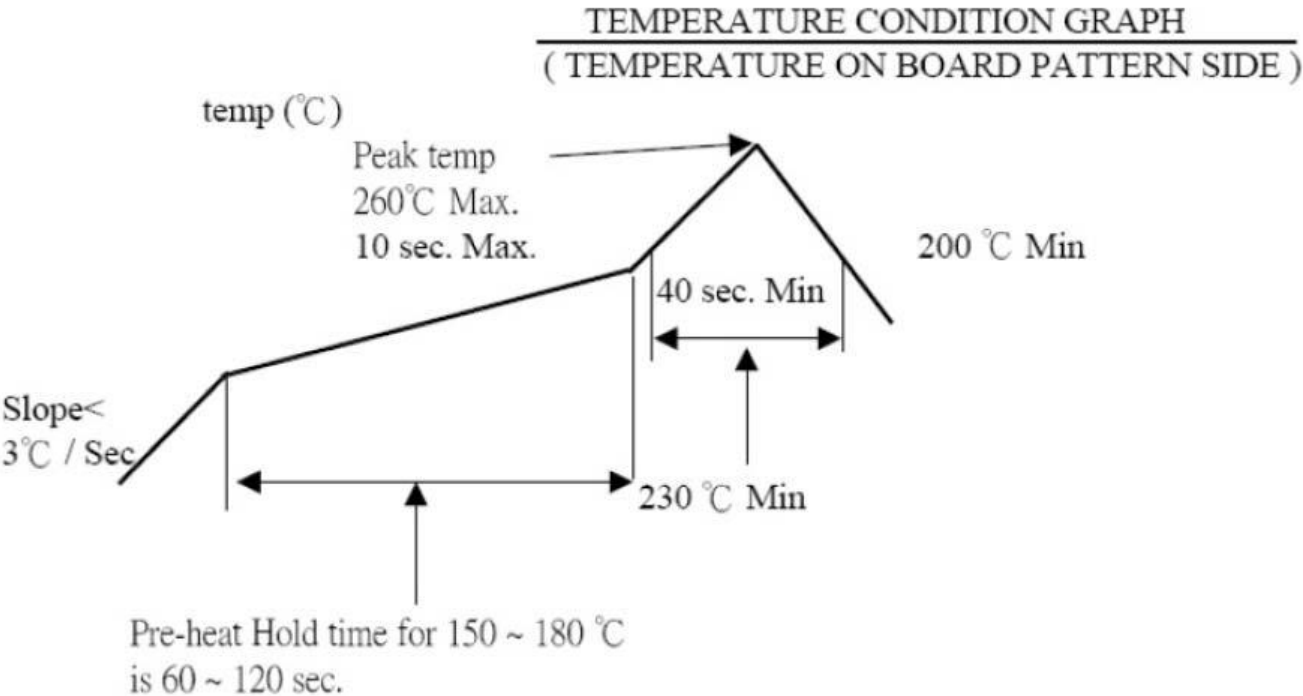


Figure 1 Recommended temperature profile of infrared reflow.  
(图 1 为红外回流焊推荐温度曲线图)



|                                                                                   |              |             |             |          |
|-----------------------------------------------------------------------------------|--------------|-------------|-------------|----------|
|  | Doc. No.     | SP-A0162-09 | Page No.    | 10/9     |
|                                                                                   | Date Issued  | 2025-09-28  | Prepared by | AShu     |
|                                                                                   | Date revised | 2025-09-28  | checked by  | SangShen |
| <b>Product Specification</b>                                                      | Rev. No.     | 01          | Approved by | Mei Chen |
| Title: MINI PCI-E Connector                                                       |              |             |             |          |

NOTE (a) Numbers indicate sequence in which test are performed. (a) 表示测试顺序

| Rev. | Description | Date revised | Created/<br>Revised by |
|------|-------------|--------------|------------------------|
| 01   | New Release | 2025/09/28   | AShu                   |
|      |             |              |                        |
|      |             |              |                        |
|      |             |              |                        |
|      |             |              |                        |
|      |             |              |                        |
|      |             |              |                        |
|      |             |              |                        |

Figure 2