

产 品 规 格 书

PRODUCT SPECIFICATION

Title【主题】:	Mini Power Connector Product Specification Mini 电源连接器产品规格书
Description【说明】:	Mini Power Plus Connector Pitch 4.20mm Mini Power 连接器间距 4.20mm
Document No【文件编号】:	EK-QB-GC-290A
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Checked by/Date【审核/日期】:	/
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Version【版本】:	A0

This specification is referred to the 4.20mm Pitch Mini Power Plus Connector

(此规格书针对 4.20mm 间距 Mini Power 连接器)

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【1. Scope 适用范围:】

This specification covers the requirements for product performance, test methods and quality assurance provisions of 4.20mm Pitch connector that included Wire to Wire and Wire to Board series.

(本规范涵盖4.20mm间距连接器的产品性能、测试方法和质量保证规定，包括线对线和线对板系列。)

【2. Reference Documents参考文献:】

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.

(以下文件在本文规定的范围内构成本规范的一部分。如果本规范的要求与产品图纸有冲突，产品图纸应优先。如果本规范的要求与参考文件之间发生冲突，则以本规范为准)

A.EIA-364

The Test Sequence and Test procedures for Electrical Connectors and Sockets

(电气连接器和插座的测试顺序和测试程序)

【3. Requirements 要求:】

3.1 Material of Components 组件材料:

No.	Component 组件	Material 材料	Finish 电镀
1	Housing 塑胶	(UL94V-0)	None (无)
2	Contact 接触端子	High Performance Copper Alloy 高导铜	Refer to Ordering Information 参考订单信息

3.2 Ratings of Connector 连接器等级:

A) Rate Voltage 额定电压: 600 V AC

B) Applicable wires 适用线材:

Wire Gauge 线规	Insulation Diameter 绝缘直径
AWG#16	1.80-3.10 mm
AWG#18~20	1.65-2.95mm

C) Rate Current 额定电流:

Current rating is 13A/per pin for single contact and the POS. in the table below is the series number under temp-rise testing.

单触点额定电流为13A/每PIN，下表中的POS是温升测试下的系列编号

POS. AWG.	2	4~6	8~12	14~18	20~24
AWG#16	13A	12A	10.5A	10A	9.5A
AWG#18	10.5A	10A	8A	8A	8A
AWG#20	9A	8A	7.5A	7A	7A

**Testing conducted with tinned copper conductor stranded wire. Above charts are intended as a guideline. Current rating is application dependent. Appropriate de-rating is required depending on factors such as higher ambient temperature, smaller copper weight of PCB traces, gross heating from adjacent modules or components and other factors that influence connector performance.

用镀锡铜导体绞合线进行测试。以上图表仅供参考。电流额定值取决于应用情况，需要根据环境温度等因素适当降低额定值，PCB走线的铜重量较小，邻近模块或组件的总加热以及影响连接器性能的其他因素。

【4. Design and Construction 设计与施工:】

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing. (产品应具有适用产品图纸中规定的设计，结构和物理尺寸)

【5. Performance and Test Description 性能和测试说明:】

The product is designed to meet the electrical, mechanical and environmental performance requirements specified below. All tests are performed at ambient temperature unless otherwise specified.

(该产品设计符合以下规定的电气，机械和环境性能要求。所有测试均在环境温度下进行，除非另有规定。)

【5.1 Electrical Performance 电气性能:】

Test Items 测试项目		Test Procedures & Condition 测试程序和条件	Requirements 要求
5.1.1	Contact Resistance 接触电阻	EIA-364-23 Subject mated contacts assembled in housing to closed circuit current of 100 mA maximum at open circuit at 20 mVDC maximum. 主体配合触点在外壳中组装，最大开路电流为 20 mVDC 时，最大为 100 mA 的闭路电流。	10 mΩ max. 10 mΩ 最大
5.1.2	Insulation Resistance 绝缘电阻	EIA-364-21 Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector assemblies. Test Voltage:500 V DC. Test Duration: 1 Minute 通过应用测试来测量相邻触点之间，以及配合连接器组件中触点和接地之间的电位。 测试电压:500 V DC. 测试持续时间: 1 分钟	Not less than 1000 MΩ 不少于 1000 MΩ
5.1.3	Dielectric Withstanding Voltage 瞬间电流(耐电压)	EIA-364-20 Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector assemblies. Test Potential: 1500Vac at sea level Test Duration: 1 Minute 通过应用测试来测量相邻触点之间，以及配合连接器组件中触点和接地之间的电位。 试验电位: 平均1500V AC 测试持续时间: 1分	No evidence of damage. 没有损坏的现象.

5.1.4	Temperature rise 温升测试	EIA-364-70 Measure the temperature rise at the rated current after 1 minute 1分钟后测量额定电流下的温升.	Temperature rise +30°C Max. 温度上升不超过30°C
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【5.2 Mechanical Performance 机械性能:】

Test Items 测试项目		Test Procedures & Condition 测试程序条件	Requirements 要求						
5.2.1	Mating and Unmating Force 插拔力	EIA-364-13 Draw out a contact in solder tail direction at 25±3mm/minute 沿焊尾方向以25±3mm /分钟拉出触点	1.Mating force: Max:15N(1.5Kgf)/Pin Before solder 2.Unmating force: Min:1N(100gf) / Pin Before solder 1. 插入力: 焊接前最大15N (1.5Kgf) /Pin 2. 拔出力: 焊接前最1N(100gf)Pin						
5.2.2	Crimping Pull Out Force 端子/线材拔出力	Fix the crimped terminal, apply axial pull out force on the wire at the speed rate of 25 ±3mm/minute 固定压接端子, 以25±3mm/分钟的速度对导线施加轴向拉拔力	<table border="1"> <tr> <td>AWG#16</td> <td>8.8Kgf Min</td> </tr> <tr> <td>AWG#18</td> <td>8.0Kgf Min</td> </tr> <tr> <td>AWG#20</td> <td>5.9Kgf Min</td> </tr> </table>	AWG#16	8.8Kgf Min	AWG#18	8.0Kgf Min	AWG#20	5.9Kgf Min
AWG#16	8.8Kgf Min								
AWG#18	8.0Kgf Min								
AWG#20	5.9Kgf Min								
5.2.3	Terminal/Housing Retention Force 端子/胶壳保持力	Apply axial pull out force at the speed rate of 25±3mm/minute on the terminal assembled in the housing. 对装配在外壳内的端子施加25±3mm/分钟的轴向拔力。	Minimum: 1.0Kgf 最小: 1.0Kgf						
5.2.4	Pin Retention force Pin 保持力	EIA-364-29 Apply axial push force at the speed rate of 25±3mm/minute. 施加轴向推力, 速度为25±3mm/分钟。	Minimum: 1.0Kgf After solder 最小: 0.5Kgf (焊接后)						

Test Items 测试项目		Test Procedures & Condition 测试程序条件	Requirements 要求
5.2.5	CAP Retention force CAP 帽保持力	EIA-364-29 Apply axial push force at the speed rate of 25±3mm/minute. 施加轴向推力，速度为25±3mm/分钟。	Min: 100g/f Max: 1Kg/f 最小: 100gf 最大: 1Kg/f
5.2.6	Thumb Latch Operation Force 拇指锁扣操作	Depress latch at a rate of 25±3mm per minute. 以每分钟25±3mm的速度压下锁扣	Max最大:16.7N(1.7Kgf)
5.2.7	Latch Yield Strength 锁扣强度测试	Pull apart housings in an axial direction at a rate of 25±3mm per minute.. 以每分钟25±3mm的速度在轴向拉开外壳	Minimum最小: 75.2N(7.52Kgf)
5.2.8	Durability 耐用性	Insertion and extraction are repeated 30 cycles with the connector at the speed rate of 10 cycles per minute. 插入和拔出连接器以每分钟10次的速度重复30次	1.No evidence of damage. 2. The electrical performances meet the spec specified in paragraph 5.1.1&5.1.2&5.1.3 1.没有损坏的现象 2.电气性能符合指定的5.1.1&5.1.2 &5.1.3的要求
5.2.9	Solder ability 可焊性	EIA-364-52 Category 3 Subject unmated connectors should be tested according to the condition listed Below : Steam Aging Temperature: 90 ~ 96°C Steam Aging Duration : 8 hours±5 min. Soldering Temperature : 245±5°C Soldering Time : 4 ~ 5 seconds 主体未配对连接器应根据下列条件进行测试如下: 蒸气老化温度 : 90 ~ 96°C 蒸气老化时间 : 8 小时±5分钟 焊接温度 : 245±5°C 焊接时间 : 4 ~ 5 秒	Continuous solder coating with a minimum 95% coverage. 连续焊接涂层至少95%覆盖

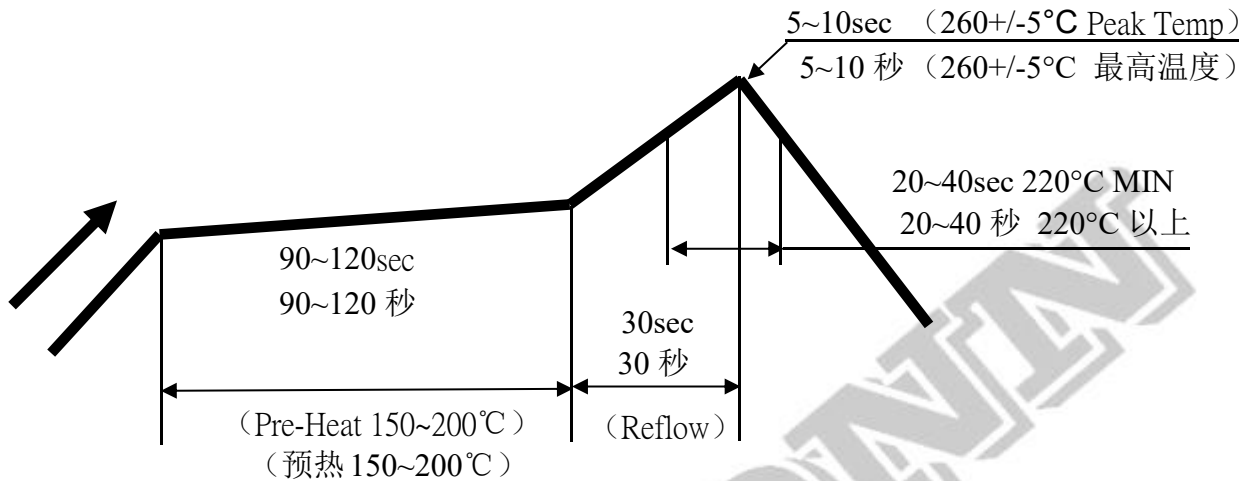
Test Items 测试项目		Test Procedures & Condition 测试程序条件	Requirements 要求
5.2.10	Vibration 振动	<p>EIA-364-28 Condition V Test letter A</p> <p>Subject mated connectors should be tested according to the condition listed below :</p> <p>Test condition : Random Frequency : 50 ~ 2000 Hz PSD value: 3.13 Grams minimum Duration : 15 minutes/axis Times : Each of three mutually perpendicular planes 主体配对连接器应该根据所列条件进行测试如下: 测试条件:随机 频率 : 50 ~ 2000 Hz PSD 值:最小3.13g 持续时间 : 15分钟/轴 时间: 每三个相互垂直的平面</p>	<p>1. No evidence of damage 2. No discontinuities of 1μs or longer duration 3. The electrical performances meet the spec. specified in paragraph 5.1.1&5.1.2&5.1.3</p> <p>1. 没有损坏的现象 2. 没有间断的1μs或更长的持续时间 3. 电性能满足指定的规格段5.1.1&5.1.2&5.1.3的要求</p>
5.2.11	Physical Shock 物理冲击	<p>EIA-364-27 Condition H</p> <p>Subject mated connectors should be tested according to the condition listed below:</p> <p>Wave form : Half-sine Peak acceleration : 30 G' s Duration : 11 ms Times : 3 shocks in each direction applied along three mutually perpendicular planes, total 18 shocks 主体配合连接器应根据下列条件进行测试如下 : 波形: 半正弦 峰值加速度: 30 G' s 持续时间: 11毫秒 次数: 每个方向震动3次三个相互作用垂直的平面, 总共18次冲击</p>	<p>1. No evidence of damage 2. No discontinuities of 1μs or longer duration 3. The electrical performances meet the spec. specified in paragraph 5.1.1&5.1.2&5.1.3</p> <p>1. 没有损坏的现象 2. 没有间断的1μs或更长的持续时间 3. 电性能满足指定的规格段5.1.1&5.1.2&5.1.3的要求</p>

【5.3 Environmental Performance 环境绩效:】

Test Items 测试项目	Test Procedures & Condition 测试程序条件	Requirements 要求
5.3.1 Humidity 湿度	EIA 364-31 Method III Test Condition A Subject mated connectors should be tested according to the condition listed below: Temperature : 25 ~ 65°C Humidity : 90 ~ 95% (R.H) Duration: 168 hours 主体配对连接器应该根据所列条件进行测试如下: 温度 : 25 ~ 65°C 湿度 : 90 ~ 95% (R.H) 持续时间 : 168 小时	1. No evidence of damage 2. The electrical performances meet the spec. specified in paragraph 5.1.1 1. 没有损坏的现象 2. 电性能满足指定的规格段5.1.1的要求
5.3.2 Thermal Shock 热冲击	EIA 364-32 Test Condition I Subject mated connectors should be tested according to the condition listed below: Temperature : -40 ~ 105°C Cycles : 10 Exposure time at temperature extremes : 30 minutes 主体配对连接器应该根据所列条件进行测试如下 : 温度 : -40 ~ 105°C 周期 : 10 曝光时间在极端温度 : 30分钟	1. No evidence of damage 2. Contact resistance 接触电阻 $\Delta R=+30m\Omega$ Max. 1. 没有损坏的现象 2. 接触电阻: 最大30mΩ
5.3.3 Salt Spray 盐雾	EIA 364-26 Test Condition A Subject mated and unmated connectors should be tested according to the condition listed below: Temperature: 35±2°C Humidity : 95 ~ 98% (R.H) PH Value : 6.5 ~ 7.2 Duration :8 hours (Tin) 48 hours (Gold) 主体已配对和未配对的连接器应根据测试条件如下: 温度 : 35±2°C 湿度 : 95 ~ 98% (R.H) PH 价 : 6.5 ~ 7.2 持续时间 :8 小时 (电镀锡) 48 小时 (电镀金)	1. No evidence of damage 2. The electrical performances meet the spec. specified in paragraph 5.1.1 1. 没有损坏的现象 2. 电性能满足指定的规格段5.1.1的要求

Test Items 测试项目		Test Procedures & Condition 测试程序条件	Requirements 要求
5.3.4	Temperature Life 温度寿命	EIA 364-17 Test Condition 3 Method A Subject mated connectors should be tested according to the condition listed below: Temperature : 105±3°C Duration : 96 hours 主体配对连接器应该根据所列条件进行测试如下： 温度 : 105±3°C 持续时间 : 96小时	1. No evidence of damage 2. The electrical performances meet the spec. specified in paragraph 5.1.1 1. 没有损坏的现象. 2.电性能满足指定的规格段5.1.1的要求
5.3.5	Resistance to Soldering Heat 耐焊性	EIA 364-56 Procedure 3 Test Condition C LCP/PA9T/PA6T Thermoplastic Can Resistance to Reflow Solderin LCP/PA9T/PA6T Heat:260±5°C 5-10 Seconds LCP/PA9T/PA6T Thermoplastic Can Resistance to Wave Soldering LCP/PA9T PA6T Heat:260±5°C 5-10 Seconds PBT/PA66 Thermoplastic Can Resistanceto Wave Soldering PBT/PA66 Heat:220±5°C 5-10 Seconds LCP/PA9T/PA6T热塑性耐回流焊： 热度:260±5°C 5-10 秒 LCP/PA9T PA6T热塑性耐波峰焊： 热度:260±5°C 5-10 秒 PBT/PA66热塑性耐波峰焊： 热度:220±5°C 5-10 秒	1. No evidence of damage 没有损坏的现象.

【6. SMT 回流条件 SMT Reflow Condition】



温度条件曲线图/板上温度

TEMPERATURE CONDITION GRAPH

注：由于 P.C 板等焊接装置改变条件，所以请预先用自己的装置检查回流焊的条件。

NOTES: Please check the reflow soldering condition with your own equipment in advance. Because the condition changes by the soldering devices (such as PC boards and so on).