

1. 适用范围Scope:

此作业规范适用于: FPC PITCH 0.5 立式自锁式SMT型连接器

This product specifications is applied for: Pitch 0.50 FPC VT Auto lock connector series

与FPC/FFC连接方式 Connected to the FPC/FFC ; Auto Lock

FPC/FFC适合厚度 FPC/FFC is suitable for thickness : 0.33±0.03mm

2. 关联规格 Related specifications:

EIA-364 :电子连接器及接插件测试程序 Electronic connectors and connector test procedure

UL STD-94 :关于塑材设备零配件及器材阻燃性测试规范 On the plastic material and equipment spare parts and equipment flame retardancy test sp

SAE/USCAR-2 REVISION6: 汽车电连接器系统性能规范 Performance Specification for Automotive Electrical Connector Systems

3. 构造 尺寸 材料 Configurations dimensions and materials :

详见成品图 Refer to the drawing.

4. 标准状态:

- 4.1 额定电压Rating voltage: AC/DC 50V
- 4.2 额定电流Rating current:0.5A
- 4.3 温湿度范围Temperature and humidity range
 - 4.3.1 使用温度范围operation temperature: -40℃~+125℃;
 - 4.3.2 储存温度范围storage temperature: -10℃~+40℃;
 - 4.3.3 开封使用温度范围Temperature range for opening: +5℃~+35℃;
 - 开封使用湿度The Humidity range for opening: 60%RH MAX
 - 4.3.4 保存湿度范围Keep humidity range:
 - 相对湿度Relative humidity:75%RH Max.

5. 性能Performance

5.1 构造Structure

序号NO.	项 目Item	测试方法 Test conditions	规格要求 Specifications
1	外观Appearance	目视 Visual	无损坏No physical damage

5.2 电气性能 Electrical Performance

序号NO.	项 目Item	测试方法 Test conditions	规格要求 Specifications
1	干电路阻抗 Dry Circuit Resistance	依照USCAR-2 5.3.1测试。 最大直流电压: 20mV 以下, 最大测试电流: 100mA. Comply with method USCAR-2 5.3.1. Test Voltage: 20mV DC Max., Test current:100mA Max.	初始值initial:60mΩ Max. 各实验后after each test:△40mΩ .
2	电压降 Voltage Drop	依照USCAR-2 5.3.2 测试。 TUT的总连接电阻最大70mΩ。 Comply with method USCAR-2 5.3.2 Total connection resistance for TUT 50m ohms max.	50mV max.
3	绝缘阻抗 Insulation Resistance	依照USCAR-2 5.5.1测试。 相邻端子间 DC 500V, 60±5秒 Comply with method USCAR-2 5.5.1. Apply DC 500V between adjacent terminals for 60±5 seconds.	100MΩ Min.

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制 品 仕 样 书 Product specification	Part name	Pitch 0.50 FPC VT Auto lock connector series			
Amphenol Aorora Technology (Huizhou) Co.,Ltd	Part No.	F323-1B7*1-210**-E200	1/7		
Document No.: IS.EQC.252	Date: 2023/08/22	Rev.: A	Written by: May	Checked by: Elven.Zhan	Approved by: Rain.Han

5.2 电气性能 Electrical Performance

序号NO.	项目Item	测试方法 Test conditions	规格要求 Specifications
4	耐电压 Dielectric withstanding voltage	依照EIA 364-20测试。 相邻信号端子间AC 250V, 60±5秒。 Comply with method EIA 364-20. AC 250V between adjacent terminals, 60±5 seconds.	无击穿, 无短路 No Breakdown.
5	温度上升 Temperature rise	依照USCAR-2 5.3.3 测试。 信号端子测试电流0.5A, 测试温度23±5℃, 测试时间1小时。 Comply with method USCAR-2 5.3.3. Signal Terminal test current 0.5A, Test temperature 23±5℃, Test duration 1 hour.	55℃ max

5.3 机械性能 Mechanical performance

1	FFC/FPC保持力 FFC/FPC Retention Force	参考USCAR-2标准中的 5.4.2,FFC/FPC (标配厚度0.33mm)插入FPC连接器后, 以50mm/分匀速垂直拔出。 FFC/FPC (standard thickness of 0.33 mm) after insert FPC connection, vertical pull out at a constant speed to 50mm/min. (Comply with USCAR-2 5.4.2) <div style="text-align: center;"> </div>	保持力: 25N MIN.(T=0.33mm) 25N MIN. @ 0.33t Flex																					
2	插入力及拔出力 Mating/Unmating Force	参考USCAR-2标准中的 5.4.2,使用FFC/FPC标配厚度0.33mm如下图所示以50mm/分匀速插入及拔出。(连接器须通过回流焊焊接在PCB板) According to USCAR-2 standard 5.4.2,The standard FFC/FPC thickness of 0.33mm was used, as shown in the figure below, to insert and pull out at a uniform speed of 25±3mm/min.(Connectors must be soldered on PCB board through reflow) <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> </div>	插入力Insert force: $0.5N * n(\text{pin数}) + 4N$ Max. 拔出力Un-Mating force: $0.1N * n$ MIN.																					
3	插拔耐久性 Durability	依照USCAR-2 5.1.7, 连接器焊板后以下动作进行10次循环: FPC插入、掀盖压入、掀盖拔起、FPC拔出 After the connector is soldered, perform the following actions for 10 cycles:FPC insert, lift cover press, lift cover pull, FPC pull out Comply with USCAR-2 5.1.7	干电路阻抗Dry Circuit Resistance: 初始值initial:60mΩ Max. 各实验后after each test:Δ40mΩ . 无异常No abnormal appearance																					
4	耐振性 Vibration	依照USCAR-2 5.4.6测试。 测试等级 Class V2 根据 USCAR-2 5.1.4.3。 每轴测试8小时, 共24小时。 测试条件如下表: Comply with method USCAR-2 5.4.6. Test Class V2 with USCAR-2 5.1.4.3. Each axis test 8 hours, a total of 24 hours. Test table: <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">V2 - Random</th> </tr> <tr> <th>F (Hz)</th> <th>PSD¹</th> <th>PSD g²/Hz</th> </tr> </thead> <tbody> <tr> <td>60.0</td> <td>0.096</td> <td>0.00100</td> </tr> <tr> <td>200.0</td> <td>144</td> <td>1.50000</td> </tr> <tr> <td>210.0</td> <td>9.60</td> <td>0.100000</td> </tr> <tr> <td>1200.0</td> <td>9.60</td> <td>0.100000</td> </tr> <tr> <td colspan="2" style="text-align: center;">g_{rms}</td> <td style="text-align: center;">119 12.1 g</td> </tr> </tbody> </table> <div style="margin-top: 10px;"> </div>	V2 - Random			F (Hz)	PSD ¹	PSD g ² /Hz	60.0	0.096	0.00100	200.0	144	1.50000	210.0	9.60	0.100000	1200.0	9.60	0.100000	g _{rms}		119 12.1 g	干电路阻抗Dry Circuit Resistance: 初始值initial:60mΩ Max. 各实验后after each test:Δ40mΩ . 瞬断Discontinuity: 1μs Max. 外观无异常No abnormal appearance 电压降Voltage Drop: 50mV max.
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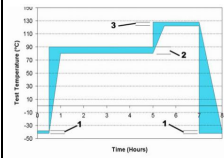
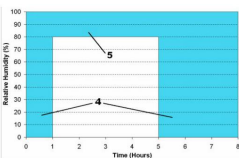
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				Approved by: Rain.Han

5.3机械性能Mechanical performance

5	耐冲击性 Shock	<p>依照USCAR-2 5.4.6测试。 测试等级 Class V2 根据 USCAR-2 5.1.4.3。 测试条件如下表： Comply with method USCAR-2 5.4.6. Test Class V2 with USCAR-2 5.1.4.3. Test table:</p> <p style="text-align: center; font-size: small;">TABLE 5.4.6.3A: SCHEDULE FOR SHOCK TESTING</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Vibration Class</th> <th>Shocks per Axis</th> <th>Wave Shape</th> <th>Direction (s)</th> <th>Duration (ms)</th> <th>Acceleration (g)</th> </tr> </thead> <tbody> <tr> <td>V1</td> <td>10</td> <td>Half Sine Wave</td> <td>Positive</td> <td>5 to 10</td> <td>35</td> </tr> <tr> <td>V2</td> <td>10</td> <td>Half Sine Wave</td> <td>Positive</td> <td>5 to 10</td> <td>35</td> </tr> <tr> <td>For V3, V4, V5 only: Perform Tests 1 and 2</td> <td>1</td> <td>132 x 6 = 792</td> <td>Half Sine Wave</td> <td>Positive/Negative</td> <td>15</td> <td>25</td> </tr> <tr> <td></td> <td>2</td> <td>3 x 6 = 18</td> <td>Half Sine Wave</td> <td>Positive/Negative</td> <td>11</td> <td>100</td> </tr> </tbody> </table>	Vibration Class	Shocks per Axis	Wave Shape	Direction (s)	Duration (ms)	Acceleration (g)	V1	10	Half Sine Wave	Positive	5 to 10	35	V2	10	Half Sine Wave	Positive	5 to 10	35	For V3, V4, V5 only: Perform Tests 1 and 2	1	132 x 6 = 792	Half Sine Wave	Positive/Negative	15	25		2	3 x 6 = 18	Half Sine Wave	Positive/Negative	11	100	<p>干电路阻抗Dry Circuit Resistance: 初始值initial:60mΩ Max. 实验后after each test:△40mΩ . 瞬断Discontinuity: 1μs Max. 外观无异常No abnormal appearance 电压降Voltage Drop: 50mV max.</p>
Vibration Class	Shocks per Axis	Wave Shape	Direction (s)	Duration (ms)	Acceleration (g)																														
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	2	3 x 6 = 18	Half Sine Wave	Positive/Negative	11	100																													

5.4 环境性能 Environmental Performance

序号NO.	项目Item	测试方法 Test conditions	规格要求 Specifications
1	冷热冲击 Thermal Shock	<p>依照USCAR-2 5.6.1测试。测试等级Class T3 根据USCAR-2 5.1.4.1 连接器焊板嵌合, 测试温度-55℃ ~ +125℃, 30s内完成温度转换, 最低和最高温保持30分钟作为一次循环, 共100次循环。 Comply with method USCAR-2 5.6.1. Class T3 with USCAR-2 5.1.4.1. Connector mating on board. The test temperature is -55℃ ~ +125℃, the temperature conversion is completed within 30 seconds, the lowest and the highest temperature is kept for 30 minutes as a cycle, total of 100 cycles.</p>	<p>无明显外观不良 电气性能满足要求 试验中无1μs以上瞬断; No evidence of damage. The electrical performances should meet the spec. specified. Discontinuity: 1μs or less.</p>
2	高温暴露 High Temperature Exposure	<p>依照USCAR-2 5.6.3测试。 测试等级Class T3 根据USCAR-2 5.1.4.1 连接器焊板嵌合, 测试温度125℃, 测试时间1008小时。 Comply with method USCAR-2 5.6.3. Class T3 with USCAR-2 5.1.4.1. Connector mating on board. The test temperature is 125℃, test time is 1008 hours.</p>	<p>干电路阻抗Dry Circuit Resistance: 初始值initial:60mΩ Max. 实验后after each test:△40mΩ . 电压降Voltage Drop: 50mV max.</p>
3	耐湿性 (温湿度循环) Humidity (Temperature and Humidity Cycle)	<p>依照USCAR-2 5.6.2测试。 测试等级Class T3 根据USCAR-2 5.1.4.1 连接器焊板嵌合, 测试温度-55℃ ~ +125℃, 依下图测试为一个循环, 测40个循环。 Comply with method USCAR-2 5.6.2. Class T3 with USCAR-2 5.1.4.1. Connector mating on board. The test temperature is -55℃ ~ +125℃, The test as shown in the figure below is a cycle, and 40 cycles are tested.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="font-size: x-small;">Key: 1. -40℃ 2. 80 to 90℃ 3. Test temperature per Table 5.1.4.1 (Class 3 shown for illustration) 4. Relative humidity is uncontrolled. Do not vent chamber at hour 5 5. Use 80 to 100% relative humidity</p> <p>注: 产品拆开包装后湿敏度等级满足MSL_2a级 Note: The humidity sensitivity level of the product after unpacking meets MSL_2a level</p>	<p>干电路阻抗Dry Circuit Resistance: 初始值initial:60mΩ Max. 实验后after each test:△40mΩ . 电压降Voltage Drop: 50mV max.</p>

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Document No.: IS.EQC.252	Date: 2023/08/22	Rev.: A	Written by: May	Checked by: Elven.Zhan
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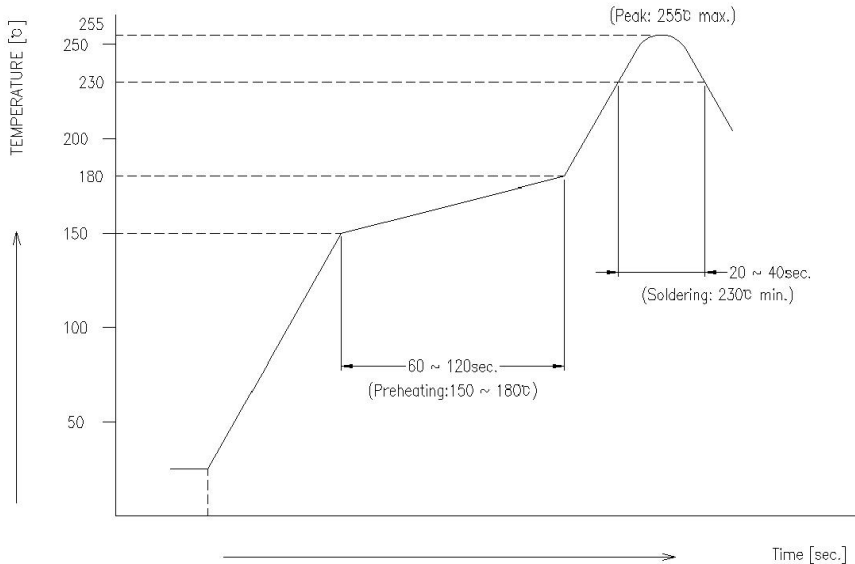
5.3机械性能Mechanical performance

4	盐雾试验 Salt Spray	<p>配合合适的FPC，温度$35\pm 2^{\circ}\text{C}$；盐水比重$5\pm 1\%$喷雾试验，试验后常温水洗干燥后进行测试（参考EIA-364-26） A: 镀金 48h B: 镀锡24h Mated with the appropriate FPC, the product is sprayed at a temperature of $35\pm 2^{\circ}\text{C}$ and a NaCl concentration of $5\pm 1\%$. After the test, the test is performed after washing and drying at room temperature. A: gold plating 48H B: Tin 24h (EIA-364-26)</p>	<p>外观无异常Appearance:No Damage 干电路阻抗Dry Circuit Resistance: 60mΩ Max. 实验后after each test: $\Delta 40\text{m}\Omega$. 绝缘阻抗Insulation Resistance: 100MΩ Min. 耐电压Dielectric withstanding voltage: 无击穿，短路No Breakdown.</p>
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5.5 焊接性能 (Solder-ability requirement)

序号NO.	项目Item	测试方法 Test conditions	规格要求 Specifications
1	沾锡性 Solderability	<p>依照EIA 364-52测试。连接器焊接部位浸入无铅锡槽内，$245\pm 5^{\circ}\text{C}$，$5\pm 0.5\text{s}$ Comply with method EIA 364-52.The connector weld area is immersed in lead-free tin groove$245\pm 5^{\circ}\text{C}$，$5\pm 0.5\text{s}$</p>	<p>吃锡饱满，在95%以上 95% of immersed area must show no voids, pin holes 外观无异常， No abnormal appearance</p>
2	Reflow	<p>预备加热时间 Pre-heating time: $150^{\circ}\text{C} \sim 180^{\circ}\text{C}$ 60~120s。 焊锡温度时间 Soldering Temperature Time: 255°C 10sMAX。</p>	<p>共面度0.10mm Max. 外观无异常， Coplanar degree 0.10mm Max. No abnormal appearance.</p>

Reflow Condition:



※ Temperature shows connector surface temperature.

Notes:

Greem solder should apply the proper quantity so that neither the flux nor solder advances into the core of connector. When these advance inside the connector so much, it becomes the case of the connector performance fall and fault.

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6. 包装 Packaging

参见包装图。See the Packaging drawing

7. 修改内容 Change content

版本Rev.	改正日期 Modify date	改正内容Modifications	Written by	Checked by
A	2023/08/23	正式版发行New	May	Rain

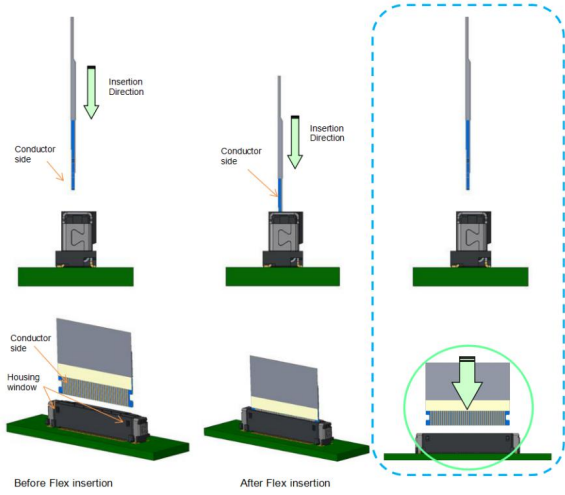
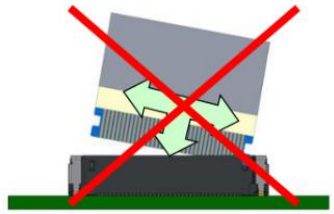
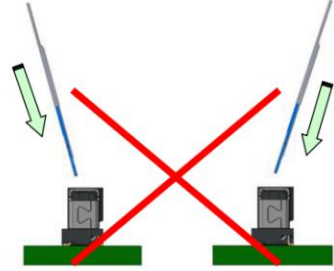
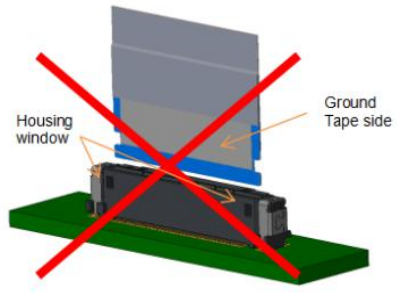
8. 群组测试顺序表Group Test Sequence Table

Test Item	Test Group							
	A	B	C	D	E	F	G	H
1. Appearance	1,3,7	1,3,8	1,3,8	1,3,8	1	1,3	1,3,9	1,3
2. Dry Circuit Resistance	4,9	5,9 10	5,9	5,9		4	4,10	
3. Voltage Drop	8	6,11	6,10	6,10		5	5,11	
4. Insulation Resistance						6	6,12	
5. Dielectric Withstanding Voltage						7	7,13	
6. Temperature rise								4
7. Terminal Retention Force					2			
8. Anchor-Plate Retention Force					3			
8. Vibration test	6							
9. Shock test	5							
10. Durability		4	4					
11. Thermal shock		7,9						
12. Temperature cycling			7					
13. High Temperature Exposure				7				
14. Resistance to soldering heat	2	2	2	2				2
15. Solderability						2	2	
16. Salt Spray							8	
Sample Size	5	5	5	5	5	5	5	5

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7. 操作说明和注意事项 Operating instructions and matters needing attention

操作方法	注意事项
<p>一: FFC/FPC插入方法/FFC/FPC Insertion</p>	
<p>请将挠性垂直插到板面上，直到在连接器插槽的末端发生碰撞。(参见下图) 其中挠性导体转向壳体窗侧。 Please insert the flex vertical to the board surface until it collides inside the end of slot of the connector. (Refer to the figure) Where the conductor of Flex is turned to the housing window side.</p> 	<p>如果FFC斜向插入连接器，有可能导致短路(图1) If the FFC is insert a slant to the connector, It may cause a short circuit.(Fig.1) 如果FFC是对角插入连接器，有可能导致接触不良或FFC弯曲(图2) If the Flex is insert a diagonally to the connector. It may cause a contact buckling and/or ever the conductor of FFC.(Fig.2) 如果FFC接触侧插入到连接器没有窗口的一侧，有可能导致接触不良及FFC弯曲(图3) If the flex conductor side is insert to the connector with the no window side. It may cause a contact buckling and/or ever the conductor of Flex. (Fig.3)</p>   

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7.操作说明和注意事项 Operating instructions and matters needing attention

操作方法	注意事项
<p>二: 确认FFC/FPC插入条件 Confirmation of FFC/FPC Insertion condition</p>	
<p>当垂直拔出FFC时, 请向下按压盖子上的Push标志。 请一直按压盖子直到FFC完全被移除。(见下图) Please push the Actuator on the push indication mark downwards while remove the flex vertically. Please keep pressing the Actuator until FLEX is completely removed. (See Fig.)</p> 	<p>盖子锁住时请勿拔出FFC,有可能导致锁扣机构被破坏。(图4)(图9) Do not pulling out Flex while the Actuator is locked condition, (Fig.9) (Fig.9) It may cause a lock finger or connector broken.</p> <p>只按住盖子一端时, 请勿拔出FFC, 有可能导致锁扣机构被破坏。(图5) Do not pulling out the Flex while pressing only one end of the Actuator. (Fig.5) It may cause a lock finger broken.</p> <p>不要拉起盖子, 有可能导致锁扣端子变形或锁杆被破坏。(图6) Do not pulling up the Actuator. (Fig.6) It may cause a lock terminal deform and / or lock lever broken.</p> <p>请手动操作, 不要用镊子等锋利工具进行操作, 有可能导致锁杆被破坏。(图7) Please operate the Actuator by hand, and do not operate it with sharp-edged tools such as tweezers etc. (Fig.7) It may cause a lock lever broken.</p> <p>拔出FFC时, 请勿向上或横向施力, 有可能导致锁扣机构或连接器被破坏。(图8) While pulling out FPC, do not apply load in the upward or lateral direction. (Fig.8) It may cause a lock finger or connector broken.</p> 

本制品不含SS-00259和ROHS禁止使用的环境物质

This product does not contain SS-00259 and ROHS banned the use of environmental substances

<p>制品仕様书 Product specification</p>		<p>Part name</p>	<p>Pitch 0.50 FPC VT Auto lock connector series</p>		
<p>Amphenol Aorora Technology (Huizhou) Co.,Ltd</p>		<p>Part No.</p>	<p>F323-1B7*1-210*-E200</p>	<p>7/7</p>	
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