

1 适用范围 SCOPE

此作业规范适用于: CONNECTOR WAFER TYPE SERIES
 This product specification is applied for CONNCTOR WAFER TYPE SERIES
 基板适合厚度: 0.8mm~1.6mm
 PCB plate is suitable for thickness: 0.8mm~1.6mm

2 关联规格 APPLICABLE DOCUMENTS

EIA-364:电子连接器及接插件测试程序
 EIA-364:Electronic connector 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
 UL STD-94: Specification for fire resistance test of plastic material equipment, spare parts and equipment

3 构造 尺寸 材料 CONFIGURATIONS DIMENSIONS AND MATERIALS

基本材料参见最新工程图纸 For the basic material, refer to the latest engineering drawing.

No.	零件名称 Part Name	原材料供应商 raw Material supplier	材料名/Material	FLAME CLASS	FILE NO.
1	塑胶主体 Housing	---	塑胶 THERMOPLASTIC	94V-0	
2	端子 Terminals	---	铜合金 COPPER ALLOY	/	
3	固定片 Fix tab	---	黄铜 BRASS	/	
4	FPA	---	塑胶 THERMOPLASTIC	94V-0	
5	CPA	---	塑胶 THERMOPLASTIC	94V-0	

4 标准状态 STANDARD STATE

- | | |
|---------------------------|---|
| 4.1 额定电压: DC 48V | 4.1 Rated voltage: DC 48V |
| 4.2 额定电流: 1A | 4.2 Rated current: 1A |
| 4.3 温湿度范围 | 4.3 Temperature and humidity range |
| 4.3.1 工作温度范围: -40℃~+125℃; | 4.3.1 Use temperature range: -40℃~+125℃; |
| 4.3.2 储存温度范围: -10℃~+50℃; | 4.3.2 Storage temperature range: -10℃~+50℃; |
| 储存湿度范围: 相对湿度 45~80%RH | Save humidity range: Relative humidity 45~80%RH |

本产品不含 SS-00259 和 RoHS 禁止使用的环境物质

THIS PRODUCT ALL MATERIAL MUST BE COMPLY WITH SS-00259 OR RoHS

制品规格书 PRODUCT SPECIFICATION		Product Name	FlexFast CONNECTOR H7.8		
Amphenol Aorora Technology (Huizhou) Co.,Ltd		Part No.	KF1R-BBAH1-E*940	1/7	
Document No.: IS.EQC.230	Date: 2023/01/05	Rev.: A	Written by: Hanson	Checked by: Staven	Approved by: Sam

5 性能 Performance

5-1 结构 Structure

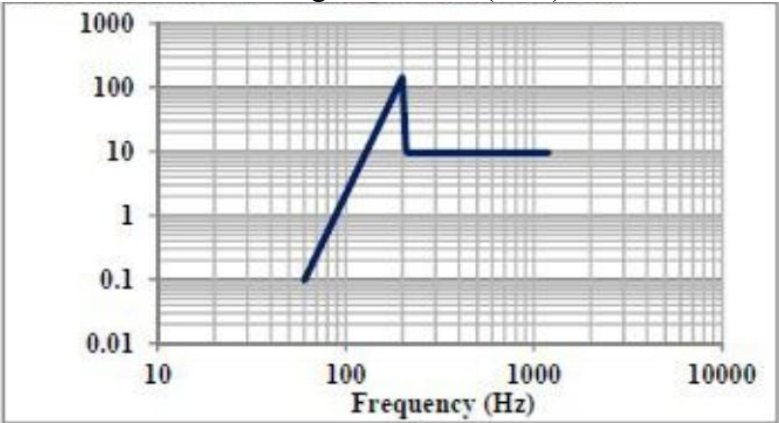
序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications
1	外观 Appearance	目视, 尺寸量测。 Visual, Measurement dimensions	符合图面要求 In accordance with the requirements of the drawing

5-2 电气性能 Electrical performances

序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications
1	接触阻抗 Contact resistance(Low Level)	根据 SAE/USCAR-2 5.3.1 测量, 在受测连接器之公母端子对上施加 20mV Max. 10mA 开路电流条件下测试。 Measured in accordance with SAE/USCAR-2 5.3.1, Mated contacts assembled in housing subject to 20V Max., open circuit at 10mA.	初始: 30 毫欧最大 INITIAL : 30mΩ Max. 终期: ΔR=20mΩ Max. Final: ΔR=20mΩ Max.
2	绝缘阻抗 Insulation resistance	参考 USCAR-2, 5.5.1 规范, 将试验样品的所有接端交错连接两组, 再施加规定的试验电压, 测量绝缘电阻. 测量电压: 500V DC 一分钟。 Reference: USCAR-2, 5.5.1 voltage between all contacts connected together and a metal foil surrounding the housing. In addition, apply the voltage a different test sample to every two adjacent contacts. Apply 500V DC for 1 minute.	接触件间的绝缘电阻应至少为 500 MΩ Insulation resistance for desiccation bound: 500MΩ Min.
3	耐压测试 Dielectric withstanding voltage	依 EIA-364-20C, 将试验样品的所有接端交错连接两组, 尽量使组内不存在互相邻近的接插件, 再施加规定的试验电压. 相邻插接件之间或地线之间施加 500V AC 一分钟。 Per EIA-364-20C, Apply an ac voltage of 500V AC for 1 minute across all contacts connected together and a metal foil surrounding the housing.	试验电压的作用下无闪断、飞弧或击穿。 During this test, neither dielectric breakdown nor flashover shall occur.
4	电压降 Voltage drop	参考: USCAR-2, 5.3.2 进行测试 Reference: USCAR-2, 5.3.2	允收标准依照 USCAR-2, 5.3.2.4 最大电压降: 50 mV Acceptance criteria in accordance with USCAR-2, 5.3.2.4 maximum voltage drop: 50 mV
5	温度上升 Temperature Rise	参考: USCAR-2, 5.3.4 进行测试 Reference: USCAR-2, 5.3.4 电流: 1.0A MAX. 最大 Current: 1.0 A MAX.	验收标准: 在试验期间, 任何接触位置的温度不得超过环境温度 55℃。 Acceptance criteria: the temperature of any terminal interface must not exceed a 55 C rise over ambient at any time during the test.

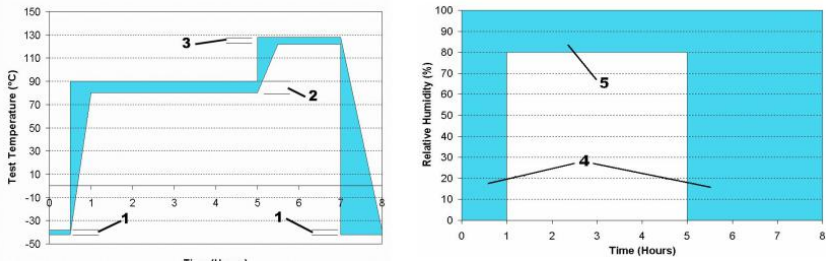
5-3 机械性能 Mechanical performance

序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications
1	连接器整体插入力 Connector mating force	参考 USCAR-2 5.4.2, 以 50mm/min 匀速垂直插入匹配连接器 Reference: USCAR-2 5.4.2, The receptacle and plug shall be mated and unmated at the speed of 25~100mm per minute and measured the force of insertion.	插入力: $\leq 75N$; Connector mating force: $\leq 75N$
2	连接器整体拔出力 Connector Un-mating force		(无锁紧装置) (Without locking device) 拔出力: $\leq 75N$; Connector Un-mating force: $\leq 75N$.
3	连接器整体拔出破坏力 Connectors Un-mating break force		(连接器锁完全啮合) (the connector lock fully engaged) 连接器整体拔出破坏力: $\geq 110N$; Connectors Un-mating break force: $\geq 110N$.
4	连接器解锁力 Connector unlocking force		连接器解锁力应 $6N \sim 51N$. The force to completely disengage the primary connector lock must be $>6N$ and $\leq 51N$
5	寿命 Durability (Repeated Mating/Unmating)	参考 SAE/USCAR-2 5.1.7 同配合产品进行 30 次插拔。 Reference: SAE/USCAR-2 5.1.7 Mating and unmating connector for 30 cycle.	完成插拔测试后接触电阻变化不大于 $\Delta R=20m\Omega$ Max. Contact Resistance: $\Delta R=20m\Omega$ Max. after testing
6	CPA 操作力 CPA operating force	参考 USCAR-2, 5.4.5 Reference: USCAR-2, 5.4.5	CPA (预插状态到锁定状态) 插入力: 60N 最小(未配插状态); 22N 最大(配插状态) CPA engage force (pre-set to lock): 60N min (un-matting) / 22N MAX (matting) CPA (锁定状态到预插状态) 拔出力: 10~30N. CPA disengage force (lock to pre-set) : 10~30N CPA 完全拔出力 30N 最小. CPA disengage force (removing) : 30N Min .
7	FPA 操作力 FPA operating force		FPA (预插状态到锁定状态) 插入力: 60N 最大 FPA engage force (Pre-set to Lock): 60N Max. FPA (锁定状态到预插状态) 拔出力: 60N 最大 FPA disengage force (Lock to Pre-set): 60N Max. FPA 完全拔出力 15N 最小 FPA disengage force (removing): 15N Min.
8	端子保持力 Contact retention force	参考 EIA 364-05, 用拉伸强度测试仪测量保持力。 测试速度: $25 \pm 3mm$ /分钟。 Measure the retention with tensile strength tester.	后端子保持力 2N (Min.) Rear Contact retention force 2N (Min.) 前端子保持力 1N (Min.) Front Contact retention force 1N (Min.)
9	固定片保持力 Fix tab retention force	Testing speed: $25 \pm 3mm$ / minute.	固定片保持力 3N (Min.) Fix tab retention force 3N (Min.)

序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications																		
10	机械冲击 Mechanical Shock	参考 USCAR-2, 5.4.6 Reference: USCAR-2, 5.4.6 方向: X, Y, Z 三个互相垂直的轴向 Direction: each of 3 orthogonal axis 测试条件 Test Condition: <table border="1" data-bbox="373 421 1203 631"> <thead> <tr> <th>Vibration Class</th> <th>Shocks per Axis</th> <th>Wave Shape</th> <th>Direction (+/-)</th> <th>Duration (ms)</th> <th>Acceleration (g)</th> </tr> </thead> <tbody> <tr> <td>V2</td> <td>10</td> <td>Half Sine Wave</td> <td>Positive</td> <td>5 ~ 10</td> <td>35</td> </tr> </tbody> </table>	Vibration Class	Shocks per Axis	Wave Shape	Direction (+/-)	Duration (ms)	Acceleration (g)	V2	10	Half Sine Wave	Positive	5 ~ 10	35							
Vibration Class	Shocks per Axis	Wave Shape	Direction (+/-)	Duration (ms)	Acceleration (g)																
V2	10	Half Sine Wave	Positive	5 ~ 10	35																
11	振动 Vibration	参考 USCAR-2, 5.4.6 Reference: USCAR-2, 5.4.6 测试条件: 振动等级 V2, 随机振动 8 小时/轴. Test Condition: Random duration 8H/Axis by class V2 V2-Random: <table border="1" data-bbox="395 909 1171 1267"> <thead> <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>0.10000</td> </tr> <tr> <td>1200.0</td> <td>9.60</td> <td>0.10000</td> </tr> <tr> <td>g_{rms}</td> <td>119</td> <td>12.1 g</td> </tr> </tbody> </table> Vibration Class V2-On Engine Random(PSD) 	F (Hz)	PSD ¹	PSD g ² /Hz	60.0	0.096	0.00100	200.0	144	1.50000	210.0	9.60	0.10000	1200.0	9.60	0.10000	g_{rms}	119	12.1 g	验收标准: 瞬断不得大于 1 微秒, 无物理性损伤 接触阻抗: $\Delta R=20m \Omega$ Max. Acceptance criteria: No discontinuities greater than 1 μs , No damage allowed Contact resistance : $\Delta R=20m \Omega$ Max.
F (Hz)	PSD ¹	PSD g ² /Hz																			
60.0	0.096	0.00100																			
200.0	144	1.50000																			
210.0	9.60	0.10000																			
1200.0	9.60	0.10000																			
g_{rms}	119	12.1 g																			
12	极化特殊效果 Polarization Feature Effectiveness	参考 USCAR-2, 5.4.4 错误的方向或不同扣位之间互配。 USCAR-2, 5.4.4 Mating in incorrect orientations and different coding.	要求: 60 N/最小。 Requirement: 60 N minimum.																		
Document No.: IS.EQC.230		SERIES KF1R PRODUCT SPECIFICATION																			
			4/7																		

5-4 环境特性 Environmental performance

序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications								
1	耐寒性 Cold resistance	参考 EIA 364-59 在-40±3℃环境中放置时间 120H, 再放在正常环境中, 120 分钟后进行测试。 Reference: EIA 364-59 At -40±3℃ for 120 hours. test after keeping in normal condition for 120min.	外观无损伤, 接触阻抗: ΔR=20mΩ Max. 绝缘阻抗: 500 MΩ Min. Appearance No damage, Contact resistance : ΔR=20mΩ Max. Insulation resistance: 500MΩ Min.								
2	高温暴露 High Temperature Exposure	参考 USCAR-2, 5.6.3 在 125±2℃环境中放置时间 1008H, 再放在正常环境中, 120 分钟后进行测试。 Reference: USCAR-2, 5.6.3 At 125±2℃ for 1008 hours. test after keeping in normal condition for 120min.									
3	恒温恒湿性 Humidity heat, Constant2-85	参考 EIA 364-31 温度 40±3℃; 湿度 90~95% RH 中放置时间 1000H, 在常温下恢复 1H 后检查。 Reference: EIA 364-31 Temperature 40±3℃, RH 90~95%, 1000H, The sample shall be allowed to cool in air for 1H.									
4	盐雾试验 Salt Spray	参考 EIA 364-26 温度 35±2℃; 盐水比重 5±1% 喷雾试验。时间: 48 小时 Reference: EIA 364-26 The connector exposure to a salt spray from the 5±1% solution at 35±2° C. Time: 48H	接触阻抗: ΔR=20mΩ Max. Contact resistance : ΔR=20mΩ Max.								
5	冷热冲击 Thermal shock test	参考 USCAR-2, 5.6.1 连接器应经受 1000 个连续的温度变化周期, 每个周期如表所示在下面。那么在标准大气条件下放置 2h 后测量。 Reference: USCAR-2, 5.6.1 The connector shall be subjected to 1000 successive change of temperature cycles each as shown in the table below. Then it shall be subjected to standard atmospheric conditions for 2h, then measurement shall be made. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">1</td> <td>-40±3℃: 30min.</td> </tr> <tr> <td>2</td> <td>Standard atmospheric condition: 10s</td> </tr> <tr> <td>3</td> <td>+125±3℃: 30min.</td> </tr> <tr> <td>4</td> <td>Standard atmospheric condition: 10s</td> </tr> </table>	1	-40±3℃: 30min.	2	Standard atmospheric condition: 10s	3	+125±3℃: 30min.	4	Standard atmospheric condition: 10s	接触阻抗: ΔR=20mΩ Max. 无瞬断<1us Contact resistance : ΔR=20mΩ Max. NO transient interruption <1us
1	-40±3℃: 30min.										
2	Standard atmospheric condition: 10s										
3	+125±3℃: 30min.										
4	Standard atmospheric condition: 10s										
6	冷凝 Condensation	连接器应按下表所示连续进行 3 次温度变化循环, 然后在标准大气条件下放置 1 小时, 然后进行测量。(用冷热冲击实验后样品测试) The connector shall be subjected to 3 successive change of temperature cycles each as shown in the table below. Then it shall be subjected to standard atmospheric conditions for 1h, then measurement shall be made. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">1</td> <td>-30±3℃: 1h</td> </tr> <tr> <td>2</td> <td>+25±3℃: 1h</td> </tr> </table>	1	-30±3℃: 1h	2	+25±3℃: 1h	接触阻抗: ΔR=20mΩ Max. Contact resistance : ΔR=20mΩ Max.				
1	-30±3℃: 1h										
2	+25±3℃: 1h										
7	冷凝循环 Condensation cycles	连接器应按下表所示连续进行 48 次温度变化循环, 然后在标准大气条件下放置 1 小时, 然后进行测量。(用冷热冲击实验后样品测试) The connector shall be subjected to 48 successive change of temperature cycles each as shown in the table below. Then it shall be subjected to standard atmospheric conditions for 1h, then measurement shall be made. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">1</td> <td>-30±3℃: 1h</td> </tr> <tr> <td>2</td> <td>+25±3℃, 80±5%RH: 1h</td> </tr> <tr> <td>3</td> <td>-30±3℃, 50%RH or less: 1h</td> </tr> </table>	1	-30±3℃: 1h	2	+25±3℃, 80±5%RH: 1h	3	-30±3℃, 50%RH or less: 1h	接触阻抗: ΔR=20mΩ Max. Contact resistance : ΔR=20mΩ Max.		
1	-30±3℃: 1h										
2	+25±3℃, 80±5%RH: 1h										
3	-30±3℃, 50%RH or less: 1h										

序号 No.	项目 Items	测试方法 Test Method	规格要求 Specifications	
8	温湿度度循环 Temperature/Humidity Cycling	<p>参考 USCAR-2, 5.6.2 使用下图所示的循环时间表循环试验样品 40 次, 循环从-40°C到+125°C, 0%-95%相对湿度, 完成下图所示的计划构成一个周期。使用最大环境温度+125°C 第 5 至第 7 小时。 Reference: USCAR-2, 5.6.2 Cycle the test samples 40 times using the cycling schedule shown in Figure. The cycle begins with the sample at -40 ° C to +125 ° C, 0%-95%RH. Completion of the schedule shown in Figure will constitute one cycle. Use +125 ° C for hours 5 through 7.</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Key: 1 (-40)°C 2 (80 - 90)°C 3 表 5.1.4.1 规定的试验温度(等级 3 仅用于演示) 4 相对湿度, 不控制. 不要在第 5 个小时进行通风。 5 (80 - 100)% 相对湿度</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p>Key: 1. -40 °C 2. 80 to 90 °C 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> </div>	外观无损伤 接触阻抗 $\Delta R=20m\Omega$ Max. 绝缘阻 500 M Ω Min. 耐电压 1000V/AC Min. Appearance No damage, Contact resistance $\Delta R=20m\Omega$ Max. Insulation resistance 500M Ω Min. Withstand Voltage 1000V/AC Min.	
9	耐焊接热 Resistance to soldering heat	焊接温度: 260±5°C 时间: 10±0.5s, 手工耐热焊接: 360°C 时间: 4+1/0s Welding temperature: 265±5°C, Time: 10±0.5s, Hand heat welding: 360°C, Time: 4+1/0s	产品主体无变形起 泡, 无端子松动. The product body has no distortion, no foam, no terminal is loose	
10	沾锡性 Solderability	参考: EIA 364-52 沾锡温度 245±5°C (Sn: Lead Free); 时间 5s Max. Reference: EIA 364-52 Tin temperature 245±5°C (Lead Free Sn.); time Max 5S	吃锡饱满, 在 95% 以上. Solder shall be covered 95% or more of the area that is dipped into the solder bath.	
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6 修改内容 Change content

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A	2023/01/05	INITIAL RELEASE	Hanson	Staven