

FPC 连接器产品规格书

FPC CONNECTOR SPECIFICATION

【1】参考文献

References:

- ◎ EIA-364
ELECTRONICS INDUSTRIES ASSOCIATION
- ◎ MIL-STD-202
Test Methods for Electronic and Electrical Component Parts
- ◎ JIS-C-5402
Method for Test of Connectors for Electronic Equipment
- ◎ GB 5095.8
电子设备用机电元件基本试验规程及测试方法 第八部份
Part eighth of Electromechanical component's basic test procedures
And test methods for electronic equipment

【2】产品适用范围

Scope of product application

- ◎ 本规范使用于 0.4 系列 FPC 连接器，包含了产品的性能、试验方法和要求。
This specification applies to 0.4 bar FPC connector series, contains the product performance, test methods and requirements.

【3】额定值

Ratings

| 项目 Item | 规格 Standard | |
|-------------------------------------|--------------|----------------------|
| 最大容许电压 Maximum allowable voltage | 50V | [AC(有效 值 rms)/DC] |
| 最大容许电流 Maximum allowable current | 0.4A | |
| 使用温度范围 Temperature range | -40℃ ~ +105℃ | |

【4】保管条件

Storage condition (reference item)

| 项目 Item | 规格内容 Standard |
|--------------------------|-------------------------------|
| 储存温度 Storage temperature | -10℃ ~ +40℃ |
| 储存湿度 Storage humidity | 75% Max |
| 储存期限 Storage life | 1年(焊接贴板最佳时段为6个月内) one year |

◎ "储存"是指在安装和使用前长期储存的产品。工作温度范围和湿度范围涵盖不导电状态下储存，发送和运输状态下已安装连接器。

The term "storage" refers to products stored for long period of time prior to mounting and use. Operating temperature range and humidity range covers non-conducting condition of installed connectors in storage ,shipment or during transportation

① 产品储存区域应保持清洁干燥，以免产品被污染或受潮变质。

To avoid product contamination or moisture deterioration ,Product storage area should be kept clean and dry,

② 产品的摆放应整齐，排列井然有序，叠放时要做到“上小下大、上轻下重”。

Products should be placed neatly in an orderly. The bigger and heavier the product is , the lower you put .

③ 产品不可直接堆放在地板上，用卡板堆放。

Products should not directly stacked on the floor, please put them by card-board.

【5】性能

Performance

试验条件 Test Conditions

1) 标准状态 Standard conditions

试验及测量如果没有特别的规定，就按周围温度 5~35℃，相对湿度为 85%以下，普通气压 86~106kPa 来实施。但是，如果按此标准测量出的值有疑义时，以判定状态为准。

The test and measurement shall be conducted at the ambient temperature of 5~35℃.relative Humidity of 85% or less, and normal atmospheric pressure of 86~106kPa unless otherwise Specified. If the judgment made on the basis of the values measured standard conditions is doubtful the test and measurement should be made under the judgment conditions.

2) 判定状态

Judgment conditions

判定状态是指:有规定环境条件下测量。周围温度 $20\pm 2^{\circ}\text{C}$, 相对湿度为 60-70%以下, 普通气压 $86\sim 106\text{kPa}$ 的环境状态下测量。

Judgment conditions, environmental conditions under which the measurement is conducted. Are the conditions of ambient temperature of $20\pm 2^{\circ}\text{C}$ relative humidity of 60-70% normal atmospheric pressure of $86\sim 106\text{kPa}$.

5-1.外观、电气性能

Appearance、Electrical performance

| NO. | 试验项目 Items | 试验条件 Test Condition | 规格 Requirement |
|-------|-------------------------------|--|---|
| 5.1.1 | 外观 Appearance | 目视检查 视力: 1.0 以上 照明: (200~300) lx 目测距离: (0.3~0.5) m Visual examination vision: > 1.0, at normal strength of vision and color perception. Illumination: (200~300) lx Viewing distance: (0.3~0.5) m | 1.塑料件表面应无明显疤痕、凹陷、开裂及影响使用的变形。 2.金属件表面无锈蚀、氧化、无明显的机械损伤等缺陷。 3.标志、其它零部件外观符合相应规范。 1. Plastic part: smooth and flat surface without discolor, broken, crack, distortion defects is acceptable. 2. Metal part: bright and even surface without rust, oxide, fog and obvious physical damage defects is acceptable. 3. The identification, other component shall be checked against the relevant spec.. |
| 5.1.2 | 接触电阻 Contact Resistance | 适合 FPC/FFC 嵌合; 开放电压 20mV 以下; 短路电流 1mA 的状态下测定。 Mate applicable FPC/FFC and measured by dry circuit, 20mV MAX. 1mA | 80 mΩ MAX |
| 5.1.3 | 绝缘电阻 Insulation Resistance | 适合 FPC/FFC 嵌合; 相邻端子间或端子与地面间加 DC 250V 下测定。 Mate applicable FPC/FFC and apply 250V DC between adjacent terminal or ground. (JIS C 5402 (5.2): 1992 & EIA-364-20B & MIL-STD-202 Method 302) | 100MΩ Min |
| 5.1.4 | 耐电压 Voltage resistance | 适合 FPC/FFC 嵌合; 相邻端子间或端子与地面间加 AC 250V (有效值) 历时 1 分钟下测定。 (GB/T5095.2-4a) Mate applicable FPC/FFC and apply 250V AC (rms) for 1 minute between adjacent terminal or ground. (JIS C5402-4-1 & MIL-STD-202 Method 301) | 无击穿现象 No breakdown |

5-2.机械性能

Mechanical Performance

| NO. | 试验项目 Items | 试验条件 Test Condition | 规格 Requirement |
|-------|---|--|-------------------|
| 5.2.1 | FPC 保持力 FPC Retention Force | 适合 0.3mm 厚的 FFC；后盖锁好,用每分钟 25±3mm 的速度；平行地拔出。 Mate applicable thick 0.3mm FFC/FPC, Insert the actuator, pull the FPC at the speed rate of 25±3mm/minute | 0.2*n (N) Min |
| 5.2.2 | 端子保持力 Terminal/Housing Retention Force | 单一端子,以用每分钟 25±3mm 的速度平行向外拉 Apply axial pull out force at the speed rate of 25±3mm/minute on the terminal assembled in the housing | 0.2 N Min |
| 5.2.3 | 重复插拔 Repeated pluggable | 无通电状态,以 10 次/分钟的速度插拔 30 次 The power is off, Insert and withdraw actuator up to 30 cycles at the speed rate of less than 10 cycles/minute. | 80 mΩ MAX |

5-3.环境性能

Environment Performance

| NO. | 试验项目 Items | 试验条件 Test Condition | 规格 Requirement | |
|-------|-------------------|--|----------------------------|------------------|
| 5.3.1 | 耐振动性 Vibration | DC 1mA 通电状态下；嵌合轴沿 XYZ 三个方向振动；振幅 1.5mm；频率 10-55-10Hz/分；历时 2 小时 The power is on with Current: DC 1mA Amplitude: 1.5mm P-P Sweep time:10-55-10Hz in 1 minute Duration:2 hours in each X.Y.Z. axes (IEC60068-2-6 &JIS C60068-2-6 &MIL-STD-202 Method 201 &EIA-364-28D,Condition I) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80mΩ MAX |
| | | | 瞬断 Transient breaking | 1 μs .MAX. |
| 5.3.2 | 耐冲击性 Shock | 在 DC 1 ma 通电的状态下，嵌合沿相互垂直的 6 个方向；每 3 次加速度 490 米/s ² {50g}。 Mate applicable FPC and subject to the following shock conditions. 3 times of shocks shall be applied for each 6 directions along 3 mutually perpendicular axes, passing DC 1mA current during the test.(Total of 18 shocks)Test pulse : Half Sine Peak value : 490m/s ² {50G}Duration : 6 milliseconds. (JIS C60068-2-27 &MIL-STD-202 Method 213 &IEC 60068-2-27 &EIA-364-27B,Method A) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80mΩ MAX |
| | | | 瞬断 Transient breaking | 1 μs .MAX. |

| NO. | 试验项目 Items | 试验条件 Test Condition | 规格 Requirement | |
|-------|-----------------------------|--|-------------------------------|------------------|
| 5.3.3 | 耐热性 Heat resistance | 适合 FPC/FFC 嵌合; 105±2℃的空气中; 放置 96 小时; 再回到室温中放置 1-2 小时 Mate applicable FPC/FFC. in the air 105 ± 2 °C for 96 hours; to return to room temperature for 1-2 hours in the place (GB/T5095.6-11j & JIS C60068-2-2/MIL-STD-202 Method 108) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.4 | 耐寒性 cold resistance | 适合 FPC/FFC 嵌合; -40±3℃的空气中; 放置 96 小时; 再回到室温中放置 1-2 小时 Mate applicable FPC/FFC, in the air -40 ± 2 °C for 96 hours; to return to room temperature for 1-2 hours in the place (GB/T5095.6-11i & JIS C60068-2-1) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.5 | 耐湿性 Humidity | 适合 FPC/FFC 嵌合; 40±2℃、相对湿度 90-95%的空气中; 放置 96 小时; 再回到室温中 1-2 小时内测定 in the air of Temperature 40 ± 2 °C and 90-95% relative humidity for 96 hours; to return to room temperature for 1-2 hours in the place (IEC 60068-2-3 & JIS C 60068-2-3 & EIA-364-31B & MIL-STD-202 Method 103) | 外观 Appearance | 无损坏 No damage |
| | | | 耐电压 Dielectric Strength | 满足 5.1.3 |
| | | | 绝缘阻抗 Insulation resistance | 50 MΩ MIN |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.6 | 温度循环 Temperature cycling | 适合 FPC/FFC 嵌合; -40±3℃ 30 分钟; 常温常湿 10-15 分钟; 105±2℃ 30 分钟; 常温常湿 10-15 分钟, 循环 5 次。 5 cycles of: A)-40±3℃ 30 minutes B)Room temperature and humidity from 10 to 15 minutes C)105±2℃ 30 minutes D)Room temperature and humidity from 10 to 15 minute (EIA-364-17B & JIS C60068-2-14) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.7 | 耐盐雾性 Salt Spray | 适合 FPC/FFC 嵌合; 35±2℃、5±1%的盐水喷雾(Sn 24H Au 48H); 试验后常温水洗; 再室温干燥, 常温常湿放置 1-2 小时。 Mate applicable FPC/FFC. (Sn 24 Au | 外观 Appearance | 无损坏 No damage |

| | | | | |
|--------|-------------------------------------|--|------------------------------|--|
| | | 48H)exposure to a salt spray from 5±1% solution at 35±2℃ . Use water at room temperature to wash ;To dry at room temperature Keep wet for 1-2 hours. (EIA-364-26B, Condition B &MIL-STD-202 Method 101) | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.8 | 耐亚硫酸 SO2 Gas | 适合 FPC/FFC 嵌合； 40±2℃、 25±5ppm 的亚硫酸中放置 24 小时 Mate applicable FPC/FFC. 24H exposure to 25±5ppm SO2 Gas at 40±2℃ | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.9 | 耐氨性 NH3 Gas | 适合 FPC/FFC 嵌合； 浓度为 28%的氨水容器中； 温度： 40℃±2,相对湿度 75%RH, 浓度 3±1ppm 放置 24 小时试验后测试接触电阻。 The connector and FPC/FFC. mated is exposed in the H ₂ S gas chamber 40±2℃, 75%RH 3±1ppm for 24 hours.It shall be measured the contact resistance after the test. | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.10 | 可焊性 Solderability | 端子前端基准面 0.2mm 处浸入 250±5℃的锡槽中； 历时 2±0.5 sec。 Soldering time: 2±0.5 sec Soldering temperature: 250±5℃ (JESD22-B102D, Condition C) | 沾敷性 Solder Wetting | 沾锡面积 95%以上 Soldering area more than 95% |
| 5.3.11 | 耐焊热 Resistance to soldering Heat | 高温烤箱 260±5℃,60 秒。 Soldering temperature 260±5℃,60sec. | 外观 Appearance | 无损坏 No damage |
| 5.3.12 | H2S 气体实验 H2S gas test | 适合 FPC/FFC 嵌合； 放置于 40±2℃、 相对湿度 80±5%RH、 H2S 浓度 10ppm 的环境中 96 小时。 测量试验后的接触电阻。 Mate applicable FPC/FFC in the H2S gas chamber 40±2℃,80±5%RH 、 10ppm for 96 hours. It shall be measured the contact resistance after the test (JIS C 60068-2-43) | 外观 Appearance | 无损坏 No damage |
| | | | 接触阻抗 Contact resistance | 80 mΩ MAX |
| 5.3.13 | 温度上升 Raise of temperature test | 连接器在最大电流范围内通电， 并测量接触点的温度升高值。 The connector shall be operated in the maxlimum raise of current and measured raise of the temperature at contact point. | 温度上升 Raise of temperature | 30℃ 以下 30℃ or below |

【6】焊接条件(参考项)

soldering condition (reference item)

| (1) 回流焊接条件: Reflow soldering conditions | | (2) 手工焊接条件 Manual soldering conditions | |
|--|--|---|---|
| 预热 Preheat | 140~160℃ | 温度 temperature | 370±5℃ |
| 预热时间 Preheat time | 30~90sec | 焊接时 soldering time | 3sec Max (一个 Pin 脚) 3sec max on each pin |
| 最高温度 the highest temperature | Max 260℃ | | |
| 焊接时间 soldering time | 5sec Max | | |
| 条件 Condition | 参照温度曲线图 Look at reflow condition picture | | |

◎ 焊接曲线图

Reflow condition picture

