# 东莞市翰皓精密电子有限公司

## DONGGUAN HANHAO PRECISION ELECTRONIC CO.,LTD

| **Product Specification [产品规格书]:** | Document No | PS-2008-03 |
|---|---|---|
| **Subject [主题]:** | Date Issued | 2017/06/21 |
| 2.00mm Pitch M2004 Series Connector Specification | Date Revised | 2020/03/14 |
| | Version | B |

This specification is referred to the 2.00mm series wire to board connector

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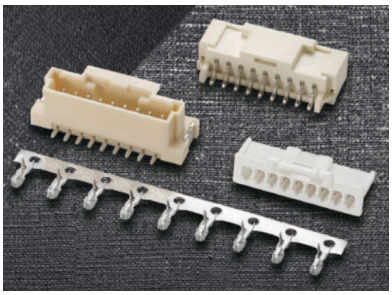
**【1.适用范围 Scope】**

此种规格包括 2.00mm Pitch 2008 Series 连接器规格说明.

This Specification Covers the 2.00mm Pitch 2008 Series Connector Specification.

**【2.规格与料号 Spec and Part number】**

| 规格内容 Specification | 产品料号 Production No. | 产品图示 Picture of Product |
|---|---|---|
| 端子/Terminal | M2004T |  |
| 胶壳/Housing | M2004H-XX | |
| 针座/Wafer | M2004WVS-XX<br>M2004WRS-XX | |

**【3.材质与表面处理 Disposal of Material and surface】**

| 规格内容 Specification | | 材 质 Materials | 表面处理 Disposal of Surface |
|---|---|---|---|
| 端子/Terminal | | 磷铜(C5191)/Phosphor Bronze | Nickel Plated: 50u" Min<br>Bright Tin Plated: 100u" Min |
| 胶壳/Housing | | PBT | UL 94V-0 |
| 针座/Wafer | Base | PA9T | UL 94V-0 |
| | PIN | 黄铜(C2680)/Brass | Nickel Plated: 50u" Min<br>Matte Tin Plated: 100u" Min |
| | Solder tab | 黄铜(C2680)/Brass | Nickel Plated: 50u" Min<br>Matte Tin Plated: 100u" Min |

**（上述参数请以工程图为准/Please Refer to the Project drawing for the above Specification）**

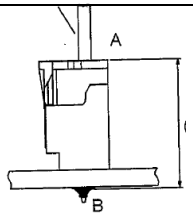
**【4. 额定等级 Ratings and applicable wires】**

| 项 目【Item】 | | 规 格【Standard】 | | |
|---|---|---|---|---|
| 4-1. | 额定电压 Rated Voltage (Max.) | 125V | [AC/DC] | |
| 4-2. | 额定电流 Rated Current (Max.) | 3A | | |
| 4-3. | 使用温度范围 Ambient temperature Range | -40℃~+105℃ | | |
| 4-4. | 适用线径 Applicable wire insulation AWG($mm^2$) | 2008T-PSN1（普通脚） | AWG#24~26 (0.22~0.13$mm^2$) | 绝缘Ø O.D：1.40mm(Max.) |
| | | 2008TH-PSN1（高脚） | AWG#20~22 (0.50~0.35$mm^2$) | 绝缘Ø O.D：1.50mm(Max.) |

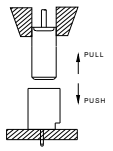
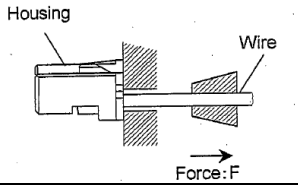
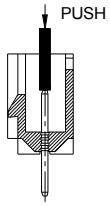
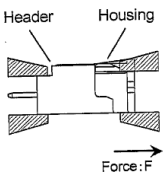
【 *升温时含端子.Including terminal temperature rise. 】

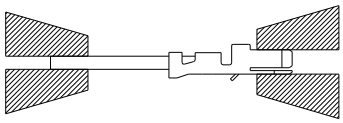
**【5.性能 PERFORMANCE】**

**5-1. 电气的性能 Electrical Performance.**

| 项 目 【Item】 | | 条 件 【Test Condition】 | 规 格 【Requirement】 |
|---|---|---|---|
| 5-1-1 | 接触阻抗 Contact Resistance | 公母配合,开放电压 20mV 以下,电流 10mA 检测连接器 A~B 区.<br>Mate connectors, measure by dry circuit, 20mV MAX, 10mA.<br>(Based upon EIA-364-06A).<br>  | Initial:<br>10 milliohms Max.<br>After Test:<br>20 milliohms Max. |
| 5-1-2 | 绝缘阻抗 Insulation Resistance | 公母配合,在相邻端子,端子与地片之间,使用 500V 的直流电,检测连接器.<br>Mate connectors, apply 500V DC between adjacent terminal or ground.<br>(Based upon EIA-364-21B / MIL-STD-202 Method 302 Cond.B) | 1000 Megohms Min. |
| 5-1-3 | 耐电压 Dielectric Strength | 公母配合,在相邻端子,端子与地片之间,使用 500V 的交流电 1 分锤,检测连接器.<br>Mate connectors, apply 500V AC for 1 minute between adjacent terminal or ground.<br>(Based upon EIA-364-20A / MIL-STD-202 Method 301) | 外观无损伤，无打火花<br>No Breakdown and Flashover |
| 5-1-4 | 铆线后端子接触阻抗 Contact resistance on crimped portion | 铆线后之端子,开放电压 20mV 以下,电流 10mA 检测连接器.<br>Crimp the applicable wire on to the terminal measure by dry circuit 20mV MAX, 10mA. | 10 milliohms Max. |

**5-2. 机械的性能 Mechanical Performance.**

| 项 目 【Item】 | | 条 件 【Test Condition】 | 规 格 【Requirement】 |
|---|---|---|---|
| 5-2-1 | 插拔力 Insertion & Withdraw Force | 以每分锺 50±3mm 的速率插入和拔出.<br>Insert and withdraw Connectors at the speed rate of 50±3mm/minute.<br>  | 参照第 6 项<br>Refer to paragraph 6 |
| 5-2-2 | 端子保持力 Terminal/ Housing Retention Force | 以每分 50±3mm 的速率,将端子从 Housing 内轴向拔出的力量.<br>Apply axial pull out force at the speed rate of 50±3mm/minute on the terminal assembled in the housing.<br>  | 9.8N {1.0kgf} Min. |
| 5-2-3 | 端子插入力 Terminal Insertion Force | 铆线后之端子插入 Housing 所需最大力量.<br>Insert the crimped terminal into the housing. | 9.8N {1.0kgf} Max. |
| 5-2-4 | Pin 针保持力 Pin Retention Force | 以每分 100mm 的速率,将 PIN 针从 Wafer 内轴向拔出的力量.<br>Apply axial push force at the speed rate of 100mm/minute.<br>  | 9.8N {1.0kgf} min. |
| 5-2-5 | Lock 保持力 Lock Retention Force | 将 Housing 与 Wafer 匹配后，将 Housing 从 Wafer 内轴向拔出的力量，看其卡扣的承受力量<br>A housing and a header shall be mated , Pulling load shall be applied them, the load to make them come off each other shall be measured<br>  | 29.4N {3.0kgf} min. |

| 项 目 【Item】 | | 条 件 【Test Condition】 | 规 格 【Requirement】 | | | | |
|---|---|---|---|---|---|---|---|
| 5-2-6 | 端子压着强度 Crimped contact | 固定铆线后的端子，使电线与端子分离时所需的最小力量. Fix the crimped terminal, apply axial pull out force on the wire. (Do not crimp insulation part). | AWG 线号($mm^2$) | AWG# 20 (0.50$mm^2$) | AWG# 22 (0.35$mm^2$) | AWG# 24 (0.22$mm^2$) | AWG# 26 (0.13$mm^2$) |
| | | | Spec.kgf. Min. | 6.0 | 4.0 | 3.0 | 2.0 |
| | |  | Note> As for unspecified wire sizes in this specification define values with customer. | | | | |

**5-3. 环境性能及其它 Environmental Performance and Others**

| 项 目 【Item】 | | 条 件 【Test Condition】 | 规 格 【Requirement】 | |
|---|---|---|---|---|
| 5-3-1 | 重复插拔 Repeated Insertion/ Withdrawal | 以每分锺不超过 10 次的速率,将公母插拔 30 次. When mated up to 30 cycles repeatedly by the rate of 10 cycles per minute. | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| 5-3-2 | 温升测试 Temperature Rise | 公母连接器配合后，加载额定电流直到温度上升到稳定状态，然后再测量温升（EIA364-70,Method 1） Mating connectors shall be energized at rating current until thermal stability is achieved, and then measured the termperature rise. （EIA364-70,Method 1） | 温升测试 Temperature rise | 30℃ Max. |
| 5-3-3 | 振动测试 Vibration test | 振幅: 1.5mm P-P 时间: 20~200~20 $H_Z$ in 3minute 持续时间: 每轴向 3 小时 加速度：44m/$S^2$ 开放电压：20mV 以下 开放电流：10mA 以下 Amplitude: 1.5mm P-P Sweep time: 20~200~20 $H_Z$ in 3 minute Duration: 3 hours in each X.Y.Z axials. (Based upon EIA-364-28B/MIL-STD-202 Method 213B Cond.A) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| | | | 瞬断 Discontinuity | 1 micro-second Max. |
| | | | 电压降落 Voltage Drop | 20mV/A Max |
| 5-3-4 | 冲击测试 Shock test | 在 X.Y.Z 上 6 个方向上,以 981m/$s^2$(100G 的力量)冲击下各 3 回. 作用时间：6ms 981m/$s^2${100G}, 3 strokes in each X.Y.Z. axes. Operation time:6ms (Based upon EIA-364-27B/MIL-STD-202 Method 213B Cond. A) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| | | | 瞬断 Discontinuity | 1 micro-second Max. |

| 项 目 【Item】 | | 条 件 【Test Condition】 | 规 格 【Requirement】 | |
|---|---|---|---|---|
| 5-3-5 | 耐热性 Heat Resistance | 105±2℃,96 hours. (Based upon MIL-STD-202 Method 108A Cond.A) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| 5-3-6 | 耐寒性 Cold Resistance | -40±3℃,96 hours. ( Based upon EIA-364-105) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| 5-3-7 | 耐湿性 Humidity | 温度: 60±2℃ 湿度: 90~95%(RH) 持续时间: 96 hours Temperature: 60±2℃ Relative Humidity: 90~95% Duration: 96 hours (Based upon EIA-364-31A/MIL-STD-202 Method 103B Cond.B) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| | | | 耐电压 Dielectric Strength | Must meet 5-1-3 |
| | | | 绝缘阻抗 Insulation Resistance | 100 Megohms Min. |
| 5-3-8 | 温度变化 Temperature Cycling | 从-40℃持续 30 分锺升至+105℃持续 30 分锺,循环 5 次. 5 cycles of: a) -40℃ 30 minutes. b) +105℃ 30 minutes. (Based upon EIA-364-32B) | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| 5-3-9 | 盐水喷雾 Salt Spray | 在温度 35±2℃,盐水浓度 5±1%下,盐水喷雾 48±4 小时. 48±4 hours exposure to a salt spray from the 5±1% solution at 35±2℃. (Based upon EIA-364-26A/MIL-STD-202 Method 101D Cond.B). | 外观 Appearance | 无异状 No Damage |
| | | | 接触阻抗 Contact Resistance | 20 milliohms Max. |
| 5-3-10 | 焊锡附着性 Solder-ability | 焊接时间: 3~5 秒. 焊接温度: 245±5℃. Soldering time: 3~5sec solder. Temperature: 245±5℃. | Solder Wetting | 浸渍面积需 95%以上 95% of immersed area must show no voids, pin holes. |

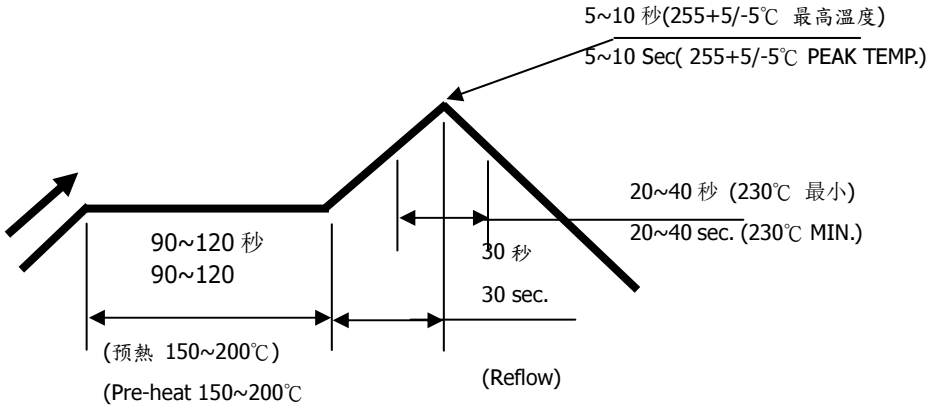
| | | | | |
|---|---|---|---|---|
| 5-3-11 | 焊锡耐热性<br>Resistance to Soldering Heat | 焊接时间: 5~10 秒.<br>焊接温度: 255+5/-5℃.<br>Soldering time:5~10 sec solder.<br>Temperature:255+5/-5℃.<br>(Based upon EIA-364-56A) | 外观<br>Appearance | 无异状<br>No Damage |

**【6.综合插入力及拔出力 INSERTION/WITHDRAWAL FORCE】<Connector mating force>**

| PIN 数<br>No. of CKT | 初次插入力(最大值)<br>First Insertion (kgf Max.) | 30 次拔出力(最小值)<br>30th Withdrawal (kgf Min.) | PIN 数<br>No. of CKT | 初次插入力(最大值)<br>First Insertion (kgf Max.) | 30 次拔出力(最小值)<br>30th Withdrawal (kgf Min.) |
|---|---|---|---|---|---|
| Single | / | / | 09 | 9.2 | 0.55 |
| 02 | 3.6 | 0.10 | 10 | 10.0 | 0.60 |
| 03 | 4.4 | 0.20 | 11 | 10.8 | 0.65 |
| 04 | 5.2 | 0.30 | 12 | 11.6 | 0.70 |
| 05 | 6.0 | 0.35 | 13 | 12.4 | 0.75 |
| 06 | 6.8 | 0.40 | 14 | 13.2 | 0.80 |
| 07 | 7.6 | 0.45 | 15 | 14.0 | 0.85 |
| 08 | 8.4 | 0.50 | | | |

注：以上插拔次数为 30 次　　Note：Insertion and Withdrawal for 30Cycles

**【7. SMT 回流条件 SMT REFLOW CONDITION】**




温度条件曲线图/ 基板上温度

TEMPERATURE CONDITION GRAPH/ (TEMPERATURE ON BOARD PATTERN SIDE)

注记: 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 by your own devices beforehand. Because the condition changes by the soldering devices, P.C. boards, and so on.