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| 皓宇（香港）公司 HAOYU (HONG KONG) LIMITED | 产品规格书 Product | 文件编号 Doc. No. | SPEC-USB-001 |
| | | 版本 Rev. | A |
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1. 范围 Scope

该标准涵盖皓宇（香港）公司制造中心生产的USB C TYPE连接器之功能要求及测试方法。

This specification covers the requirements for product performance and test methods of HAOYU (HONG KONG) LIMITED Manufacturing Center's USB C TYPE plug and receptacle Connectors.

2. 标准文件 Related Standards

- 2-1 IEC512
- 2-2 MIL-STD 202
- 2-3 EIA-364

3. 等级 Rating

- 3-1 额定: 3A 30V AC/DC max
Rated : 3A 30V AC/DC max
- 3-2 温度范围: 存储: -20°C + 60°C
Temperature Range: storage : -20°C to +60°C ;
工作: -30°C + 80°C ;
operating : -30°C to +80°C ;
名义: : +20°C
Nominal : +20°C

4. 测试要求 Test Condition

- 4-1 所有的测试应当执行详见下表条件,除非另有说明。
All tests shall be performed as bellow conditions unless otherwise specified.
- 4-2 温度范围: +15°C + 35°C
Temperature range : +15°C to +35°C
- 4-3 湿度范围: 25% - 85%
Humidity range: 25% to 85%

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5. 产品外观 PRODUCT APPEARANCE

| 项目 ITEM | 描述 Description | 测试方法 Test Methods | 测试规格 Test Specification |
|------------|--|---|--|
| 5-1 | 产品外观 Examination of Product Appearance | 依据 EIA364-18 测试 肉眼观察， 产品外形必须符合图纸要求。 | 产品外观良好，无外观不良情形， 产品结构及尺寸须符合图纸设计 要求。 |
| | | EIA364-18 Shall be confirmed with eyes in accordance with each drawing. | Outward appearance shall be good without such injurious problem and structure shall be meet the design and dimension requirement of drawing |

6. 机械性能 MECHANICAL PERFORMANCE

| 项目 ITEM | 描述 Description | 测试方法 Test Methods | 测试规格 Test Specification |
|------------|-------------------------|--|---|
| 6-1 | 插入力 Insertion force | 依据 EIA 364-13 测试方式 ,操作速 度 12.5mm /min. | 插拔力的范围: 5N-20 N |
| | | EIA 364-13 Measure force at maximum rate of 12.5mm (0.492") per minute | The connector insertion force shall be the range from 5N to 20N |
| 6-2 | 拔出力 Extraction force | 依据EIA 364-13测试方式 , 测量力 的速度达到最大12.5 mm /min. | 拔出力的范围: 8N-20 N |
| | | EIA 364-13 Measure force at maximum rate of 12.5mm(0.492") per minute | The connector extraction force shall be the range from 8N to 20N |
| 6-3 | 耐插拔 Durability | 依据EIA 364-09测试方式 插拔10000次循环,手动插拔速度 200周期/小时. | 必须满足以下条件后循环测试完成后: 接触电阻(40 mΩ,变化量10 mΩ(Max)后 测试) 插入力(5到20N) 拔出力(8到20 N) 产品外观符合需求, 无破损及外形损伤。 |

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| | | EIA 364-09 Type C :10000 cycles cycle rate of 200cycles per hour manually。 | Must meet the following criteria after the cycle test is completed: - Contact resistance (40mΩ , delta 10mΩ(Max) after test) - Insertion force (5N to 20N) - Extraction force (8N to 20N) - Visual inspection (no exposed base metal on contacts) | | |
| 6-4 | Cable 摇摆弯曲 Cable Flexing | 依据 EIA 364-41 测试方式 电缆组件与尺寸 X =电缆外径 3.7, 并在两个平面 120 度来回 100 个循环。 | 弯曲过程中没有物理损坏或不连续 1ms 以上应发生在 | | |
| | | EIA 364-41 100 cycles in each of 2 planes 120 degree. Dimension x=3.7x cable diameter | No discontinuity over 1 microsecond During flexing or physical damage allowed | | |
| 6-5 | Cable 负重测试 Cable Pull-Out | 依据 EIA-364-38 测试方式 经受 40 N 轴向负荷为最小为 1 分钟 | 组件没有损伤和物理损坏 | | |
| | | EIA-364-38 40N steady state axial load for 1 minute | No discontinuity or physical damage allowed | | |
| 6-6 | 四轴向测试 4-axes continuity test | 8N 拉力一段 10 秒钟;标本必须服从 0°、90°、180°、270°四个方向。 | 组件没有间断大于 1us,没有物理损害 | | |
| | | 8N tensile force for a period of 10 seconds Min; The specimen must subject to 0° , 90° , 180° , 270° direction. | No discontinuity greater than 1us and no physical damage to the specimen(one cable per test) | | |
| | | EIA364-18 105° C without applied voltage for 120 hours. 105° C without applied voltage for 72 hours when used as preconditioning in EIA 364-1000. 01 | Visual inspection,Test shall be done in sequences defined in EIA364-1000.01 | | |

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7. 电气特性 ELECTRICAL PERFORMANCE

| 项目 ITEM | 描述 Description | 测试方法 Test Methods | 测试规格 Test Specification |
|------------|---|---|--|
| 7-1 | 绝缘阻抗 Insulation Resistance | 依据 EIA 364-21C 测试方式 加100V DC的电压于相邻两端子之 间. | 未交配和配对连接相邻触点间最低 100MΩ 绝缘电阻 |
| | | EIA 364-21C Unmated connectors, apply 100Volts DC between adjacent terminal or ground. | 100MΩminimum(unmated)between adjacent contacts and contacts and shell |
| 7-2 | 低电接触电阻 Low Level Contact Resistance | 依据 EIA 364-23b 测试方式 一组对插好的连接器; 测试开路电压:20mV max.; 测试短路电流: 100m A max.. | 接触电阻(40 mΩ,测试后变化量10 mΩ(Max)) |
| | | EIA 364-23b 20mV Max. open circuit at 100mA Max. | 40mΩ(Max) initial for VBUS and GND contacts and all other contacts; delta 10mΩ(Max) after test |
| 7-3 | 耐电压 Dielectric withstanding Voltage | 依据 EIA 364-20 测试方式 加100V AC的电压于相邻两端子之间 1分钟. | 无击穿和飞弧现象 |
| | | EIA 364-20 Subjected to 100VAC (RMS) for 1 minute between adjacent terminals. | There shall be no breakdown |
| 7-4 | 接触额定电流 Contact current rating | 5.0 A的电流应被共同施加到VBUS引 脚和1.25 A通过相应的GND施加到 VCONN引脚与返回路径引脚。 0.25 A的最小电流也应分别适用于所有的 其它端子。 | 当电流被施加到触点上，温度上升不 超过30℃的USB型-C下测试，当在25 ℃的环境温度下测得的配套插头和插 座的任何点 |
| | | EIA364-70 5.0A shall be applied collectively to VBUS pins and 1.25 A applied to the VCONN pin and 0.25 A the other contacts. | When the currents are applied to the contacts, the temperature rise shall not exceed 30 °C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25 °C. |

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8. 环境特性 ENVIRONMENT PERFORMANCE

| 项目 ITEM | 描述 Description | 测试方法 Test Methods | 测试规格 Test Specification |
|------------|----------------------------|--|---|
| 8-1 | 温度老化测试 Temperature Life | 依据EIA 364-17测试方式 温度寿命试验的温度和持续时间 105℃下 120 小时 温度寿命试验的温度和持续时间对预处理 105℃， 72 小时 | 外观: 无损伤; 试验后接触电阻最大: 40mΩ |
| | | EIA 364-17 105° C without applied voltage for 120 hours. 105° C without applied voltage for 72 hours when used as preconditioning in EIA 364-1000.01. | Visual inspection, Test shall be done in sequences defined in EIA 364-1000.01. |
| 8-2 | 冷热冲击测试 Thermal Shock | 依据EIA 364-32方式测试 10 个周期-55℃+ -55℃。USB 3.0 必须对插配合下 测试 | 外观没有损害 |
| | | EIA 364-32 10 Cycles - 55°C and +85°C. The USB 3.0 connectors under test must be mated. | There shall be no evidence of any physical damage. |
| 8-3 | 盐水喷雾 Salt Spray | MIL-STD-202F 101d 条件B测试 对插产品测试环境: 温度: 35±2℃, 盐 水浓度:重量比5±1%, 时间: 48小时。 测试后常温水洗,干燥. | 1) 要满足视觉要求, 没有物理 损害。 2) 要满足的要求, 额外的测试 中指定在第五节测 |
| | | MIL-STD-202F, Method 101D, Test Condition B Subject mated connectors to 48 hours at 35 °C with 5%-Salt-solution concentration. | 1).Shall meet visual requirement, show no physical damage. 2).Shall meet requirements of additional tests as specified in test sequence in Section 5 |
| | 恒温恒湿 | 依据 EIA 364-31方式测试 周期 25℃± 3℃之间对插产品在 80%± 3% 湿度 和 65℃± 3℃温度 50%± 3% 湿度,时间应 0.5 小 时和停顿时间 0.5 小时。24 个周期 | 目视检查,测试应在序列中定义 完成 EIA 364 - 1000.01 |

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3. 等级 Rating

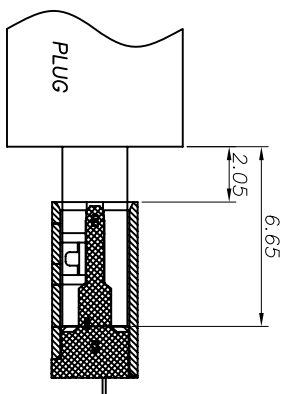
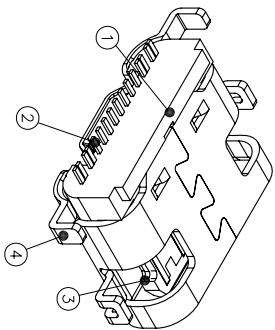
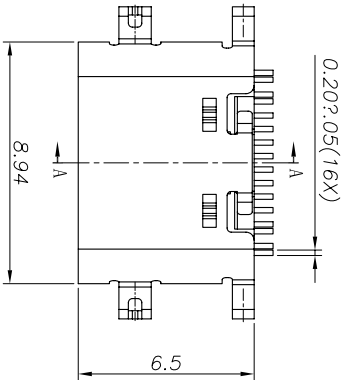
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Temperature Range: storage : -20°C to +60°C ;
工作: -30°C + 80°C ;
operating : -30°C to +80°C ;
名义: : +20°C
Nominal : +20°C

4. 测试要求 Test Condition

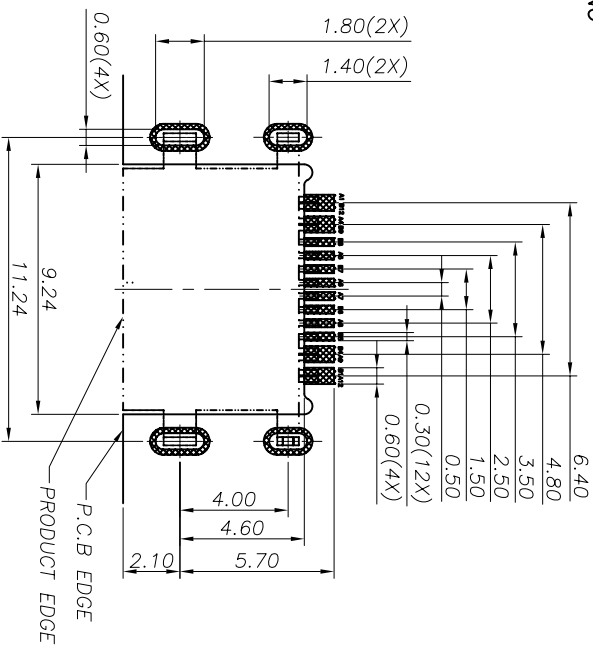
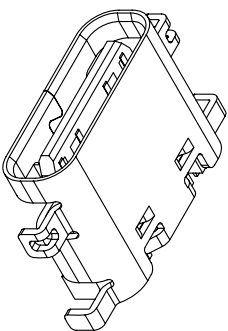
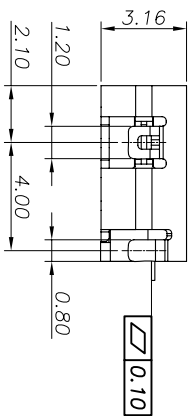
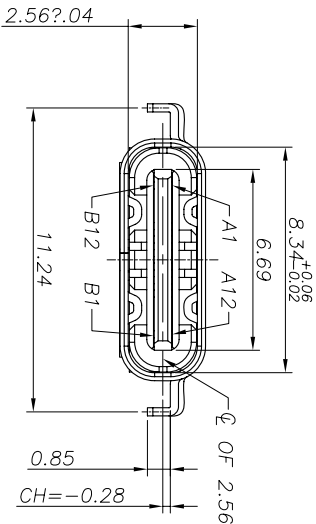
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- 4-2 温度范围: +15°C + 35°C
Temperature range : +15°C to +35°C
- 4-3 湿度范围: 25% - 85%
Humidity range: 25% to 85%

5 · DURABILITY (耐久性)

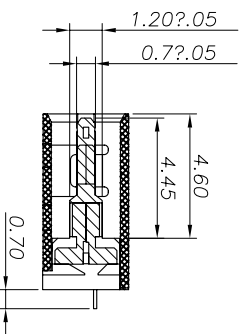
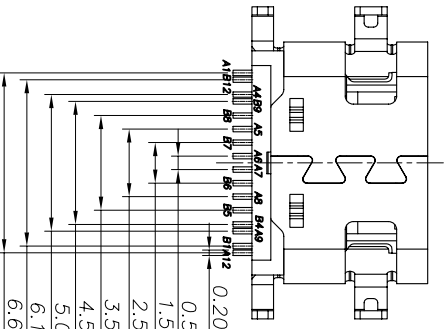
| | | | |
|----|--|---|---|
| 5A | <p>RESISTANCE TO SOLDERING HEAT TEST 耐焊性試驗</p> | <p>THE TOP OF THE TERMINALS SHALL BE DIPPED 2mm . THE PLASTIC BODY IS 1.6mm ABOVE THE TIN LIQUID. 端子頂部被浸入焊錫池中 2mm 深, 膠身距離錫液 1.6mm。 Wave-soldering is to be performed within 3seconds at 260 +/-5 °C 波峰焊接溫度 260 +/-5°C 時間 3 秒。 Hand weilding to be performed within 3 seconds at 380°C or below. 手工焊接溫度為 380°C 或以內, 時間為 3±0.5 秒。 Reflow welding to be performed within 3 seconds at 260°C or below. 回流焊接溫度為 260°C 或以內, 時間為 3±0.5 秒 注: 本產品只適合用手焊、波峰焊、回流焊。</p> | <p>WITHOUT DEFORMATION OF CASE OR EXCESSIVE LOOSENESS OF TERMINALS ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED. 本體無變形, 能滿足於機械、電氣性能。</p> |
|----|--|---|---|



| A1 | GND | B12 | GND |
|-----|--------|-----|--------|
| A2 | SSTXP1 | B11 | SSRXP1 |
| A3 | SSTXN1 | B10 | SSRXN1 |
| A4 | VBUS | B9 | VBUS |
| A5 | CC1 | B8 | SBU2 |
| A6 | DP1 | B7 | DN2 |
| A7 | DN1 | B6 | DP2 |
| A8 | SBU1 | B5 | CC2 |
| A9 | VBUS | B4 | VBUS |
| A10 | SSRXN2 | B3 | SSTXN2 |
| A11 | SSRXP2 | B2 | SSTXP2 |
| A12 | GND | B1 | GND |



RECOMMENDED PCB LAYOUT(TOP VIEW)
THICKNESS: 0.80MM;DEFAULT TOLERANCE:±0.05



SECTION-A-A

| NO. | PART | NAME | MATERIAL | QTY | FINISHING |
|-----|-----------|------|----------|-----|--------------|
| 5 | | | | | |
| 4 | SHELL | | SUS | 1 | Ni-PLATED |
| 3 | MID PLATE | | SUS | 1 | Ni-PLATED |
| 2 | CONTACT | | BRASS | 12 | Au/Ni-PLATED |
| 1 | HOUSING | | LCP | 1 | |

| TOLERANCE UNLESS SPECIFIED | ANGULAR ±1° | NO | DATE | REVISIONS | BY | APPD |
|----------------------------|-------------|----|------|-----------|----|------|
| UP TO 5mm: ±0.1 | | 1 | | | | |
| ABOVE 5mm: ±0.2 | | | | | | |

TITLE: USB JACK

MODEL: USB-310CA-B-SU

UNIT: MM
SCALE: 1:1

ROHS COMPLIANT

CHK'D

APPD



HAOYU(HONGKONG)LIMITED
皓宇(香港)有限公司

PRO.AGI:



REV: A0