

|                                       |                         |                  |              |
|---------------------------------------|-------------------------|------------------|--------------|
| 皓宇（香港）公司<br>HAOYU (HONG KONG) LIMITED | 产品规格书<br><b>Product</b> | 文件编号<br>Doc. No. | SPEC-USB-001 |
|                                       |                         | 版本<br>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<br>ITEM | 描述<br>Description                            | 测试方法<br>Test Methods  | 测试规格<br>Test Specification   |
|------------|--|---|--|
| 5-1        | 产品外观<br>Examination of<br>Product Appearance | 依据 EIA364-18 测试 肉眼观察，<br>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，<br>产品结构及尺寸须符合图纸设计<br>要求。   |
|            |  | EIA364-18<br>Shall be confirmed with eyes in<br>accordance with each drawing. | Outward appearance shall be good<br>without such injurious problem and<br>structure shall be meet the design and<br>dimension requirement of drawing |

## 6. 机械性能 MECHANICAL PERFORMANCE

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

|                                       |                                 |   |   |                  |              |
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|                                       |                                 | EIA 364-09<br>Type C :10000 cycles cycle rate of 200cycles per hour manually。   | Must meet the following criteria after the cycle test is completed:<br>- Contact resistance (40mΩ , delta 10mΩ(Max) after test)<br>- Insertion force (5N to 20N)<br>- Extraction force (8N to 20N)<br>- Visual inspection (no exposed base metal on contacts) |                  |              |
| 6-4                                   | Cable 摇摆弯曲<br>Cable Flexing     | 依据 EIA 364-41 测试方式<br>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<br>1ms 以上应发生在   |                  |              |
|                                       |                                 | EIA 364-41<br>100 cycles in each of 2 planes 120 degree.<br>Dimension x=3.7x cable diameter   | No discontinuity over 1 microsecond<br>During flexing or physical damage allowed  |                  |              |
| 6-5                                   | Cable 负重测试<br>Cable Pull-Out    | 依据 EIA-364-38 测试方式<br>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<br>40N steady state axial load for 1 minute  | No discontinuity or physical damage allowed   |                  |              |
| 6-6                                   | 四轴向测试<br>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<br>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<br>ITEM | 描述<br>Description                         | 测试方法<br>Test Methods  | 测试规格<br>Test Specification   |
|------------|---|---|--|
| 7-1        | 绝缘阻抗<br>Insulation<br>Resistance          | 依据 <b>EIA 364-21C</b> 测试方式<br>加100V DC的电压于相邻两端子之<br>间.  | 未交配和配对连接相邻触点间最低<br>100M $\Omega$ 绝缘电阻  |
|            |   | <b>EIA 364-21C</b><br>Unmated connectors, apply 100Volts<br>DC between adjacent terminal or<br>ground.  | 100M $\Omega$ minimum(unmated)between<br>adjacent contacts and contacts and<br>shell   |
| 7-2        | 低电接触电阻<br>Low Level Contact<br>Resistance | 依据 <b>EIA 364-23b</b> 测试方式<br>一组对插好的连接器;<br>测试开路电压:20mV max.;<br>测试短路电流: 100mA max..  | 接触电阻(40 m $\Omega$ ,测试后变化量10<br>m $\Omega$ (Max))  |
|            |   | <b>EIA 364-23b</b><br>20mV Max. open circuit at 100mA<br>Max.   | 40m $\Omega$ (Max) initial for VBUS and GND<br>contacts and all other contacts; delta<br>10m $\Omega$ (Max) after test   |
| 7-3        | 耐电压<br>Dielectric<br>withstanding Voltage | 依据 <b>EIA 364-20</b> 测试方式<br>加100V AC的电压于相邻两端子之间<br>1分钟.  | 无击穿和飞弧现象   |
|            |   | <b>EIA 364-20</b><br>Subjected to 100VAC (RMS) for 1<br>minute between adjacent terminals.  | There shall be no breakdown  |
| 7-4        | 接触额定电流<br>Contact current<br>rating       | 5.0 A的电流应被共同施加到VBUS引<br>脚和1.25 A通过相应的GND施加到<br>VCONN引脚与返回路径引脚。 0.25<br>A的最小电流也应分别适用于所有的<br>其它端子。  | 当电流被施加到触点上，温度上升不<br>超过30 $^{\circ}$ C的USB型-C下测试，当在25<br>$^{\circ}$ C的环境温度下测得的配套插头和插<br>座的任何点   |
|            |   | <b>EIA364-70</b><br>5.0A shall be applied collectively to<br>VBUS pins and 1.25 A applied to the<br>VCONN pin and 0.25 A the other<br>contacts. | When the currents are applied to the<br>contacts, the temperature rise shall<br>not exceed 30 $^{\circ}$ C at any point on the<br>USB Type-C mated plug and<br>receptacle under test, when measured<br>at an ambient temperature of 25 $^{\circ}$ C. |

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## 8. 环境特性 ENVIRONMENT PERFORMANCE

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

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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

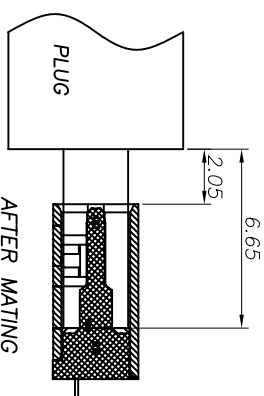
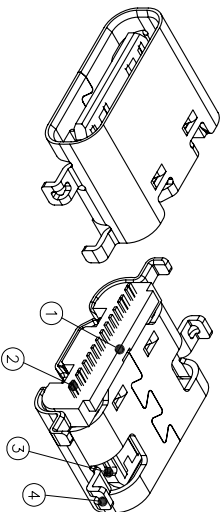
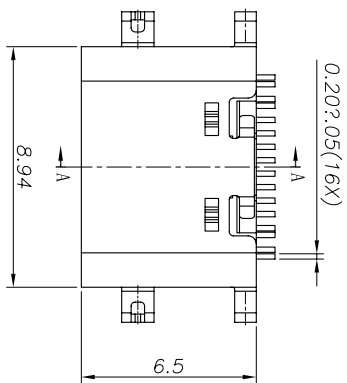
- 4-1 所有的测试应当执行详见下表条件,除非另有说明。  
All tests shall be performed as bellow conditions unless otherwise specified.
- 4-2 温度范围: +15°C + 35°C  
Temperature range : +15°C to +35°C
- 4-3 湿度范围: 25% - 85%  
Humidity range: 25% to 85%



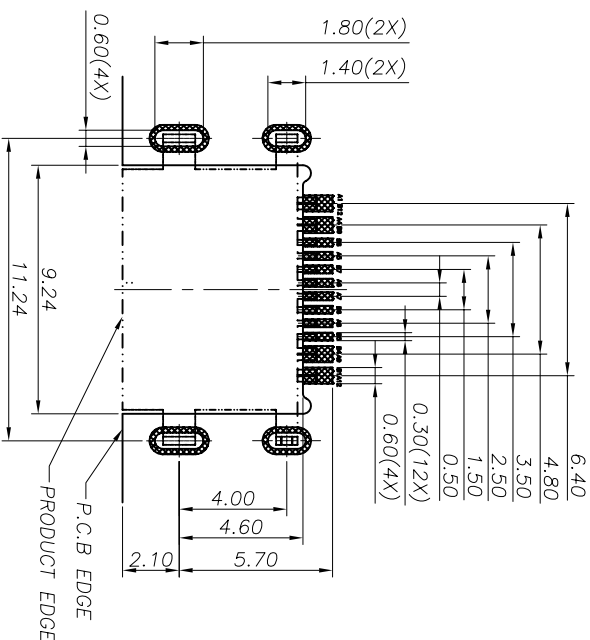
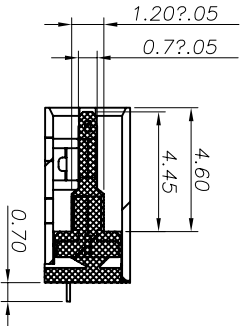
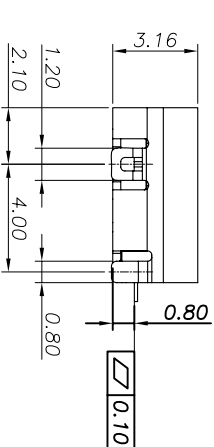
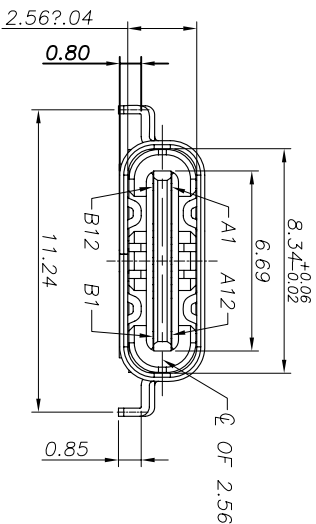
5 · DURABILITY (耐久性)

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

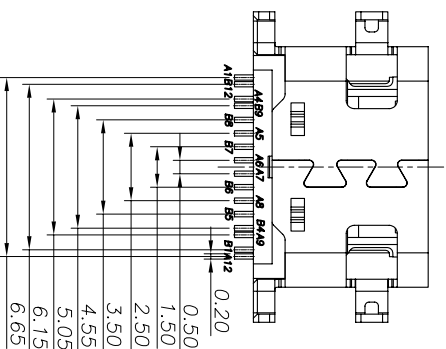




| PIN | SIGNAL NAME | PIN | SIGNAL NAME |
|-----|-------------|-----|-------------|
| A1  | GND         | B12 | GND         |
| A2  | SSTXP1      | B11 | SSRXp1      |
| A3  | SSTXN1      | B10 | SSRXN1      |
| A4  | VBUS        | B9  | VBUS        |
| A5  | CC1         | B8  | SBUS        |
| A6  | DP1         | B7  | DN2         |
| A7  | DN1         | B6  | DP2         |
| A8  | SPU1        | 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



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

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

| TITLE: USB JACK      |            | UNIT: MM       |       |
|----------------------|------------|----------------|-------|
| MODEL: USB-310A-B-SU | SCALE: 1:1 | ROHS COMPLIANT | CHK'D |
|                      |            | APPD           |       |


**HAOYU(HONGKONG) LIMITED**  
 皓宇(香港)有限公司

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