

# APPROVAL SPECIFICATIONS

Title. TYPE-C USB CONNECTOR

Product Model. TYC-251D

Customer's Part NO.

Customer's Model:

## **Customer's Approval Requested.**

Please return this copy as a certification of your approval.

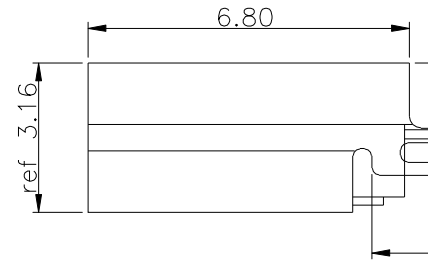
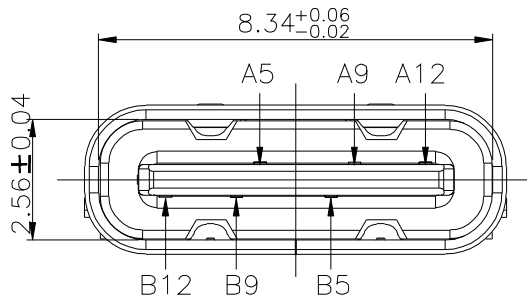
Checked by: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

|         |        |      |
|---------|--------|------|
| APPROVE | REVIEW | POLT |
| 王凯      | 林永坚    | 陈旺   |

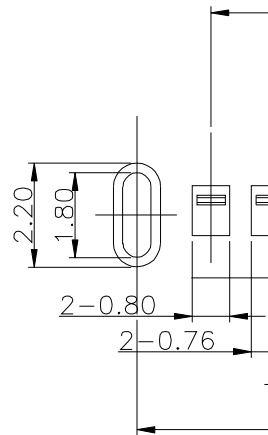
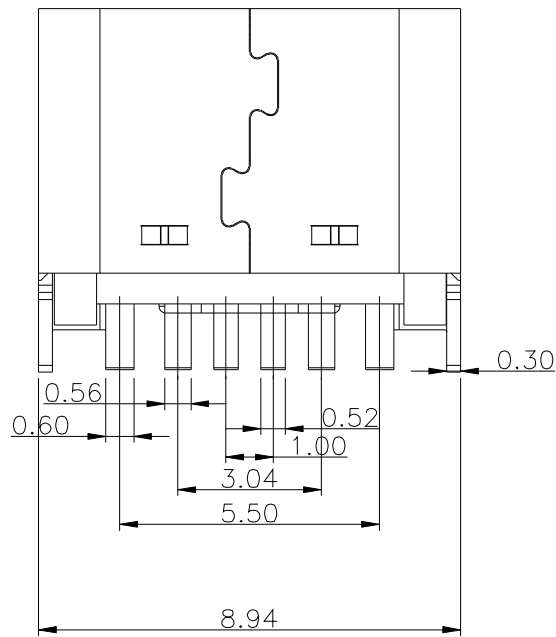
**XUNPU ELECTRONICS CO.,LTD**

C



▽

B



RECOMME  
TOLERANCE

A

### PIN ASSIGNMENTS

|     |             |     |             |
|-----|-------------|-----|-------------|
| A5  | CC1         | B12 | GND         |
| A9  | VBUS        | B9  | VBUS        |
| A12 | GND         | B5  | CC2         |
| PIN | SIGNAL NAME | PIN | SIGNAL NAME |

東莞市訊普電子科技有限公司  
DONGGUAN XUNPU ELECTRONICS CO., LTD

USB 3.1 TYPE-C系列产品SPEC

版本版次: B                      制定日期 20160620                      制定人:唐竹君                      适用范围 通用

1. Scope (范围)

1.1 Contents(内容)

This specification covers the performance, tests and quality requirements for the Electronics USB 3.1 TYPE-C  
(此份产品规格适用于USB 3.1 TYPE-C连接器的产品功能, 测试方法及质量要求)

2. Requirements (要求):

2.1 Rating(额定条件)

A. Voltage rating(额定电压):30V AC

B. Current rating(额定电流):3A

C. Operation Temperature Range(工作温度范围):-30°C to +80°C

3. Test Condition(测试条件):

3.1 Temperature range(温度范围):-15°C to +35°C

3.2 Humidity range (湿度范围):25% to 85%

4. Test Methods and Requirements:(测试方法及要求)

4.1 Examination of product (产品外观)

|       |                                |              |  |
|-------|--------------------------------|--------------|--|
| 4.1.1 | Examination of Product<br>产品外观 | Visual<br>目视 | No peeling off the plating deformation of the base or damage.<br>不得有电镀层剥落, 塑料变形或破损 |
|-------|--------------------------------|--------------|--|

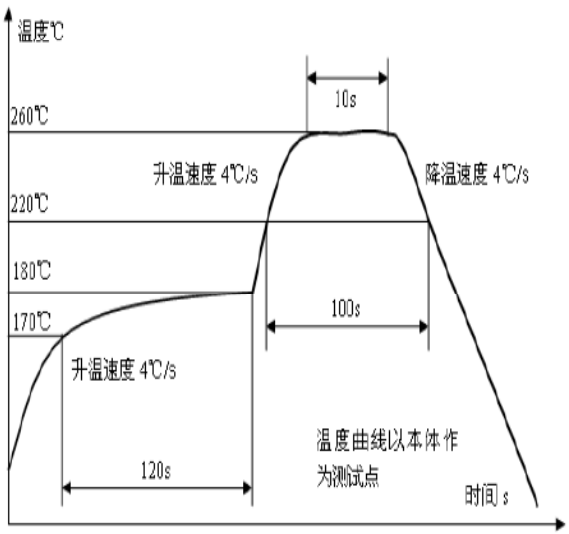
4.2. Electrical Performance(电气性能)

|       |                            |  |          |
|-------|----------------------------|--|----------|
| 4.2.1 | Contact Resistance<br>接触阻抗 | (EIA-364-06B)<br>适合USB 3.1 TYPE-C嵌合; 开放电压20mv以下; 短路电流100ma的状态下测定。<br>Mate applicable USB 3.1 TYPE-C and measure by dry circuit, 20mv MAX, 100mA. 40mΩMAX | 40mΩ MAX |
|-------|----------------------------|--|----------|

|                                  |                                       |   |   |
|----------------------------------|---------------------------------------|---|---|
| 4.2.2                            | Dielectric Withstanding Voltage (耐电压) | (EIA-364-20C)<br>Unmated connectors, apply 100V AC (RMS.) for 1 minute between adjacent terminals of ground.<br><br>没有配对的连接器在相邻的端子或接地之间通上100V的交流电压1分钟   | 1. No Breakdown or flashover<br>2. Leakage current:0.5mA Max<br><br>1. 不能有损坏或跳火花<br>2. 漏电流<0.5mA  |
| 4.2.3                            | Insulation Resistance 绝缘阻抗            | (EIA-364-21C)<br>Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground.<br>没有配对的连接器在相邻的端子或接地之间通上500V的直流电压1分钟  | 100MΩ min (unmated)<br><br>没有配对需大于100 MΩ  |
| 4.3 Mechanical Performance(机械性能) |                                       |   |   |
| 4.3.1                            | Insertion/Withdrawal Force 插入力/拔出力    | (EIA-364-13)<br>Insertion and withdrawal speed: 25mm/minute.<br>插入和拔出的速度为25mm/分   | 插入力 Insertion<br>0.50kgf/MIN, 2.0kgf/MAX<br>拔出力 Withdrawal<br>0.80kgf/MIN, 2.0kgf/MAX<br>After 10000 cycles   |
| 4.3.2                            | Durability 寿命测试                       | (EIA-364-09)<br>适合USB 3.1 TYPE-C; 用每分钟12.5mm的速度, 平行的插入, 拔出。<br>Insert and extract applicable USB 3.1 TYPE-C at the speed rate of 12.5 mm/minute.  | 10000 cycles  |
| 4.3.3                            | Vibration 振动                          | (EIA-364-28条件3)<br>Amplitude:1.52mm P-P or 147m/s <sup>2</sup> {15G}<br>Sweep time: 50-2000-50Hz in 20 minutes.<br>Duration: 12 times in each (total of 36 times) X, Y, Z, axes.<br>Electrical load DC 100mA current shall be flowed during the test.(ANSI/EIA-364-28 Condition III)<br>在直流100毫安通电状态下测试, 在X,Y,Z垂直3方向上, 频率50-2000-50赫兹(加速度往复20分钟), 全振幅1.52mm P-P或147 m/s <sup>2</sup> {15G}, 每轴12回计36回 | Appearance: No damage<br>外观: 无损坏<br>Contact Resistance 接触阻抗<br>Contact: Change from initial Value:30mΩ Max.<br>端子: 从初始值开始变化量小于30mΩ<br><br>间断性: 不超过1微秒 |

|                               |                            |  |   |
|-------------------------------|----------------------------|--|---|
| 4.3.4                         | Physical shock<br>冲击性      | <p>(EIA-364-27条件A)</p> <p>Pulse width: 11msec</p> <p>Waveform: Half-sine</p> <p>490m/s<sup>2</sup> (50G) 3 strokes in each X, Y, Z axes.</p> <p>(ANSI/EIA-364-27 condition A)</p> <p>周期: 11msec</p> <p>冲击波形: 正弦半波490m/s<sup>2</sup> (50G) 3 循环在X, Y, Z 轴</p>   | <p>Appearance: No damage</p> <p>外观: 无损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 40mΩ Max</p> <p>端子: 从初始值开始变化量小于40mΩ</p> <p>Discontinuity: 1μ sec Max.</p> <p>间断性: 不超过1微秒</p> |
| 4.4 Environmental Performance |                            |  |   |
| 4.4..1                        | Thermal shock test<br>冷热冲击 | <p>EIA-364-32C条件1)</p> <p>10 cycles of:</p> <p>a)-55±3℃ for 30 minutes</p> <p>b) +85±3℃ for 30 minutes</p> <p>10个循环,</p> <p>a)-55±3℃ 30 分钟</p> <p>b) +85±3℃ 30 分钟</p>  | <p>Appearance: No Damage.</p> <p>外观: 没有损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 40mΩ Max</p> <p>端子: 从初始值开始变化量小于40mΩ</p>  |
| 4.4..2                        | Solder ability<br>焊锡性      | <p>(EIA-364-52)</p> <p>To be sipped in the solder bath 260±5℃</p> <p>Coverage for 10±1 seconds.</p> <p>将焊锡脚浸在260±5℃的锡炉中10±1秒</p>   | <p>The inspected area of each lead must have 95% solder coverage minimum</p>  |
| 4.4..3                        | Humidity<br>恒温恒湿           | <p>(EIA-364-31B)</p> <p>(A) Mate connectors together and perform the test as follows</p> <p>配对的连接器测试条件</p> <p>Temperature: +25℃ to +85℃(温度: +25℃到+85℃)</p> <p>Relative Humidity: 90% to 95%(相对湿度: 90%到95%)</p> <p>Duration:4 cycles(96 hours) (持续时间: 4个循环共96小时)</p> <p>Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed.</p> <p>试验完成后, 样品放置于室温条件中24小时后再进行测试</p> | <p>Appearance: No Damage</p> <p>外观, 没有损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 30mΩ Max</p> <p>端子: 从初始值开始变化量小于30mΩ</p>   |

|        |                                     |   |  |
|--------|-------------------------------------|---|--|
|        |                                     | <p>(EIA-364-31B)</p> <p>(B) Unmated each connector and perform the test as follows.<br/>没有配对的连接器测试条件<br/>Temperature: +25°C to +85°C (温度: +25°C 到 +85°C)<br/>Relative Humidity: 90% to 95% (相对湿度: 90% 到 95%)<br/>Duration: 4 cycles (96 hours) (持续时间: 4 个循环共 96 小时)</p> <p>Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed.<br/>试验完成后, 样品放置于室温条件中 24 小时后再进行测试</p>       | <p>Appearance: No Damage<br/>外观, 没有损坏</p> <p>Conform to item of dielectric withstanding Voltage and Insulation Resistance.<br/>符合耐电压及绝缘阻抗要求</p>  |
| 4.4..4 | Salt Spray<br>盐水喷雾                  | <p>EIA-364-26B)</p> <p>Temperature: 35±2°C 温度: 35±2°C<br/>Concentration for salt: 50% 盐水浓度: 50%<br/>(1) Duration: 24H 持续时间: 24 小时<br/>Condition(条件):<br/>Contact plated gold more than 15u" (include 15 u" ), and the material of shell for copper alloy, or stainless.<br/>端子镀金厚度大于等于 15 u" 且壳体材质是铜合金或是不锈钢<br/>(2) Duration: 12H 持续时间: 12 小时<br/>Condition(条件):<br/>Contact plated gold less than 15 u" , and/or the material of shell for steel<br/>端子镀金厚度小于 15 u" 且/或壳体材质是铁材</p> | <p>No detrimental corrosion( Terminal solder tail unrequested)<br/>产品无氧化, 锈蚀 (端子焊脚镀锡处不作要求)</p>   |
| 4.4..5 | Cold resistance<br>(Unmated)<br>冷阻抗 | <p>(EIA-364-17B)</p> <p>Unmated connectors and expose to -25±3°C for 168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.<br/>没配对的连接器放置于 -25±3°C 温度中 168 小时, 当完成实验后, 样品放置一般环境中 1 到 2 小时后, 在进行测试</p>   | <p>Appearance: No Damage.<br/>外观: 没有损坏</p> <p>Contact Resistance 接触阻抗<br/>Contact: Change from initial Value 30mΩ Max<br/>Shell Part: Change from initial Value 50mΩ Max<br/>端子: 从初始值开始变化量小于 30mΩ<br/>外壳: 从初始值开始变化量小于 50mΩ</p> |

|        |                                     |  |   |
|--------|-------------------------------------|--|---|
| 4.4..6 | Heat resistance<br>(Unmated)<br>热阻抗 | <p>(EIA-364-17B)</p> <p>Mated connectors and expose to <math>85\pm 2^{\circ}\text{C}</math> for 168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>配对的连接器放置于<math>85\pm 2^{\circ}\text{C}</math>温度中168小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试</p>                             | <p>Appearance: No Damage.<br/>外观：没有损坏</p> <p>Contact Resistance 接触阻抗<br/>Contact: Change from initial Value 30mΩ Max<br/>Shell Part: Change from initial Value 50mΩ Max<br/>端子：从初始值开始变化量小于30mΩ<br/>外壳：从初始值开始变化量小于50mΩ</p> |
| 4.4..7 | Thermal Aging<br>高温老化               | <p>(EIA-364-31B, Condition 4, Method A)</p> <p>Unmated connectors and expose to <math>+85\pm 2^{\circ}\text{C}</math> for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>没配对的连接器放置于<math>+85\pm 2^{\circ}\text{C}</math>温度中250小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试</p> | <p>Appearance: No Damage.<br/>外观：没有损坏</p> <p>Contact Resistance 接触阻抗<br/>Contact: Change from initial Value 40mΩ Max<br/>端子：从初始值开始变化量小于40m</p>  |
| 4.4.8  | IR-reflow<br>回流焊测试                  | <p>Solder Temp: <math>260\pm 5^{\circ}\text{C}</math>, <math>10\pm 1\text{sec}</math><br/>焊锡温度：<math>260\pm 5^{\circ}\text{C}</math>, <math>10\pm 1\text{sec}</math></p>    | <p>No physical damage shall occur.<br/>不可有损坏</p>  |

Note 1: Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

说明1: 测试要求不能有物理损坏, 测试依据表格二的顺序进行

3.Product Qualification And Requalification Test:产品测试顺序表 Figure 2

| Test or Examination                   | Test Group |     |     |   |     |     |     |     |     |     |     |     |     |   |
|---------------------------------------|------------|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
|                                       | A          | B   | C   | D | E   | F   | G   | H   | I   | J   | K   | L   | M   | N |
| Test Sequence                         |            |     |     |   |     |     |     |     |     |     |     |     |     |   |
| 4.1.1.Examination of Product 产品外观     | 1,9        | 1,3 | 1,5 | 1 | 1,5 | 1,5 | 1,5 | 1,3 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1 |
| 4.2.1.Contact Resistance 接触阻抗         | 2,8        |     | 2,4 |   | 2,4 | 2,4 | 2,4 |     | 2,4 | 2,4 | 2,4 | 2,4 | 2,4 |   |
| 4.2.2.Dielectric Withstanding Voltage | 3,7        |     |     |   |     |     |     |     |     |     |     |     |     |   |
| 4.2.3.Insulation Resistance 绝缘阻抗      | 4,6        |     |     |   |     |     |     |     |     |     |     |     |     |   |
| 4.3.1.Insertion/Withdrawal force 插拔力  |            | 2   |     |   |     |     |     |     |     |     |     |     |     |   |
| 4.3.2.Durability 寿命测试                 |            |     | 3   |   |     |     |     |     |     |     |     |     |     |   |
| 4.3.3.Vibration 振动性                   |            |     |     |   | 3   |     |     |     |     |     |     |     |     |   |
| 4.3.4.Physical shock 冲击性              |            |     |     |   |     | 3   |     |     |     |     |     |     |     |   |
| 4.4.1.Thermal shock test 冷热冲击         |            |     |     |   |     |     | 3   |     |     |     |     |     |     |   |
| 4.4.2.Solderability 焊锡性               |            |     |     |   |     |     |     | 2   |     |     |     |     |     |   |
| 4.4.3.Humidity 恒温恒湿                   | 5          |     |     |   |     |     |     |     | 3   |     |     |     |     |   |
| 4.4.4.Salt Spray 盐水喷雾                 |            |     |     |   |     |     |     |     |     | 3   |     |     |     |   |
| 4.4.5.Cold resistance 冷阻抗             |            |     |     |   |     |     |     |     |     |     | 3   |     |     |   |
| 4.4.6.Heat resistance 热阻抗             |            |     |     |   |     |     |     |     |     |     |     | 3   |     |   |
| 4.4.7.Thermal Aging 高温老化              |            |     |     |   |     |     |     |     |     |     |     |     | 3   |   |
| 4.4.8.IR-reflow 回流焊测试                 |            |     |     |   |     |     |     |     |     |     |     |     |     | 2 |
| NO. of Test samples(Min.) 测试样         | 5          | 5   | 5   | 5 | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5 |

NOTE 2: (a) Numbers indicate sequence in which tests are performed.

(b) Discontinuities shall not take place in this test group, during tests.

说明 2: (a)测试依照矩阵要求数量进行。

(b)在测试中, 群组测试不能间断



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