

APPROVAL SPECIFICATIONS

Title. TYPE-C USB CONNECTOR

Product Model. TYC-249D

Customer's Part NO.

Customer's Model:

Customer's Approval Requested.

Please return this copy as a certification of your approval.

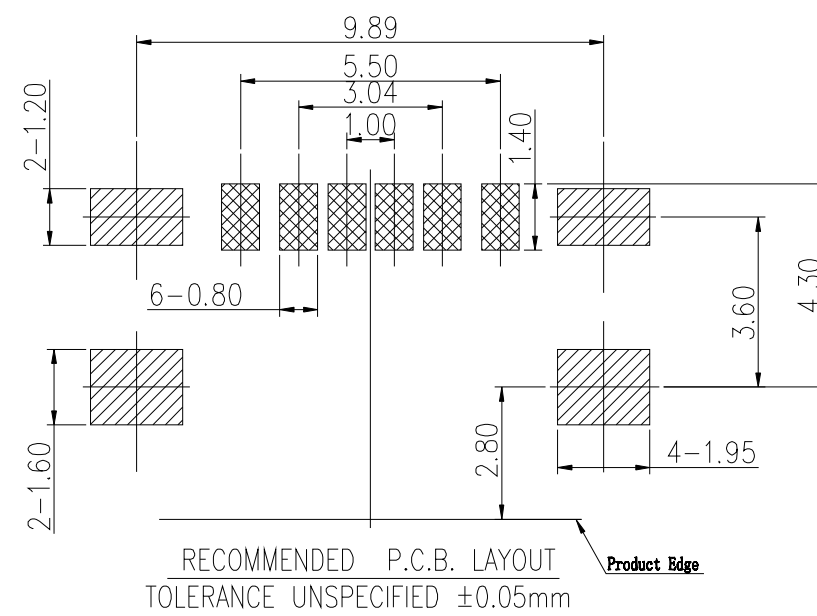
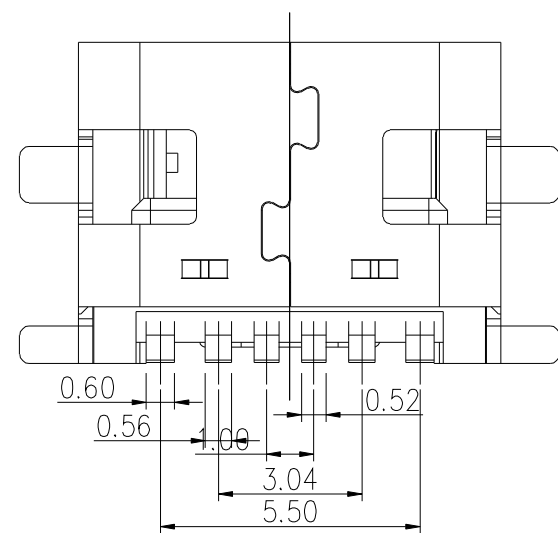
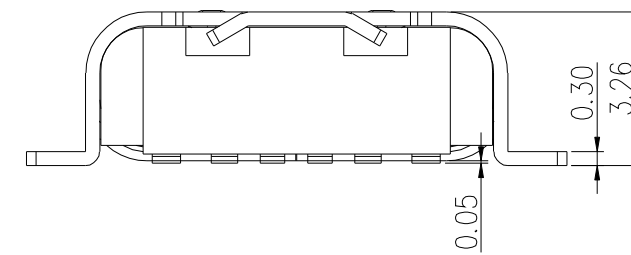
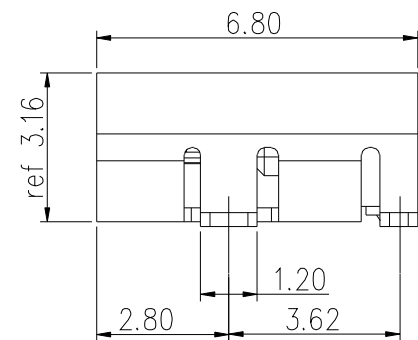
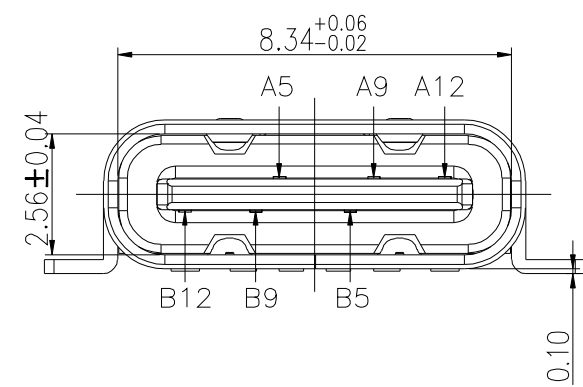
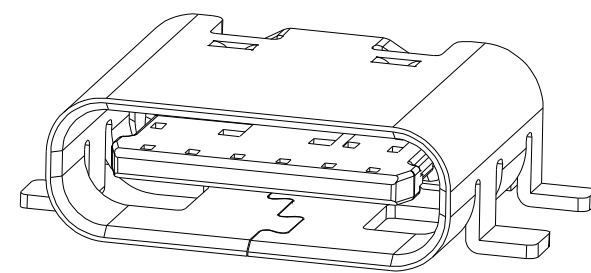
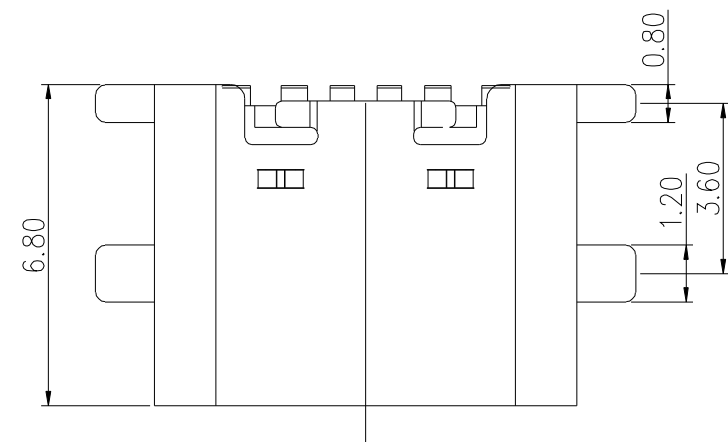
Checked by: _____ Date: _____

Approved by: _____ Date: _____

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

XUNPU ELECTRONICS CO.,LTD

| REV | LTR | DESCRIPTION | DATE | APPROVED |
|-----|-----|-------------|----------|----------|
| A0 | | | 20160406 | |



NOTE:

- MATERIAL SPECIFICATION:
 - HOUSING: HIGH TEMPERATURE RESISTANT PLASTIC, UL94 V-0.
 - CONTACTS: COPPER ALLOY
 - MID PLATE: STAINLESS STEEL
 - FRONT SHELL: STAINLESS STEEL
- PLATING SPECIFICATION:
 - CONTACTS: Ni 50u" MIN. UNDER PLATED OVER ALL. Au PLATED ON THE FUNCTIONAL AREA OF CONTACT. (GOLD PLATING THICKNESS FOLLOW THE P/N) PLATING SPECIFICATIONS OF THE SOLDER AREA FOLLOW THE P/N
 - FRONT SHELL: SEE TABLE 1.
 - SHIELD PLATE & EMI PLATE: CLEAR ONLY
- MECHANICAL PERFORMANCE,
 - INSERTION FORCE: 0.5~2.0kgf.
 - REMOVAL FORCE: 0.8kgf~2.0kgf.
 - DURABILITY: 5000 CYCLES.
- ELECTRICAL PERFORMANCE,
 - CURRENT RATING: 3.0A VOLTAGE RATING: 5.0V
 - LLCR: VBUS & GND PINS AND OTHER PINS: 40mΩ/PIN MAX. SHIELD: 50mΩ/MAX. LLCR MAX. CHANGE OF ALL PINS: 10mΩ.
 - INSULATION RESISTANCE: 100MΩ MIN
 - DIELECTRIC WITHSTAND VOLTAGE, AC 100V FOR 1 MINUTE.
- ENVIRONMENTAL PERFORMANCE: OPERATING TEMPERATURE: -25°C~+85°C.
- IR REFLOW: THE PEAK TEMPERATURE ON THE BOARD SHALL BE MAINTAINED FOR 10 SECONDS AT 260°C.

PIN ASSIGNMENTS

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

| TOLERANCE | | NAME (INTENDED USE) CUSTOMER DRAWING | | 东莞市讯普电子科技有限公司 | | | |
|------------|-----------|---|--|-------------------------------|--|--|--|
| X.X ±0.30 | X.* ±10° | PART NO. | | TITLE: TYPE-C 6PIN 板上四脚全贴 SMT | | | |
| .XX ±0.20 | .X* ± 8° | TYC-249D | | DRAWG NO. | | | |
| .XXX ±0.10 | .XX* ± 5° | DESIGN: DRAW | | DRAWG NO. | | | |
| UNITS | mm | CHED: | | DRAWG NO. | | | |
| MATERILA | | APPD: | | DRAWG NO. | | | |
| FINISH | | | | DRAWG NO. | | | |

| SCALE | SHEET | REV. |
|-------|-------|------|
| SCALE | SHEET | REV |

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)

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

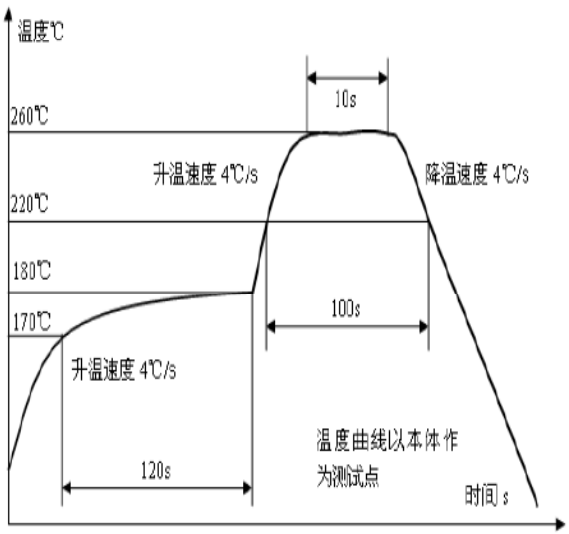
4.2. Electrical Performance(电气性能)

| | | | |
|-------|----------------------------|--|----------|
| 4.2.1 | Contact Resistance 接触阻抗 | (EIA-364-06B) 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。 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) | <p>(EIA-364-20C)</p> <p>Unmated connectors, apply 100V AC (RMS.) for 1 minute between adjacent terminals of ground.</p> <p>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</p> | <p>1. No Breakdown or flashover 2. Leakage current:0.5mA Max</p> <p>1. 不能有损坏或跳火花 2. 漏电流<0.5mA</p> |
| 4.2.3 | Insulation Resistance 绝缘阻抗 | <p>(EIA-364-21C)</p> <p>Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground.</p> <p>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</p> | <p>100MΩ min (unmated)</p> <p>没有配对需大于100 MΩ</p> |
| 4.3 Mechanical Performance(机械性能) | | | |
| 4.3.1 | Insertion/Withdrawal Force 插入力/拔出力 | <p>(EIA-364-13)</p> <p>Insertion and withdrawal speed: 25mm/minute.</p> <p>插入和拔出的速度为25mm/分</p> | <p>插入力 Insertion 0.50kgf/MIN, 2.0kgf/MAX 拔出力 Withdrawal 0.80kgf/MIN, 2.0kgf/MAX After 10000 cycles</p> |
| 4.3.2 | Durability 寿命测试 | <p>(EIA-364-09)</p> <p>适合USB 3.1 TYPE-C; 用每分钟12.5mm的速度, 平行的插入, 拔出。 Insert and extract applicable USB 3.1 TYPE-C at the speed rate of 12.5 mm/minute.</p> | 10000 cycles |
| 4.3.3 | Vibration 振动 | <p>(EIA-364-28条件3)</p> <p>Amplitude:1.52mm P-P or 147m/s² {15G} Sweep time: 50-2000-50Hz in 20 minutes. Duration: 12 times in each (total of 36 times) X, Y, Z, axes. Electrical load DC 100mA current shall be flowed during the test.(ANSI/EIA-364-28 Condition III) 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/s² {15G}, 每轴12回计36回</p> | <p>Appearance: No damage 外观: 无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value:30mΩ Max. 端子: 从初始值开始变化量小于30mΩ</p> <p>间断性: 不超过1微秒</p> |

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

| | | | |
|--------|-------------------------------------|---|--|
| | | <p>(EIA-364-31B)</p> <p>(B) Unmated each connector and perform the test as follows. 没有配对的连接器测试条件 Temperature: +25°C to +85°C (温度: +25°C 到 +85°C) Relative Humidity: 90% to 95% (相对湿度: 90% 到 95%) 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. 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 外观, 没有损坏</p> <p>Conform to item of dielectric withstanding Voltage and Insulation Resistance. 符合耐电压及绝缘阻抗要求</p> |
| 4.4..4 | Salt Spray 盐水喷雾 | <p>EIA-364-26B)</p> <p>Temperature: 35±2°C 温度: 35±2°C Concentration for salt: 50% 盐水浓度: 50% (1) Duration: 24H 持续时间: 24 小时 Condition(条件): Contact plated gold more than 15u" (include 15 u"), and the material of shell for copper alloy, or stainless. 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 (2) Duration: 12H 持续时间: 12 小时 Condition(条件): Contact plated gold less than 15 u" , and/or the material of shell for steel 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) 产品无氧化, 锈蚀 (端子焊脚镀锡处不作要求)</p> |
| 4.4..5 | Cold resistance (Unmated) 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. 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. 外观: 没有损坏</p> <p>Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子: 从初始值开始变化量小于 30mΩ 外壳: 从初始值开始变化量小于 50mΩ</p> |

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| 4.4..6 | Heat resistance (Unmated) 热阻抗 | <p>(EIA-364-17B)</p> <p>Mated connectors and expose to $85\pm 2^{\circ}\text{C}$ 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.</p> <p>配对的连接器放置于$85\pm 2^{\circ}\text{C}$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. 外观：没有损坏</p> <p>Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子：从初始值开始变化量小于30mΩ 外壳：从初始值开始变化量小于50mΩ</p> |
| 4.4..7 | Thermal Aging 高温老化 | <p>(EIA-364-31B, Condition 4, Method A)</p> <p>Unmated connectors and expose to $+85\pm 2^{\circ}\text{C}$ 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$+85\pm 2^{\circ}\text{C}$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. 外观：没有损坏</p> <p>Contact Resistance 接触阻抗 Contact: Change from initial Value 40mΩ Max 端子：从初始值开始变化量小于40m</p> |
| 4.4.8 | IR-reflow 回流焊测试 | <p>Solder Temp: $260\pm 5^{\circ}\text{C}$, $10\pm 1\text{sec}$ 焊锡温度：$260\pm 5^{\circ}\text{C}$, $10\pm 1\text{sec}$</p>  | <p>No physical damage shall occur. 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