

# 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.

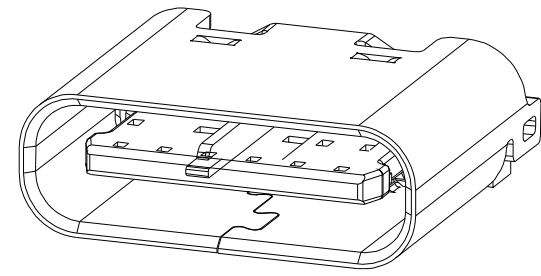
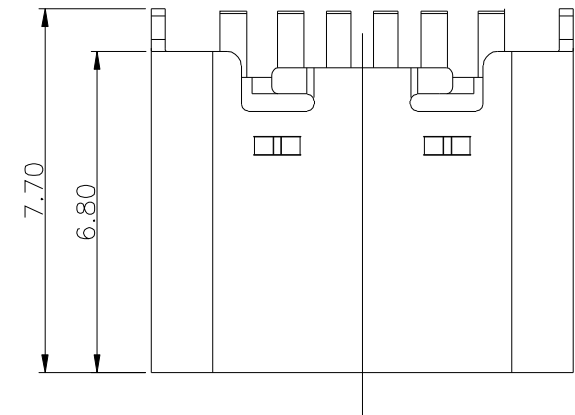
Checked by: \_\_\_\_\_ Date: \_\_\_\_\_

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

APPROVE	REVIEW	POLT
王凯	林永坚	陈旺

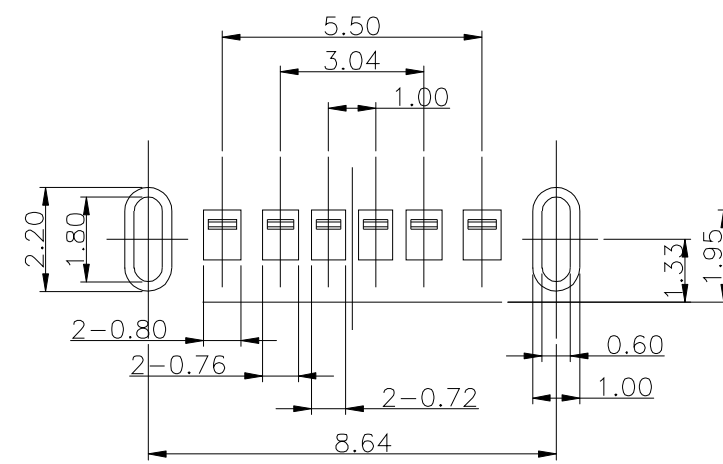
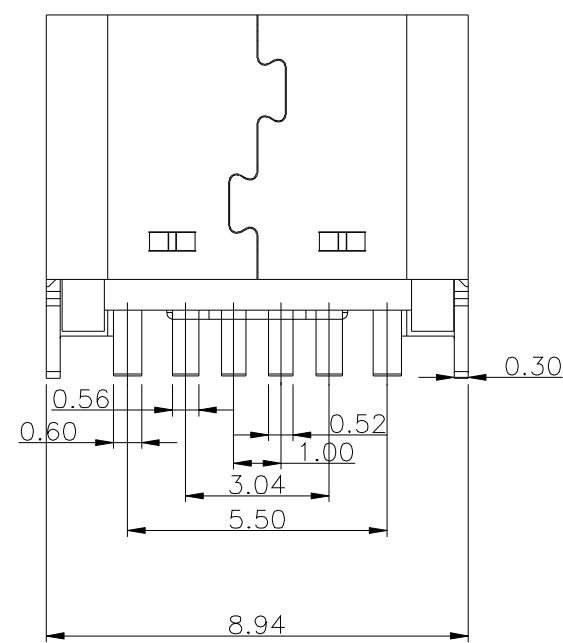
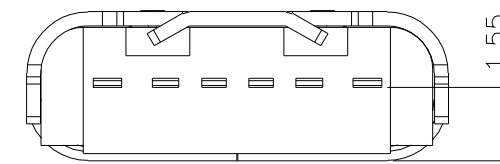
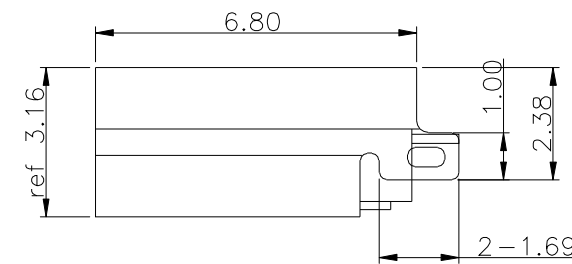
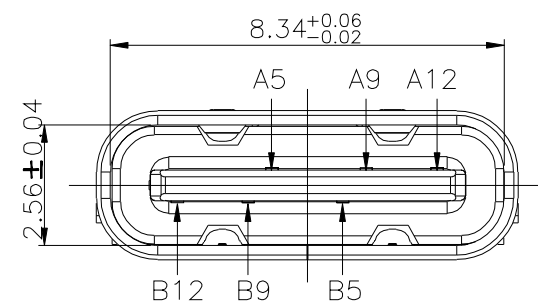
**XUNPU ELECTRONICS CO.,LTD**

REV	LTR	DESCRIPTION	DATE	APPROVED
A0			20160406	



NOTE:

- 1.MATERIAL SPECIFICATION:
  - 1.HOUSING:HIGH TEMPERATURE RESISTANT PLASTIC,UL94 V-0.
  - 2.CONTACTS:COPPER ALLOY
  - 3.MID PLATE: STAINLESS STEEL
  - 4.FRONT SHELL: STAINLESS STEEL
- 2.PLATING SPECIFICATION:
  - 2-1.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
  - 2-2.FRONT SHELL:  
SEE TABLE1.
  - 2-3.SHIELD PLATE&EMI PLATE:  
CLEAR ONLY
- 3.MECHANICAL PERFORMANCE,
  - 3-1.INSERTION FORCE: 0.5~2.0kgf.
  - 3-2.REMOVAL FORCE: 0.8kgf~2.0kgf.
  - 3-3.DURABILITY: 5000 CYCLES.
- 4.ELECTRICAL PERFORMANCE,
  - 4-1. CURRENT RATING:3.0A  
VOLTAGE RATING:5.0V
  - 4-2. LLCR:  
VBUS & GND PINS AND OTHER PINS: 40mΩ/PIN MAX.  
SHIELD: 50mΩ/MAX.  
LLCR MAX. CHANGE OF ALL PINS: 10mΩ.
  - 4-3.INSULATION RESISTANCE: 100MΩ MIN
  - 4-4.DIELECTRIC WITHSTAND VOLTAGE,AC 100V FOR 1 MINUTE.
5. ENVIRONMENTAL PERFORMANCE:  
OPERATING TEMPERATURE: -25°C~+85°C.
- 6.IR REFLOW:  
THE PEAK TEMPERATURE ON THE BOARD SHALL BE MAINTAINED FOR 10 SECONDS AT 260°C.



RECOMMENDED P.C.B. LAYOUT  
TOLERANCE UNSPECIFIED ±0.05mm

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 立式插板			
.XX ±0.20	.X* ± 8'	TYC-251D				
.XXX ±0.10	.XX* ± 5'	DESIGN: DRAW	DRAWG NO.			
UNITS	mm	CHED:				
MATERILA		APPD:				
FINISH						

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)

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
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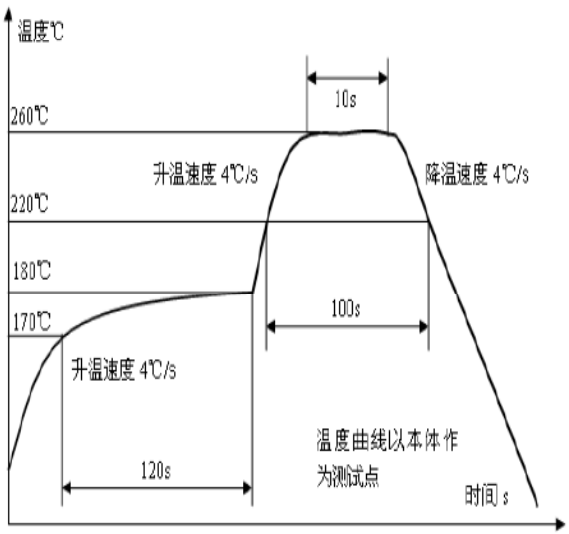
4.2. Electrical Performance(电气性能)

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
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4.2.2	Dielectric Withstanding Voltage (耐电压)	(EIA-364-20C) Unmated connectors, apply 100V AC (RMS.) for 1 minute between adjacent terminals of ground.  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 2. Leakage current:0.5mA Max  1. 不能有损坏或跳火花 2. 漏电流<0.5mA
4.2.3	Insulation Resistance 绝缘阻抗	(EIA-364-21C) Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground. 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)  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) Insertion and withdrawal speed: 25mm/minute. 插入和拔出的速度为25mm/分	插入力 Insertion 0.50kgf/MIN, 2.0kgf/MAX 拔出力 Withdrawal 0.80kgf/MIN, 2.0kgf/MAX After 10000 cycles
4.3.2	Durability 寿命测试	(EIA-364-09) 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.	10000 cycles
4.3.3	Vibration 振动	(EIA-364-28条件3) Amplitude:1.52mm P-P or 147m/s <sup>2</sup> {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/s <sup>2</sup> {15G}, 每轴12回计36回	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  间断性: 不超过1微秒

4.3.4	Physical shock 冲击性	(EIA-364-27条件A) Pulse width: 11msec Waveform: Half-sine 490m/s <sup>2</sup> (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 <sup>2</sup> (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 15u" 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>

4.4..6	Heat resistance (Unmated) 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. 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 <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. 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: <math>260\pm 5^{\circ}\text{C}</math>, <math>10\pm 1\text{sec}</math> 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. 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