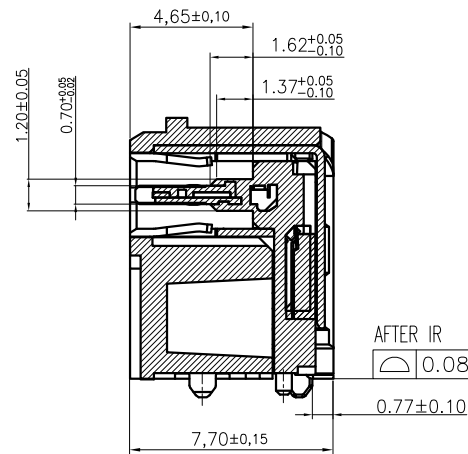
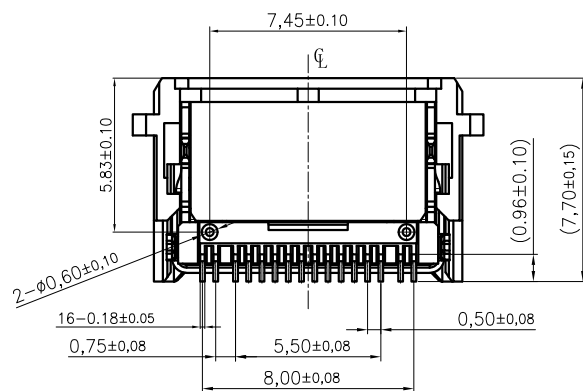
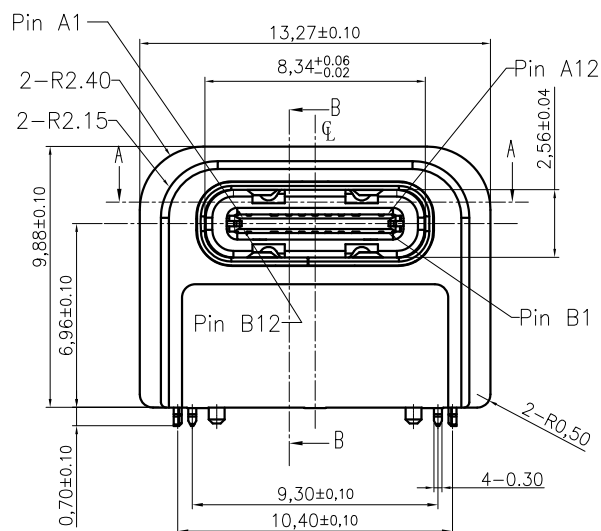
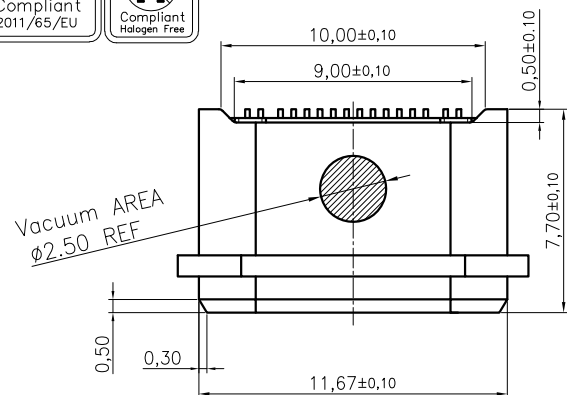
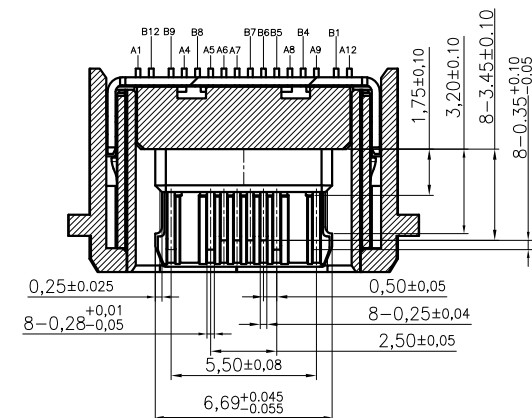
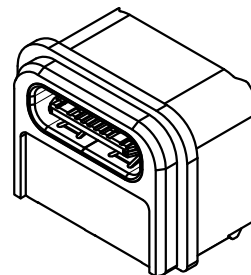
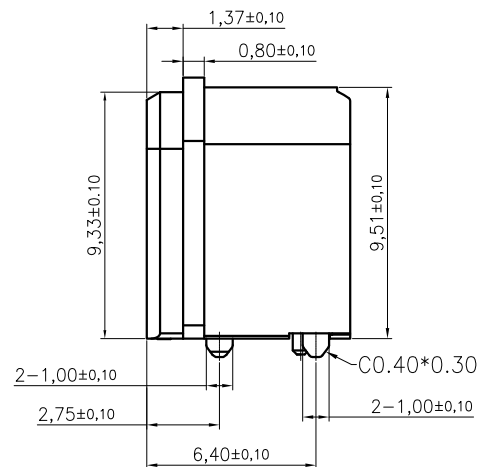


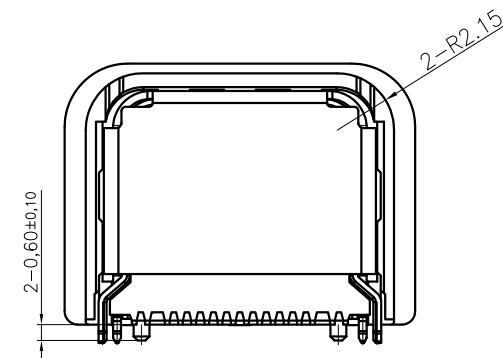
REV.	ECN NO OR DESCRIPTION	REVISED	DATE
A	PROPOSE ONLY	ERIC	2019.08.12



SECTION B-B



SECTION A-A

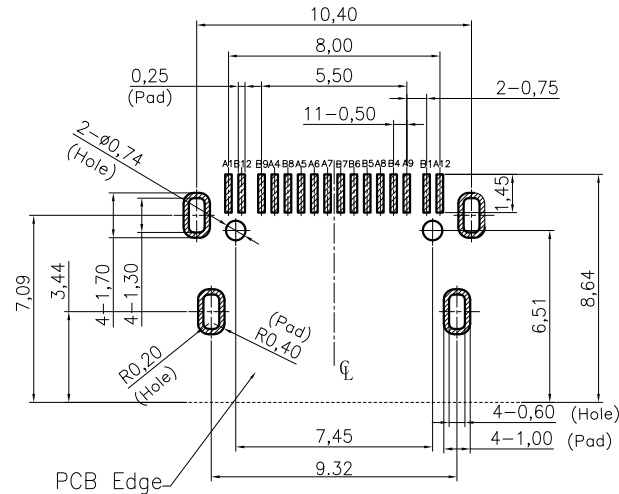


UNLESS OTHERWISE SPECIFIED TOLERANCES		深圳市虹康科技有限公司			
DECIMALS:	ANGLES:	TITLE	Type: C 16PIN CH6,96MM CONN. RECPTACLE		
X : ±0.5	X : ±2°	DWN	Johnie PART NO. TCRO5-95121602-02		
X.X : ±0.30	X.X : ±1°	CHKD	Kevin.d	SCALE: 1:1	UNIT: mm
X.XX : ±0.20		APVD	Simon.Mo	SIZE: A4	SHEET: 1 OF 1
X.XXX : ±0.10		DRAW NO.	C-DWG-TC05-02		REV: A
			CUSTOMER COPY		



REV.	ECN NO OR DESCRIPTION	REVISED	DATE
A	PROPOSE ONLY	ERIC	2019.08.12

A1B12 B9A4 B8A5 A6A7 B7B6 B5A8 B4A9 B1A12



RECOMMENDED PCB PAD LAYOUT
GENERAL TOLERANCE: ±0.05mm

NOTE:

1. Material:

All Housing: LCP(Polyplastics),Black,Thermoplastics,UL94V-0
Insulation Jacket: LCP(Polyplastics),Black,Thermoplastics,UL94V-0
Contact: Copper Alloy
Mid Plate: Stainless Steel
Outer Shell: Stainless Steel
Inner Shell: Stainless Steel

2. FINISH:

Contact: Au 2u" Min. over Pd-Ni 30 u" Min. on Contact Area
Au 2u" Min. on Solder Area
80~200 u" Nickel Underplating Over All
Mid-Plate : 40~200 u" Nickel Over All
Inner & Outer Shell: 40~200 u" Nickel Over All

3. Outer Shell (Insulator) Minimum Thickness 0.40mm

4. Electrical Characteristic s:

Current Rating: 5A For Pin(A4,A9,B4,B9)
1.25 A For Pin(A 1,A12,B1,B12,B5)
0.25A For Others Pin

Insulation Resistance: 100MΩ Min.

Contact Resistance: 50 mΩ Max.

Dielectric Withstanding Voltage: 500V AC/0.1S/0.1mA

5. Mechanical Characteristics :

The Initial Insertion Force: 5~20N ,
extraction force 8~20N
Durability After 10000 Cycles Insertion Force: 5~20N,
extraction force 8~20N
Durability :10000 Cycles

6. Operating Temperature: -30°C TO +85°C

PIN ASSIGNMENT

PIN NUMBER	SIGNAL NAME	PIN NUMBER	SIGNAL NAME
A1	GND	B12	GND
A2	TX1+	B11	RX1+
A3	TX1-	B10	RX1-
A4	VBUS	B9	VBUS
A5	CC1	B8	SBU2
A6	D+	B7	D-
A7	D-	B6	D+
A8	SBU1	B5	CC2
A9	VBUS	B4	VBUS
A10	RX2-	B3	TX2-
A11	RX2+	B2	TX2+
A12	GND	B1	GND

UNLESS OTHERWISE
SPECIFIED TOLERANCES

DECIMALS:	ANGLES:
X :±0.5	X :±2°
X.X :±0.30	X.X :±1°
X.XX :±0.20	
X.XXX :±0.10	

深圳市虹康科技有限公司

TITLE	Type C 16PIN CH6.96MM CONN. RECPTACLE		
DWN	Johnie	PART NO.	TCR05-95121602-02
CHKD	Kevin.d	SCALE:1:1	UNIT: mm
APVD	Simon.Mo	SIZE: A4	SHEET:1OF1
DRAW	NO. C-DWG-TC05-02		CUSTOMER COPY

9	UP Terminal	GUB129H-1B1-VA2A	Copper Alloy	Note.2	1SET
8	Down Terminal	GUB130H-1B1-VA2A	Copper Alloy	Note.2	1SET
7	Insulation Jacket	HUB121L-1A1-BX00-H	LCP E130i BK UL 94V-0 , HF		1PCS
6	Down Molding	HUT124L-1A1-BM2A-H			1PCS
5	Up Molding	HUT125L-1A1-BM2A-H			1PCS
4	Second Molding	HUT120L-1B1-BM2A-H			1PCS
3	Mid-Plate	GUB139U-1A1-VN72	Stainless Steel	Note.2	1PCS
2	Inner Shell	GUB138U-1A1-VN72	Stainless Steel	Note.2	1PCS
1	Outer Shell	GUB133U-1B1-SN72	Stainless Steel	Note.2	1PCS
项次 NO.	品称 NAME	料号 PART NUMBER	材料 MATERIAL	表面处理 PLATING	备注 MARK

1

2

3

4

5

6

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		保密等级 Class	☐ 机密 Confidential	☐ 密 Secret	☒ 一般 General
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	APPROVED	CHECKED	PREPARED	ISSUED BY:
BY	JIMMY	Alex Huang	Lorry Wang	
DATE	01/14'2019	01/14'2019	01/14'2019	

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1. SCOPE

This specification covers the requirements for product performance and test methods of USB Type C(UN521-00X)

2. REFERENCE DOCUMENTS

MIL-STD-202F	Test method for electrical components 电器元件测试方法
EIA364	Test method for electrical components 电器元件测试方法
JIS C 0051	Test method for electrical components 电器元件测试方法
MIL-G-45204C	Specification for gold plating 镀金规格
IEC-512-3 IEC	Standard for current carrying capacity tests 通用的运送能力标准
UL498	UL standard for safety of attachment plug and receptacle 公端和母端配件的 UL 安全标准

3. FEATURE & DIMENSIONS

3.1 Production Dimension

Product shall be intermateable with industry standard product of opposite gender. This connector shall have the dimensions as shown in 2D Drawing.

3.2 Bill of Material

The bill of material and product number of these Connectors is described in 2D Drawing. Harmful material controls please follow RoHS and HF regulation.

3.3 Mechanical & Electrical Characteristic

The connector shall have the mechanical and electrical performance as described in 2D.

3.4 Packaging

Parts shall be packaged according to requirements specified in purchase order for safe delivery. The packaging specification shows the product packaging and packaging details.

3.5 Marking

Manufacturer’s name, industry recognized logo, or customer approved marks.

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4. SOLDER REQUIREMENT

Reflow profile with a 260°C (+0/-5°C) peak temperature while exposed to manufacturing environment is as follows:

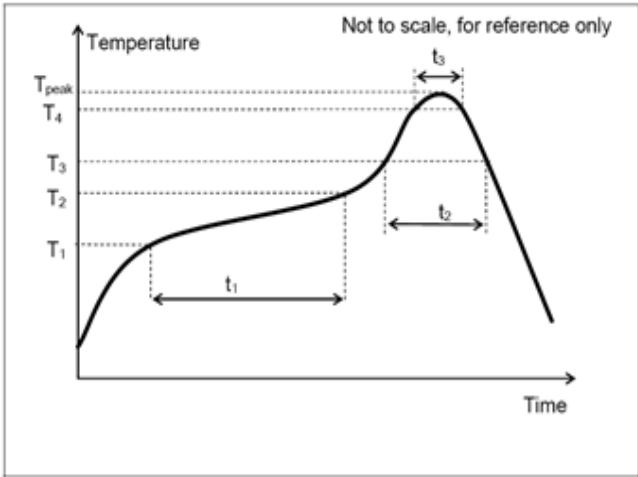


Figure 1. Reflow profile for soldering heat resistance testing.

Parameter	Reference	Specification
Preheat minimum temperature	T1	150°C
Preheat maximum temperature	T2	180°C
Preheat time	t1	120...180 s
Time above 217°C (T3)	t2	Min 65 s
Time above 250°C (T4)	t3	Min10 s
Peak temperature in reflow	Tpeak	260°C (+0/-5°C)
Temperature gradient in cooling		Max -5°C/s
Time from 40°C to 220°C		Min. 200 s
Atmospere condition in reflow oven		Air, Nitrogen rich can be used oxygen content below 3000ppm

5.PFORMANCE AND TEST DESCRIPTION

5.1 Requirement

Product is designed to meet electrical, mechanical, and environmental performance requirements specified in Table I .

5.2 Operating Temperature Range

-30°C~+85°C

5.3 Storage Temperature Range

-40°C~+85°C

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5.4 Rated Current and voltage

Rated continuous current: 5A
Rated continuous voltage: 30V AC.

5.5 Test Condition

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

5.6 Sample Selection

Test samples shall be selected at random from current production. No test samples shall be reused. Each group shall be containing 5 test samples at least

5.7 Test Sequence

Products qualification test sequence as shown in Table II.

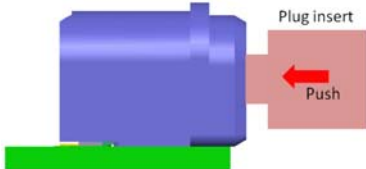
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6. Performance Requirement (Table I)

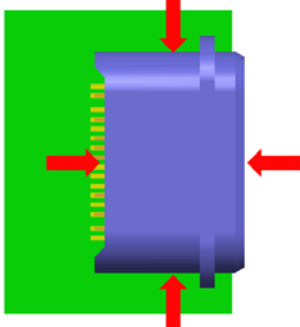
Items	Test Conditions	SPEC/Requirement
6.1.1 Visual Examination(外观检查)	EIA 364-18	Visual inspection samples shall be free from defects such as damage, deformation, blister and burrs that are detrimental to the function and appearance
6.2 Electrical Requirement		
6.2.1 Low Level Contact Resistance(接触阻抗)	Maximum open circuit voltage: 20mV Test current: 100mA Mated conditions: Mated	Initial 40mΩ maximum
6.2.2 Dielectric Withstanding Voltage(耐电压)	Test voltage: AC 500V Electrification time: 1minute±5sec Mated conditions: Mated	No breakdown
6.2.3 Insulation Resistance(绝缘阻抗)	Test voltage: AC 500V V-bus: AC 700V Electrification time: 1minute±5sec Applicable to both receptacle and plug. Mated conditions: Mated	A minimum of 100 MΩ insulation resistance is required between adjacent contacts of unmated and mated connectors

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6.3 Mechanical Requirements:(Continued)

Items	Test Conditions	SPEC/Requirement
6.3.1 Insertion Force(插入力)	Force Rate : 12.5±3 mm/min	Within the range of 5 N to 20 N
6.3.2 Extraction Force(拔出 力)	Force Rate : 12.5±3 mm/min	Within the range of 8 N to 20 N
6.3.3 Durability test(耐久测 试)	S1: Perform 4 unplug/plug cycles, followed by an unplug. S2: Perform 25 unplug/plug cycles. followed by a plug,Cycle rate: 500±50 cycles per hour S3: Perform 2,468 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 5,000 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 7,500 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 10,000 plug/unplug cycles. Cycle rate of 500 ± 50 cycles per hour (total of 10,000 plug/unplug cycles, flipping every 2,500 cycles).	No evidence of physical damage S1: Insertion Force: 5N~20N Extraction Force: 8N~20N(initial reading) S2: Insertion Force: 5N~20N Extraction Force: a)the change is less than 33% of the initial reading, and b) 8 N to 20 N. S3: Insertion Force: 5N~20N Extraction Force: 8N~20N LLCR: Variation 10mΩ maximum Insulation Resistance:100 MΩ Min Dielectric withstanding Voltage: No Breakdown
6.3.4 Mating Strength(强度测 试)	Push the plug(or JIG) with insertion direction and measure the force as solder crack. Operation speed:12.5±3mm/min 	25kgf(250N)/min
6.3.5 Vibration(机械振动)	Frequency:10-55 Hz Peak amplitude:0.75mm Operation Speed:2 hours in each direction test (IEC 60512-4 6d)	Appearance:No Damage Discontinuity:1μs MAX

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Items	Test Conditions	SPEC/Requirement
6.3.6 Random Vibration(随机振动)	Frequency:50-2000 Hz Peak amplitude:0.75mm Operation Speed:15 minutes in each direction test (IEC 60512-4 6d)	Appearance: No Damage Discontinuity:1μs MAX
6.3.7 Physical shock(冲击)	Acceleration:490m/s ² Sustainment time:11m/s 3 times for each test in each direction (IEC 60512-4 6c)	Appearance: No Damage Discontinuity:1μs MAX
6.3.8 Soldering Strength(焊接强度)	PCB mount ,applying force in the direction of X,Y axis. Operation Speed: 12.5±3mm/min (ref.fig.2) direction: X.Y 	8kgf(80N)Min.
6.4 Environment Characteristics		
6.4.1 Dry Heat (steady state) 干燥高温	Temperature:+85±2℃ Duration: 96 Hr (After test return to ambient temp. for 1-2hours) (IEC 60068-2-2)	Appearance: No Damage Contact Resistance: Variation 10 mΩ Max Insulation Resistance:100 MΩ Min Dielectric withstanding Voltage: No Breakdown
6.4.2 Dry Cold (steady state) 干燥低温	Temperature:-40±2℃ Duration: 96 Hr (After test return to ambient temp. for 1-2hours) (IEC 60068-2-1)	Appearance: No Damage Contact Resistance: Variation 10 mΩ Max Insulation Resistance:100 MΩ Min Dielectric withstanding Voltage: No Breakdown

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Items	Test Conditions	SPEC/Requirement
6.4.3 Thermal Shock (温度冲击)	Temperature:-40℃(30Min)→ Within5(Min) of Temperature change →85℃(30Min) Test Cycles: 96 Cycle (IEC 60068-2-33)	Appearance: No Damage Contact Resistance: Variation 10 mΩ Max Insulation Resistance:100 MΩ Min Dielectric withstanding Voltage: No Breakdown
6.4.4 Humidity (湿度)	Temperature:85℃ Relative Humidity: 85% Duration: 120 Hr (After test return to ambient temp. for 1-2hours) (IEC 60068-2-2),(IEC 60068-2-78)	Appearance: No Damage Contact Resistance: Variation 10 mΩ Max Insulation Resistance:100 MΩ Min Dielectric withstanding Voltage: No Breakdown
6.4.5 Salt Spray(盐雾测试)	Temperature:35℃ Salt water density: 5% Duration: 72 Hr (After test wash a connector,return to ambient temp. for 1-2hours) (IMIL-STD-202 101D)	There shall be no exposure of base metal of contact witch is detrimental to contacting. Contact Resistance:70 mΩ Max
6.4.6 Reflow(过回流焊炉)	Test Cycles: 3 Cycles(Peak 260℃)	Blister,bending,etc. There should be no damage Before & After test will be below 0.08mm.
6.4.7 Solder ability(可焊性)	Solder Temperature:255±5℃ Solder Paste:Sn-Ag(3.0)-Cu(0.5) Immersion Duration:5~10 sec (IEC 60068-2-12)	More than 95% of the dipped part shall be covered with solder.

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6.5 Test Sequence (Table II: Product Qualification Test Sequence)

Test item/Test group 测试项目/测试组		A	B	C	D	E	F	G	H	I	J	K	L	M
1	Visual Examination(外观检查)	1, 11	1	1, 3	1, 3	1, 3	1	1, 6	1, 6	1, 6	1, 6	1, 4	1	1
2	LLCR(接触阻抗)	3, 14						2, 7	2, 7	2, 7	2, 7	2, 5		
3	Dielectric Withstanding Voltage(耐电压)	2, 15						3, 8	3, 8	3, 8	3, 8			
4	Insulation Resistance(绝缘阻抗)	16						4, 9	4, 9	4, 9	4, 9			
5	Insertion Force(插入力)	5, 8, 12												
6	Extraction Force(拔出力)	6, 9, 13												
7	Durability 耐久性测试(4次)	4												
	Durability 耐久性测试(25次)	7												
	Durability 耐久性测试(10000次)	10												
8	Mating Strength(强度测试)		2											
9	Vibration(机械振动)			2										
10	Random Vibration(随机振动)				2									
11	Physical Shock(冲击)					2								
12	Soldering Strength(焊接强度)						2							
13	Dry Heat(steady state)干燥高温							5						
14	Dry Cold(steady state)干燥低温								5					
15	Thermal Shock(温度冲击)									5				
16	Humidity(湿度)										5			
17	Salt Spray(盐雾测试)											3		
18	Reflow(过回流焊炉)												2	
19	Solder ability(可焊性)													2
Sample size (PCS) 样品数量		5	5	5	5	5	20	5	5	5	5	5	5	5