

# 承认书

SPECIFICATION FOR APPROVAL

Rev.A

FILE NO. AS-USB-111-PC20AR-01

客户名称

CUSTOMER NAME.

客户料号

CUSTOMER PART NO.:

型 号

Model Type:

16PIN USB C/F PIP TYPE CONNECTOR

制造者系列号

Maker Series No.:

USB-111-PC20AR-01

制造者料号

Maker Part No.:

USB-111-PC20AR-01

日 期

DATE

2025.02.08

Approved by Customer:

香港春生实业有限公司



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**Product  
Specification**

DOC. No.:  
Q/CS.QW-001W-  
USB-111-PC20AR-01

Rev.:  
A

Date:  
2022.06.23

**USB TYPE C  
Connector  
(USB-111-PC20AR-01)**

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## 1. Scope

This specification serves as a guideline for design, development and voluntary compliance testing of USB TYPE C receptacle and plug connectors, as well as defining mechanical, electrical, environmental and performance characteristics.

## 2. Applicable Documents

The following documents are parts of this specification. If confliction occurs between the requirements of this specification and the product drawing, the product drawing should be prior. If confliction occurs between the requirements of this specification and the referenced documents, this specification should be prior.

### 2.1. CS Electronics Documents:

- 1) USB TYPE C Connector (**USB-111-PC20AR-01**): Customer drawing

### 2.2. EIA Standards and Other Specifications

- 1) EIA 364 : Electrical Connector/Socket Test Procedures Including Environmental Classifications
- 2) Flammability: Refer to drawing material introduction

## 3. Requirements

### 3.1. Design, Structure and appearance

- 1) The design, structure and physical dimensions of product should meet the requirements of customer drawing.
- 2) There should be no scratches, cracks, stains or warp that are detrimental to the function or the appearance of the connector.

### 3.2. Test condition

Unless otherwise specified, all measurements should be performed within the following lab conditions:

Temperature : 15°C to 35°C

Relative Humidity :25% to 85%

Air Pressure : 860 hPa to 1060 hPa.

### 3.3 Materials/Finish

Materials/Finish: Refer to the latest customer drawing.

### 3.4 Application performance and storage requirement

- 1) Voltage rating: 5V AC (normal); 20V AC Max. (Max. value)
- 2) Current rating: 5A Max.
- 3) Operating temperature: -25°C to +85°C

## 4. Performance and Test Description

Product shall be designed to meet the electrical, mechanical and environmental performance requirements specified herein. All tests should be operated in the room temperature, unless otherwise specified.

### 4.1 Visual examination of product

	Test Item	Test Condition	Specification
4.1.1	Examination of Product	Refer to EIA-364-18B; Visual inspection, no physical damage.	Meets requirement of product drawing and specifications

## 4.2 Electrical Characteristic

4.2.1	Contact Resistance	Refer to EIA-364-23B; Test circuit: 100mA Max; Test voltage: 20mV Max; Mated test contacts must be in a connector housing. The mating female connector must be Inserted well in male connector.	Measurements shall be taken from receptacle terminal to plug terminal	Pre test: 40mΩ Max. Post test: 50mΩ Max.
4.2.2	Insulation Resistance	Refer to EIA-364-21C; Test voltage: 100V DC; Measurement should be made immediately after one minute period of uninterrupted test voltage application.	Measure between adjacent separate contacts assembled in housing.	100MΩ Min.
4.2.3	Dielectric Withstanding Voltage	Refer to EIA-364-20C; The test voltage should be maintained at 100V AC(RMS) for 1 minute.	Measure between adjacent separate contacts assembled in housing.	No evidence of damage, or breakdown, etc.
4.2.4	Contact Current Rating	Refer to EIA-364-70; 5.0A shall be applied collectively to VBUS pins and 1.25A applied to the VCONN pin and 0.25 A the other contacts.	When the currents are applied to the contacts, the temperature rise shall not exceed 30 °C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25 °C.	Temperature rise: less 30 °C

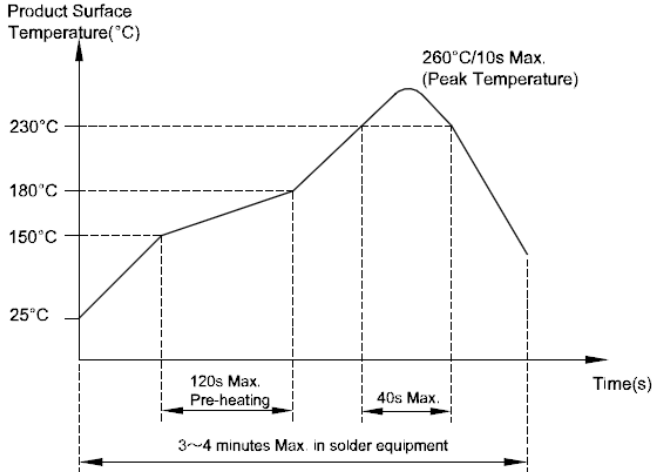
## 4.3 Mechanical Characteristic

4.3.1	Operating force	Refer to EIA-364-13; Insertion force and withdrawal force should be measured after inserting and withdrawing 3 times with a gauge of standard dimensions (refer to item 5).	Insertion force	5N~20N
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		Insertion force test speed: 12.5mm per minute;  Withdrawal force test speed: 12.5mm per minute;	Withdrawal force		8N~20N
4.3.2	Durability	Refer to EIA-364-09C; 1. The object of this test procedure is to detail a uniform test method for determining the effects caused by subjecting a USB connector to the conditioning action of insertion and withdrawal, simulating the expected life of the connectors. Durability cycling with a gauge is intended only to produce mechanical stress. Durability performed with mating components is intended to produce both mechanical and wear stress. 2. 10000 insertion /withdrawal cycles at a maximum rate of 200 cycles per hour if done automatically, and 200 if manual cycle.	Examination of Product		Refer to 4.1.1
			Electrical Characteristic		Refer to 4.2.1, 4.2.2, 4.2.3
			Insertion force	before test	5N ~ 20N
				after test	6N ~ 20N
			Withdrawal force	before test	8N ~ 20N
				after test	6N ~ 20N

#### 4.4 Environmental Characteristic

4.4.1	Temperature life	Refer to EIA-364-17B; Temperature: +85 ±2 °C; Humidity: 50 ± 5% RH; Duration: 96 hours; Then the specimens should be left in the chamber and the temperature should be gradually reduced to room ambient temperature. The specimens should be measured after 1 hour Min, but less than 2 hours after removal from the chamber.	(1).Dimensional requirements should be satisfied. (2).Electrical characteristics and Mechanical characteristics should be satisfied
4.4.2	Humidity test	Refer to EIA-364-31B; The specimens should be placed in a chamber and subjected to a relative humidity of 90% to 95% and a temperature of +40±2 °C for 96 hours. Then the specimens should be left in the chamber and the temperature should be gradually reduced to room ambient temperature. The specimens should be measured after 1 hour Min, but less than 2 hours after removal from the chamber.	
4.4.3	Solderability	Refer to EIA364-52 Solder shall cover a minimum of 95% of the surface being immersed, when soldered at temperature 245 °C±5 °C for immersion duration 5s.(Component is to be lead-free components).Using type R flux.	Continuous solder coating with a min. 95% coverage

4.4.4	Resistance to soldering heat (Reflow)	<p>This condition shows that it's no problem in the heat resistance ability in the reflow condition above and mechanical characteristic and electric characteristic clear the specification. This condition doesn't guarantee solder wettability of connectors after reflow. so the solder wettability of connectors depends on warp of PWB.</p> 	<p>1) Electrical characteristics and mechanical characteristics shall be satisfied. 2) Appearance: No damage</p>
	Resistance to soldering heat (Soldering iron)	<p>Bring the temperature of soldering iron up to <math>360 \pm 5^{\circ}\text{C}</math>. Touch SMT part of each terminal for 3~5s.</p>	
4.4.5	Salt Spray	<p>Refer to EIA-364-26B; Salt Spray condition: 1. Temperature: <math>35 \pm 2^{\circ}\text{C}</math>; 2. Salt Consistency: <math>5 \pm 1\%</math>; 3. Duration: 8 hours Min.; Note: Remove the salt deposits by a gentle wash or dip in running water, follow by natural drying under room temperature for 2 hours before the measurement.</p>	<p>(1).Appearance : No damage (2).Contact resistance : <math>40 \text{ m}\Omega</math> Max..</p>
4.4.6	Thermal Shock	<p>Refer to EIA-364-32D; 1. Temperatures: <math>+85 \pm 3^{\circ}\text{C}</math> and <math>-55 \pm 3^{\circ}\text{C}</math>. 2. Humidity: Off 3. Duration: 15 minutes at each temperature extreme including a 0-5 minute transition time (i.e.1 cycle), and 10 cycles total.</p>	<p>(1).There shall be no damage on appearance. (2).Electrical characteristics and mechanical characteristics shall be satisfied</p>

## 5. Qualification test sequences

TEST ITEMS		TEST GROUP									
		A	B	C	D	E	F	G			
Examination of Product	4.1.1	1,7	1	1,7	1,3	1,4	1,4	1,7			
Contact Resistance	4.2.1	2,8	2,8	2,8		2,5	2,5	2,8			
Insulation Resistance	4.2.2	3,9	3,9	3,9				3,9			
Dielectric Withstanding Voltage	4.2.3	4,10	4,10	4,10				4,10			
Operating force	4.3.1	5,11	5,11	5,11				5,11			
Durability	4.3.2	6									
Temperature life	4.4.1		6								
Humidity	4.4.2			6							
Solderability	4.4.3				2						
Resistance to soldering heat	4.4.4					3					
Salt Spray	4.4.5						3				
Thermal Shock	4.4.6							6			

Remarks: 5pcs specimens in each group.

