SPECIFICATION

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SPEC. NO.: PS-31120-XXXXX-XXX **REVISION:** B

PRODUCT NAME: USB 3.0 A TYPE

PRODUCT NO: 31120、30201、30154、30173、301xx SERIES

PREPARED:	CHECKED:	APPROVED:
LIAO WAN TING	**TENG CHANG HO**	**KUO JUNG HSUN**
DATE: **2021.07.28**	DATE: **2021.07.28**	DATE: **2021.07.28**

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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-002602	NEW SPEC	LIAO WAN TING	2021/02/26
B	ECN-003171	ADD 30173、301xx SERIES	LIAO WAN TING	2021/07/28

2 SCOPE

This specification covers performance, tests and quality requirements for USB 3.0 connector.

3 APPLICABLE DOCUMENTS

EIA-364：ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy (Phosphor Bronze & Brass)
Finish: (a) Contact Area: Gold plated based on order information
(b) Under plate: Nickel-plated all over
(c) Solder area: Tin plated
4.2.2 Housing: Thermoplastic or Thermoplastic High Temp.
4.2.3 Shell: Stainless steel

4.3 Ratings

4.3.1 Voltage: 30 Volts AC (per pin)
4.3.2 Current: 1.8 A FOR PIN 1 AND PIN 4
0.25A FOR ALL THE OTHER CONTACTS
4.3.3 Operating Temperature : -55℃ to +85℃

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	**Requirement**	**Standard**
Low Level Contact Resistance	30 mΩ (Max) initial for VBUS and GND contacts. 50 mΩ (Max) initial for all other contacts. 40 mΩ (Max) after for VBUS and GND contacts. 60 mΩ (Max) after for all other contacts.	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	100 M Ω Min.	Unmated and mated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric withstanding voltage	No discharge, flashover or breakdown. Current leakage: 1 mA max.	100 VAC Min. at sea level for 1 minute. Test between adjacent contacts of unmated and mated connectors. (EIA-364-20)
Temperature rise	30℃ Max. Change allowed	A current of 1.8 A shall be applied to VBUS pin and its corresponding GND pin. Additionally, a minimum current of 0.25 A shall be applied to all tile other contacts. when measured at an ambient temperature of 25 °C. (EIA-364-70 METHOD 2)
Differential Impedance	90Ω +/-15Ω Reefer to High Frequency Graphic **Figure 1**	Mated connector 50 ps (20%-80%) Risetime.
MECHANICAL		
Item	**Requirement**	**Standard**
Durability	5000 cycles.	The durability test shall be done at a maximum rate of 200 cycles per hour and no physical damage to any part of the connector and cable assembly shall occur. (EIA-364-09)
Insertion / Extraction Force	Insertion Force: 35 N Max. Extraction Force: 10 N Min. Initial 8 N Min. Final	Operation Speed： 12.5 ± 3 mm/minute. Measure the force required to mate/unmate connector. (EIA-364-13)

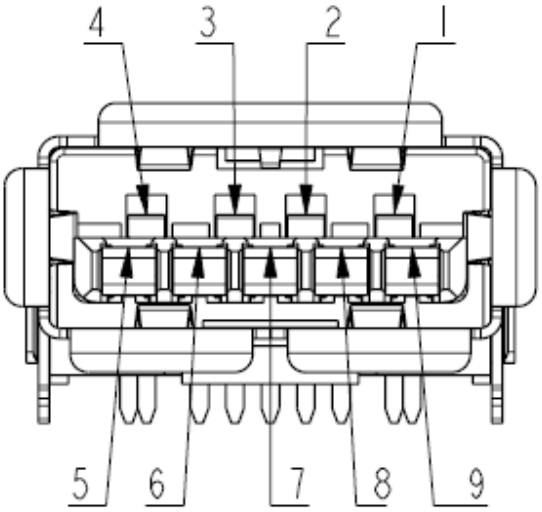
Vibration	1 μs Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions. (EIA-364-28 Condition I)

ENVIRONMENTAL

Item	Requirement	Standard
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 8	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max. (EIA-364-56)
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, Test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40℃, 90~95% RH,96 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 105℃ for 96 hours. (EIA-364-17, Test condition A)
Salt Spray	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II) Au 30u" for 48 hours (EIA-364-26)
Solder ability	Solder able area shall have minimum of 95% solder coverage.	And then into solder bath, Temperature at 245 ±5℃, for 5 sec. (EIA-364-52)

Note. Flowing Mixed Gas shell be conduct by customer request.

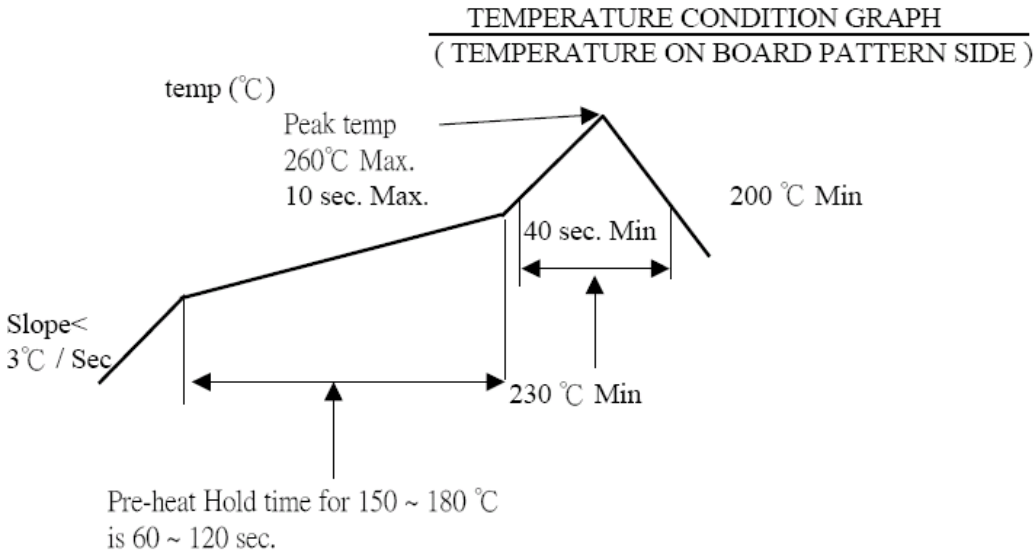
6 PIN ASSIGNMENTS



Schematic diagram

Pin Number	Signal Name
1	VBUS
2	D-
3	D+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+
Shell	Shield

7 INFRARED REFLOW CONDITION



8 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence									
Examination of Product				1、7	1、6	1、4		1		
Low Level Contact Resistance		1、5	1、3	2、10	2、9	2、5		3		
Insulation Resistance				3、9	3、8					
Dielectric Withstanding Voltage				4、8	4、7					
Temperature rise	1									
Insertion / Extraction Force		2、4								
Durability		3								
Vibration			2							
Thermal Shock				5						
Humidity				6						
Temperature life					5					
Salt Spray						3				
Solder ability							1			
Resistance to Soldering Heat								2		
Sample Size	2	4	4	4	4	4	2	4		

9 HIGH FREQUENCY GRAPHIC

Figure 1
Impedance Limits of a Mated Connector