

SPEC. NO.: PS-50925-XXXXX-XXX

PRODUCT NAME: USB 3.0 A TYPE

PRODUCT NO: 5092X 、 5305X 、 5306X 、 5307X 、 5390X 、 5391X 、
5392X 、 5393X 、 5394X 、 5494X 、 5495X 、 5592X 、
5593X 、 5597X 、 5598X 、 5599X 、 3013X 、 3016X 、
592XX 、 CK12H 、 301XX 、 302XX 、 31XXX SERIES

PREPARED: LIAO WAN TING DATE: 2019.12.05	CHECKED: TENG CHANG HO DATE: 2019.12.05	APPROVED: KUO JUNG HSUN DATE: 2019.12.05
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TITLE: USB 3.0 A TYPE

RELEASE DATE: 2019.12.05

REVISION: V

ECN No: [ECN-1912124](#)

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Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-1004120	REV-O RELEASE	JASON	2010.04.13
A	ECN-1011144	ADD 50927 SERIES	JASON	2010.11.18
B	ECN-1110205	ADD 53051/53052/53053/53054/53055/53056/ 53057/53058 SERIES	JASON	2011.10.18
C	ECN-1202296	ADD 50928 /53060/53062 SERIES	JASON	2012.02.21
D	ECN-1204406	ADD 53063, 53065, 53066, 53067 SERIES	JASON	2012.04.20
E	ECN-1205517	ADD 53072,53073,53074,53075,53078 SERIES	JASON	2012.05.30
F	ECN-1212388	ADD 53059,53061,53077,53079,53900,53902, 53903,53906,53909 SERIES	JOHN	2012.12.24
G	ECN-1307445	APD1010679_53915_53916_53926_SERI ES	WAN.BO	2013.07.27
H	ECN-1312320	ADD 5393X SERIES	ERIC	2013.12.20
J	ECN-1408264	ADD 5394X, 5494X , 5495X SERIES	ERIC	2014.8.22
K	ECN-1411281	ADD 5592X, 5593X SERIES	ERIC	2014.12.17
L	ECN-1512385	ADD 5597X SERIES MODIFY DURABILITY TO 5000 CYCLES ADD Au 30u" IN SALT SPRAY TEST ITEM	DAVID	2015.12.25
M	ECN-1606327	ADD 5598X, 5599X SERIES	TINA	2016.06.23
N	ECN-1612543	ADD 3013X SERIES	TINA	2016.12.27
P	ECN-1705278	CORRECT THE ERROR : 4.3.2 Current	TINA	2017/05/18
Q	ECN-1708010	ADD 3016X SERIES	TINA	2017/08/11
R	ECN-1708024	ADD 592XX SERIES	TINA	2017/08/21
S	ECN-1712410	ADD CK12H SERIES	LIAO WAN TING	2017/12/25
T	ECN-1811527	ADD 301xx SERIES	LIAO WAN TING	2018/11/30
U	ECN-1907373	ADD 302xx 、 31xxx SERIES	LIAO WAN TING	2019/07/17
V	ECN-1912124	ADD Salt Spray : Au 15u" for 48 hours	LIAO WAN TING	2019/12/05

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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°C to +85°C**

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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. ΔR 10 m Ω Max. after environmental stresses.	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°C 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 the 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)

Aces P/N: **50925 series**

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Vibration	1 μ s 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)
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ENVIRONMENTAL

Item	Requirement	Standard
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 8	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C 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 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, Test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 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°C 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°C (I) Gold flash for 8 hours (II) NiPd 30u" for 96 hours. (III) Au 30u" for 96 hours (IV) Au 15u" 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°C , for 5 sec . (EIA-364-52)

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

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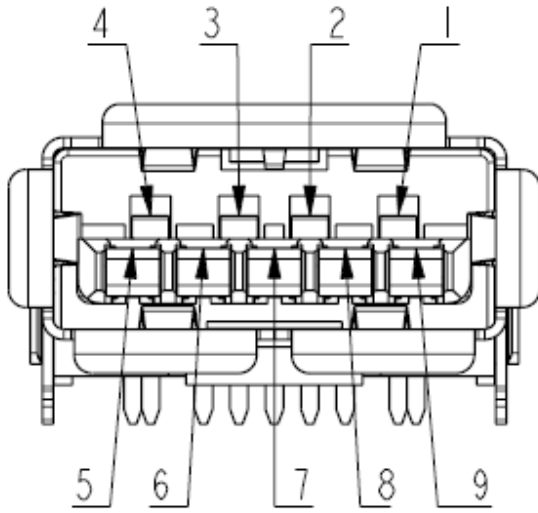
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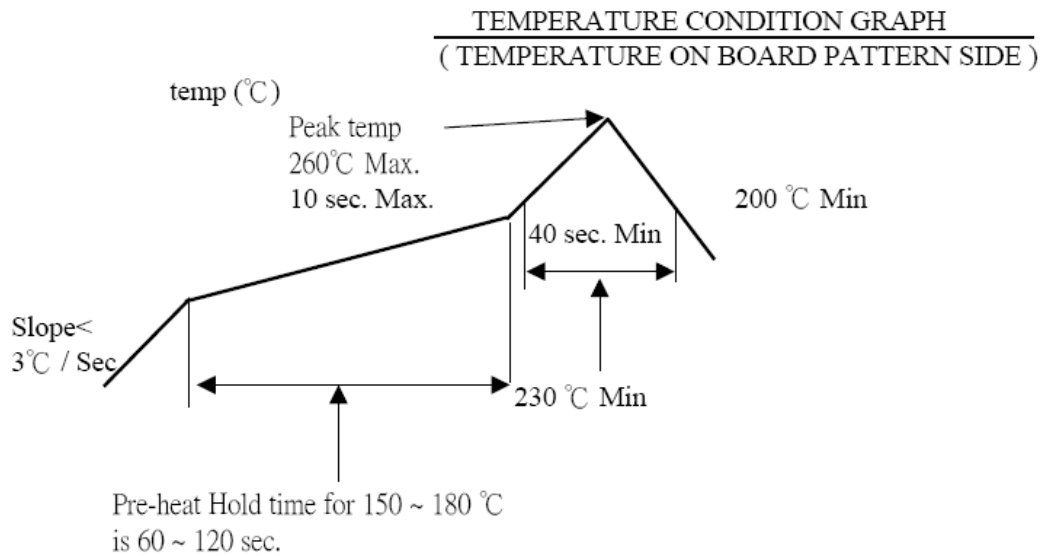
6 PIN ASSIGNMENTS



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



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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