

TITLE: **1.27 mm PITCH SATA PLUG CONNECTOR**RELEASE DATE: **2020/07/22**REVISION: **B**ECN No: **ECN-000537**PAGE: **4** OF **9**

2 SCOPE

This specification covers performance, tests and quality requirements for the **1.27 mm pitch SATA connector series products**.

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
Plated: **Refer to the drawing**.

4.2.2 Housing: **Thermoplastic, High temp. UL94V-0.**

4.2.3 Screw: **High performance copper alloy**
Plated: **Refer to the drawing**.

4.2.4 Board Lock: **High performance copper alloy**
Plated: **Refer to the drawing**.

4.3 Ratings

4.3.1 **Working voltage less than 36 volts AC (per pin)**

4.3.2 Voltage: **15 Volts AC**

4.3.3 Current: **DC 1.5 Amperes**

4.3.4 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 m Ω Max.(initial)per contact 15 m Ω Max. Change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	1000 M Ω Min.	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 0.5 mA max.	500 VAC Min. at sea level for 1 minute. Test between adjacent contacts of mated and unmated connector assemblies (EIA-364-20)
Mated Connector Impedance (Signal Port)	100 Ω \pm15%	<ol style="list-style-type: none"> 1. Set the Time Domain Reflectometer (TDR) pulse in differential mode with a positive going (V+) and a negative going pulse (V-). Define a reflected differential trace: $V_{diff}=V+ - V-$ 2. With the TDR connected to the risetime reference trace, verify an input risetime of 70 ps (measured 20% - 80% Vp). Filtering may be used to slow the system down (see NOTE 2) 3. Connect the TDR to the sample measurement traces. Calibrate the instrument and system (see NOTE 3) 4. Measure and record the maximum and minimum values of the near end connector impedance.
Temperature Rise	30°C Max. Change allowed	<ol style="list-style-type: none"> 1. Mount connector to a test PCB 2. Wire three adjacent pins in parallel for supply (or the minimum number required by the connector type) 3. Wire three adjacent pins in parallel for return (or the minimum number required by the connector type) 4. Apply a DC current of three times the current rating per contact to the supply pins ,returning through the return pins 5. Record temperature rise when thermal equilibrium is reached.

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Item	Requirement	Standard
Durability	50cycles. (For Reference)	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 10 ± 3 mm/min. (200 cycles per hour max.) (EIA-364-09)
Screw Torque	2.5Kgf-cm Max.	Use the torque driver to fix the screw on connector without housing structure broken and screw thread stripped.
Contact Retention Force	0.30Kgf Min.	Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
Lock / Housing Retention Force	0.25kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the Lock assembled in the housing.
Vibration (Random)	1 μ s Max.	15 minutes in each of 3 mutually perpendicular directions, Both mating halves should be rigidly fixed so as not to contribute to the relative motion of one contact against another (EIA-364-28, test conditions VII, test condition letter D)
Shock (Mechanical)	1 μ s Max.	Subject mated connectors to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be DC 100mA maximum for all contacts. (EIA-364-27, test condition H)

ENVIRONMENTAL

Item	Requirement	Standard
Resistance to Reflow Soldering Heat	Second Reflow process must be taken after the product temperature has down to room condition. See Product Qualification and Test Sequence Group 8	Pre Heat : $150^{\circ}\text{C} \sim 180^{\circ}\text{C}$, 60~90sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max. Reflow number cycle : 2 times

Aces P/N: **50886 series**

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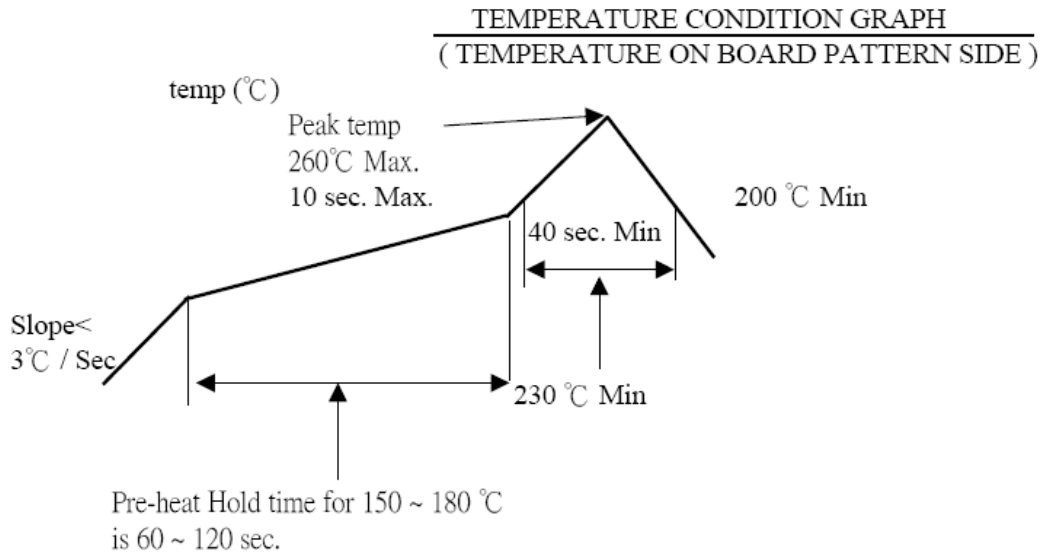
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Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 10 cycles. 1 cycles: -55 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA 364-32 Test Condition I)
Humidity	See Product Qualification 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 1	Subject mated connectors to temperature life at 85°C for 96 hours. (EIA-364-17, Test condition III Method A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 11	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours (II) Gold plating 5 u" for 96 hours.
Solder ability	Solder able area shall have minimum of 95% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5°C , for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	$T \geq 350^{\circ}\text{C}$, 3sec at least.

Note 1. Flowing Mixed Gas shall be conducted by customer request.

Note 2. Test Plug: Molex SATA P/N: 87703-0001

6 INFRARED REFLOW CONDITION



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7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence										
Examination of Product	1、8	1、6	1、5	1、8				2			1、4
Low Level Contact Resistance	2、4、6	2、5	2、4								2、5
Insulation Resistance				2、6							
Dielectric Withstanding Voltage				3、7							
Temperature Rise	7										
Durability			3								
Vibration (Random)		3									
Shock (Mechanical)		4									
Thermal Shock				4							
Humidity				5							
Temperature Life	3										
Reseating (Manually Unplug/Plug Three Times)	5										
Salt Spray(Only For Gold Plating)											3
Solder ability							1				
Resistance to Soldering Heat								1			
Mated Connector Impedance (Signal Port)						1					
Screw Torque									1		
Contact Retention Force										1	
Lock /Housing Retention Force					1						
Sample Size	2	4	4	4	4	4	4	2	4	4	4