

PRODUCT SPECIFICATION

PRODUCT NAME : USB 3.0 CONNECTOR

PRODUCT NO : USB3.0 Female series spec

DATE : 2013.05.19 **REVISION :** A

Rev.	Revised	Originator	Issue Date
1	NEW	STEVEN	2013.05.19



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1-1. Scope :

This document contains general Helioway requirements about USB 3.0 connector

1-2. Reference Documents :

The following documents form a part of this specification to the extent specified herein.

Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

EIA-364 : The Test Sequence and Test Procedures for Electrical Connectors.

1-3. Material of Components :

- A. Housing : Thermoplastic,
- B. 4 Pin Contact : Copper Alloy
- C. 5 Pin Contact : Copper Alloy
- D. Shell : STAINLESS STEEL.or Copper Ally.

1-4. Design and Construction :

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

1-5. Ratings :

A current of 1.8A shall be applied to VBUS pin and its corresponding GND pin(pin1 and pin4). Additionally a minimum current of 0.25A .A shall be applied to all the other contacts.

1-6. Performance and Test Descriptions :

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in paragraph 1-7.

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

1-7. Test Requirements and Procedures Summary :

Electrical Performance		
Test Description	Test Procedures & Condition	Requirements
Contact Resistance	EIA 364-23 The object of this test is to detail a standard method to measure the electrical resistance across a pair of mated contacts such that the insulating films, if present, will not be broken or asperity melting will not occur. Measurement to use Kelvin 4-wire method. Measurements shall be taken form receptacle terminal to plug terminal.	Contact : 30mΩ Max. When measure at 20mv maximum open circuit at 100mA.Mated test contacts must be in a connector housing
Low Level Contact Resistance	EIA 364- 23B The object of this test procedure is to detail a standard method to measure the electrical resistance across a pair of mated contacts such that the insulating films, if present, will not be broken or asperity melting will not occur. Measure at 20 mV maximum open circuit at 100 mA	30 mΩ max initial for VBUS and GND contacts. 50mΩ max initial for all other contacts.
Insulation Resistance	EIA 364- 21 The object of this test procedure is to detail a standard method to assess the insulation resistance of connectors. This test procedure is used to determine the resistance offered by the insulation materials and the various seals of a connector to a DC potential tending to produce a leakage of current through or on the surface of these members. Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector assemblies. Test Voltage : 100 V DC for two minutes maximum, or until stabilized, mated.	100 MΩ minimum
Dielectric Withstanding Voltage	EIA 364- 20 The object of this test procedure is to detail a test method to prove that a connector can operate safely at its rated voltage and withstand momentary over potentials due to switching, surges and/or other similar phenomena. Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector assemblies. Test Potential : 300V AC at sea level,60Hz Test Duration : 60 seconds	1.No flashover, No spark over No excess leakage, No breakdown 2.Current leakage:<0.5mA

Mechanical Performance		
Test Description	Test Procedures & Condition	Requirements
Mating and Unmating force	EIA 364-13 The object of this test is to detail a standard method for determining the mechanical forces that are required for inserting a USB connector. Operation Speed:12.5 mm/minute.	1. Mating force : 3.5Kg Maximum 2. Unmating force : 1.0~2.5Kg 3. After Life Test , Unmating force : 0.8~2.5 Kgf
Durability	EIA 364-09 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 extraction, 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.	1,500cycles/standard, 5000cycles /High Automatic cycling, 200cycles(max)per hour No physical damage and shall meet requirements
Vibration (Random)	EIA 364-28 Test Condition V Test Letter A This test procedure tests the ability of USB connectors to withstand conditions involving vibration. function during vibration or merely to survive conditions of vibration should be clearly stated by the detailed product specification. In either case, the relevant specification should always prescribe the acceptable performance tolerances. Subject mated connectors should be tested according to the condition listed below : Test condition : Random Frequency : 50 ~ 2000 Hz PSD value : 5.35 Grms minimum Duration : 15 minutes/axis Times : Each of three mutually perpendicular planes.	No discontinuities of 1 μS or longer duration when mated USB connectors are subjected to 5.35 GRMS. 15 minutes in each of three mutually perpendicular planes.

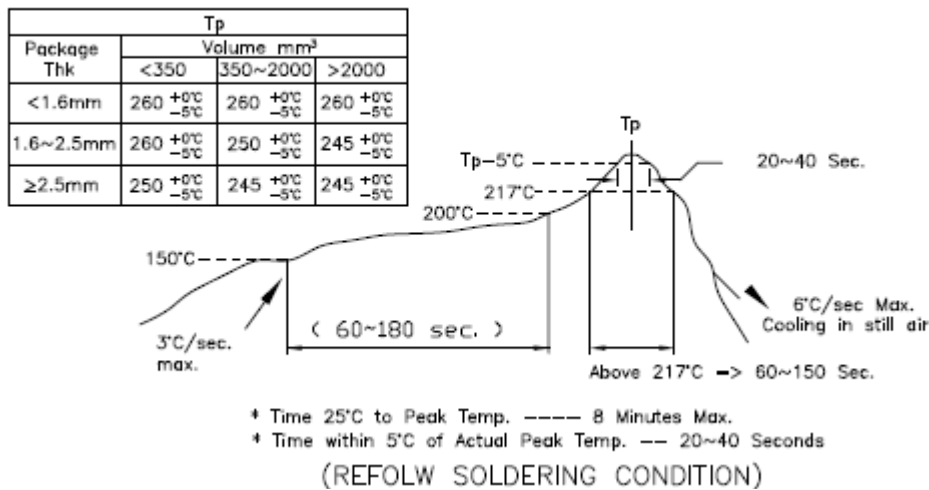
Electrical Performance		
Test Description	Test Procedures & Condition	Requirements
Humidity (Temperature Cycling)	<p>EIA 364-31 Method III Test Condition A</p> <p>The object of this test procedure is to detail a standard test method for the evaluation of the properties of materials used in connectors as they are influenced by the effects of high humidity and heat.</p> <p>Subject mated and unmated connectors should be tested according to the condition listed below :</p> <p>Temperature : 25 ~ 65°C Relative Humidity : 80 ~ 95% (R.H) Duration : 168 hours</p>	<p>Appearance: No physical damage</p> <p>Low level contact resistance per 30 mΩ maximum change from initial per contact pair.</p>
Thermal Shock	<p>EIA 364-32</p> <p>Test Condition I The object of this test is to determine the resistance of a USB connector to exposure at extremes of high and low temperatures and to the shock of alternate exposures to these extremes, simulating the worst case conditions for storage, transportation and application.</p> <p>Temperature : -55 ~ +85°C Cycles : 10 cycles Exposure time at temp. extremes : 30 minutes</p>	<p>Contact resistance per 30 mΩ maximum change from initial per contact pair.</p> <p>The USB connectors under test must be mated.</p> <p>There shall be no evidence of damage.</p>
Salt Spray	<p>EIA 364-26 Test Condition A</p> <p>The object of this test procedure is to detail a standard test method to assess the effects of a controlled salt laden atmosphere on connector components, finishes and mechanisms.</p> <p>Subject mated and unmated connectors should be tested according to the condition listed below :</p> <p>Temperature : 35±1.1°C Humidity : 95 ~ 98% (R.H.) PH Value : 6.5 ~ 7.2 Duration :48 hours</p>	<p>1.Contact resistance shall be less than 30mΩ after the test.</p> <p>2.There should be no corrosion detrimental to contact connection.</p>

Solderability	<p>EIA 364-52</p> <p>The object of this test procedure is to detail a uniform test method for determining USB connector solder ability . The test procedure contained herein utilizes the solder dip technique. It is not intended to test or evaluate solder cup, solder eyelet, other hand-soldered type or SMT type terminations.</p>	<p>Solderable area shall have a minimum of 95% solder coverage. For lead free solder pot temperature shall be $+255^{\circ}\text{C} \pm 5^{\circ}\text{C}$</p>
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SOLDERING CONDITION :

(1)IR REFLOW CONDITION : (IPC/JEDEC-STD-020C)

Solder Heat Resistance (Lead-Free)



Note : Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in Test Sequence in paragraph 8

1-8. Green Product :

To conform to the Singatron Hazardous Substance Free spec .