

1. Scope

This specification covers the requirements for product performance and test methods of USB A M 3.0(Universal Serial Bus) Series Connectors.

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

2. Applicable documents

The following documents form a part of this specification to the extent specified herewith. In the event of conflict between the requirements of the specification and the product drawing, the product drawing shall take precedence.

In the event of conflict between the requirements of the specification and the referenced documents, this specification shall take precedence.

3. Ordering information

Refer to the drawing.

4. Connector dimensions

Refer to the drawing.

5. Material

Housing: Themoplastic (UL 94V-0)

Color: Refer to the drawing.

Terminal: Copper alloy

Plating: Gold on contact area, tin on tail

Shell: SPCC

Plating: Nickel plated

6. Accommodated P.C.B layout

Refer to the drawing.

7. Rating

Operating voltage(Max.) 30V DC/AC

Current rating(Max.) 1.5 A

Temperature range-operating -40°C -- +85°C

8. Performance

Test item	Requirement	Procedure
-----------	-------------	-----------

Electrical Performance

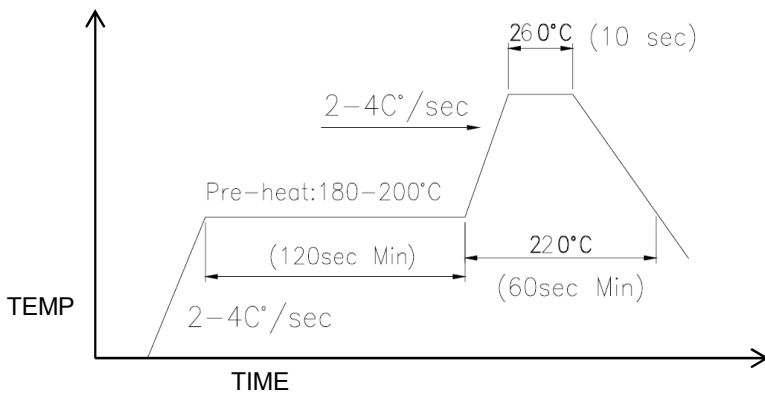
Contact Resistance	1) 30 mΩ Max.Initial for VBUS and GND contacts. 50 MΩ Max.Initial for all other contacts 2) After test: 10 mΩ Max.	Subject mated contacts assembled in housing to 20mV Max. open circuit at 100 mA Max. (EIA 364-23B) (or MIL-STD-1344A, Method 3002.1, Test Condition B)
--------------------	---	--

Insulation Resistance	1) Initial: 100 MΩ Min. 2) After test: 100 MΩ Min.	Test between adjacent contacts of mated and unmated connector assemblies. (EIA 364-21) (or MIL-STD-202F, Method 302, Test Condition B)
-----------------------	---	--

Dielectric Withstanding Voltage	100 V AC for one minute at sea level 1) No flashover or insulation breakdown 2) Leakage current: 0.5mA Max.	Test between adjacent contacts of mated and unmated connector assemblies. (EIA 364-20) (or MIL-STD-202F, Method 301, Test Condition B)
---------------------------------	---	--

Test item	Standards	Requirement
Mechanical Performance		
Insertion Force	1) Initial : 35 Newtons (or 3.57Kgf) Max. 2) After test: 35 Newtons (or 3.57Kgf) Max.	Shall be measured with tension gauge or tension tester. Measure force necessary to mate assemblies at maximum rate of 12.5mm (or 0.492") per minute. (EIA 364-13)
Withdrawal Force	1) Initial : 10 Newtons (or 1.02Kgf) Min. 2) After test: 8 Newtons (or 0.82Kgf) Min.	Shall be measured with tension gauge or tension tester. Measure force necessary to mate assemblies at maximum rate of 12.5mm (or 0.492") per minute. (EIA-364-13)
Contact Retention Force	1) Initial : 0.4 Kgf Min. 2) After test: 0.4 Kgf Min.	Shall be measured with tension gauge or tension ester in same direction. (EIA 364-35)
Durability	Shall meet visual requirement, show no physical damage.	Mate and Un-mate Connector assemblies for 1,500 cycles at maximum rated of 200 cycles per hour. (EIA-364-09)
Mechanical Shock	No discontinuities of 1 microsecond or long duration.	Subject mated connector to 30G's half-sine shock pulses of 11msec duration. Three shocks in each direction applied along three mutuall perpendicular planed for a total of 18 shocks. (EIA-364-27B)
Vibration	No discontinuities of 1 microsecond or long duration.	Subject mated connectors to 10~55~10Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. (EIA-364-28D)
Environmental Performance and others		
Temperature life	Shall meet visual requirement, show no physical damage.	Subject mated connectors to temperature life at 105℃ for 120 hours. (EIA 364-17 Test Condition 3 Method A)
Humidity	Shall meet visual requirement, show no physical damage.	Subject mated connectors to 168 Hours (7 complete cycles) (EIA 364-31, Test Condition A Method III) (or MIL-202F, Method 103B Test Condition B.)
Thermal Shock	Shall meet visual requirement, show no physical damage.	Subject mated connectors to 10 cycles between -55℃ to +85℃ (EIA 364-32, test condition I.) (or MIL-202F, Method 107G Condition A.)

Test item	Standards	Requirement
Salt Spray	Shall meet visual requirement, show no physical damage.	Subject mated connectors to 24 hours at 35°C with 5%-Salt-solution concentration. (MIL-STD-202F, Method 101D, Test Condition B)
Solderability	The surface of the portion to be soldered shall at least 95% covered with new solder coating.	Connector terminal tails in solder: (held at 215±5°C) up to 0.5mm from the bottom of the housing for 5± 0.5 sec. (EIA 364-52)
Resistance To Solder Heat	No mechanical defect on housing or other parts.	1) For wave soldering : Pre-heat : 80°C, 60 Seconds Temperature : 260 ± 5 °C Immersion duration : 10 ± 1 sec. (MIL-STD-202F, Method 210A, Test Condition B.)
		2) For manual soldering : Pre-heat : No Temperature : 350 ± 10 °C Immersion duration : 3.5 ± 0.5 sec. (MIL-STD-202F, Method 210A, Test Condition A.)
		3) For reflow soldering : Pre-heat : 150(Min)~200(Max) °C, 60 ~180 Seconds Temperature : 260 ± 5 °C Immersion duration : 10~40 sec. (EIAJ RCX-0101/102.)



Reference infrared reflow condition

9. Test sequences identification

Number of Test Samples (Min.)		5	5	5	5	5	5	5	5	
Group Amount		5	5	5	5	5	5	5	5	
Test Item	Test Description	A	B	C	D	E	F	G	H	
1	Examination of Product	1,13	1,5	1,8	1,3	13	1,5	13	16	
2	Low Level Contact Resistance	2,10	2,4				2,4		25	
3	Insulation Resistance	3,11		2,6						
4	Dielectric Withstanding Voltage	4,12		3,7						
5	Durability	7								
6	Mechanical Shock								3	
7	Vibration								4	
8	Insertion Force	5,8								
9	Withdrawal Force	6,9								
10	Contact Retention Force					2				
11	Thermal Shock			5						
12	Humidity			4						
13	Salt Spray		3							
14	Temperature life						3			
15	Solderability				2					
16	Resistance to Soldering Heat							2		