

1. Scope

USB3.1 Type C series

This specification covers the performance, tests and quality requirements for the Type C plug and socket connector.

2. Applicable document

Refer to the drawing.

3. Ordering information

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.

4. Connector dimensions

Refer to the drawing.

5. Material

Housing: LCP (UL 94V-0)

Color: Black

Terminal: Copper alloy

Plating: Gold in contact area, tin on tail

Shell: Stainless steel

Plating: Nickel plated

6. Accommodated P.C.B layout

Refer to the drawing.

7. Rating

Operating voltage(Max.) 5V DC/AC (RMS. Max)

 Current rating(Max.) 3.00 Amps Max for total Vbus pins (Pin A9,B9,A12,B12); GND pin 1.25 Amps Max;
0.25 Amps Min. for all other contact.

Temperature range-operating -30°C -- +85°C

Storage Temperature range -20°C -- +60°C

8. Performance

Test item	Requirement	Procedure
Electrical Performance		
Contact Resistance	50mΩ max for shield (initial) 40mΩ max for other (initial) 10mΩ max change for post test	Subject mated contacts assembled in housing to 20mV max open circuit at 100mA max. (EIA 364-23B)
Insulation Resistance	Initial:1,000 MΩ min. Final(post test) 100 MΩ min.	Test voltage 100±10V DC between adjacent contacts of mated and unmated connector assemblies interval of shield case and contacts too in the same way. (EIA 364-21C)
Dielectric withstanding Voltage	No flashover& spark over & excess leakage & breakdown	Test voltage 100V AC between adjacent contacts of mated and unmated connector assemblies for one minute. Interval of shield case and contacts too, in the same way. (EIA 364-20)

Test item	Requirement	Procedure
Mechanical Performance		
Insertion Force	0.5~2.0kgf.	Measure force necessary to mate connector assemblies at maximum rate of 30 cycles/min. (EIA-364-13)
Withdrawal Force	0.8~2.0kgf.	Measure force necessary to mate connector assemblies at maximum rate of 30 cycles/min. (EIA-364-13)
Durability	Mating force: 0.5~2.0Kgf Unmating force: 0.8~2.0Kgf Contact resistance:10mΩ max change for post test appearance :no breakdown	Mate and unmated connector assemblies for 10,000 cycles at. Cycle rate of 500 cycles per hour if done. (EIA-364-09)
Environmental Performance and others		
Thermal Shock	Contact resistance:10mΩ max Change for post test	Mated connector -55±3°C (30minutes), +85±2°C (30minutes) Perform this 1 cycle ,repeat 10 cycles. (EIA 364-32C Condition 1)
Humidity life	Withstand voltage: No breakdown Insulation resistance:100 MΩ Min. Contact resistance:10mΩ max. change for post test Appearance :no breakdown	Mated connector 25~65°C, 90~95% RH, 1 cycle:24 hours, 4cycles (EIA-364-31B)
Salt Spray	Contact resistance:10 mΩ max change for post test appearance: by visual inspection terminal without noticeable rust.	Subject mated connectors to 35±2°C and 5±1% salt condition for 24 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. (EIA-364-26B)
Temperature Life	Withstand voltage: No breakdown Insulation resistance:100 MΩ Min. Contact resistance:10mΩ max. change for post test Appearance :no breakdown	Mated connector to 105±2°C for 120 hours upon completion of the exposure period, test exposure period the test specimens shall be conditioned at ambient room, conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-17B)
Solderability	solder shall cover a minimum of 95% of the surface being immersed	Soldered at temperature 265°C±5°C at a rate of 25.4mm± 6.35 mm per second for in immersion duration 20±0.5sec. (EIA 364-52)

Test item	Requirement	Procedure
Resistance to soldering heat	No physical damage shall occur	Pre heat:150~180°C,90±30sec. Heat:230°C min. , 35±5sec Peak temp.: 265°C max. Duration:2 cycles

9. Test sequence

Test Item	Test Group							
	A	B	C	D	E	F	G	H
Appearance	1,8	1,9	1,9	1,9	1,9	1,5	1,3	1,3
Contact Resistance	2,5	2,8	2,6	2,6	2,6	2,4		
Dielectric Withstanding Voltage	4,7		4,8	4,8	4,8			
Insulation Resistance	3,6		3,7	3,7	3,7			
Insertion force		3,6						
Withdrawal force		4,7						
Durability		5						
Solder ability							2	
Resistance to soldering heat								2
Thermal shock				5				
Humidity life			5					
Temperature life					5			
Salt spray						3		