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. **Ordering information**

Refer to the drawing.

3. **Connector dimensions**

Refer to the drawing.

4. **Material**

Housing: Thermoplastic (UL 94V-0)

Color: Black

Terminal: Copper alloy

Plating: Gold plated

Shell: Stainless steel

Plating: Nickel plated

5. **Accommodated P.C.B layout**

Refer to the drawing.

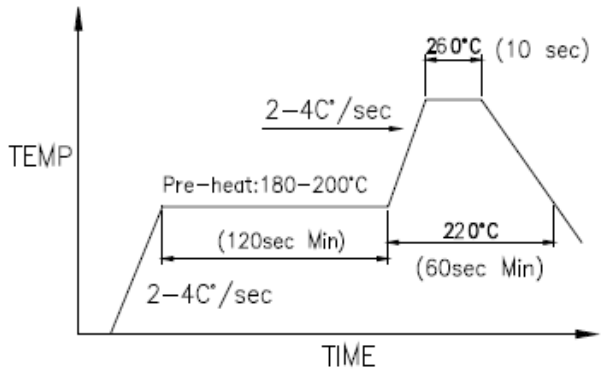
6. **Rating**

Operating voltage(Max.)	5V DC/AC (RMS. Max)
Current rating(Max.)	3 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	-25°C -- +85°C
Storage Temperature range	-20°C -- +60°C

7. **Performance**

Test item	Requirement	Procedure
Electrical Performance		
Low Level Contact Resistance	40mΩ(Max) initial for VBUS and GND contacts and all other contacts; delta 10mΩ(Max) after test	20mV Max. open circuit at 100mA Max. (EIA 364-23B)
Insulation Resistance	100MΩminimum (unmated) between adjacent contacts and contacts and shell	Unmated connecrors,apply 100Volts DC between adjacent terminal or ground. (EIA 364-21C)
Dielectric withstanding Voltage	There shall be no breakdown	Subjected to 100VAC (RMS) for 1 minute between adjacent terminals (EIA 364-20)
Contact current rating	When the currents are applied to the contacts, the temperature rise shall not exceed 30°C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25°C.	3.0A shall be applied collectively to VBUS pins and 1.25A applied to the VCONN pin and 0.25A the other contacts. (EIA364-70)

Test item	Requirement		Procedure
Mechanical Performance			
Insertion Force	0.5~2.0kgf.		Measure force at maximum rate of 12.5mm (0.492") per minute. (EIA-364-13)
Withdrawal Force	0.8~2.0kgf.		Measure force at maximum rate of 12.5mm(0.492") per minute. (EIA-364-13)
Durability	Insertion force: 0.5~2Kgf Withdrawal force: 0.8~2Kgf Contact resistance: 40mΩ, delta 10mΩ max after test Appearance: No breakdown		Mate and unmated connector assemblies for 10,000 cycles at. Cycle rate of 200 cycles per hour if done (EIA-364-09)
Cable Flexing	No discontinuity over 1 micorsecont During flexing or physical damage allowed		100 cycles in each of 2 planes 120 degree. Dimension x=3.7x cable diameter (EIA 364-41)
Cable Pull-Out	No discontinuity or physical damage allowed		40N steady state axial load for 1 minute (EIA-364-38)
4-axes continuity test	No discontinuity greater than 1us and no physical damage to the specimen(one cable per test)		8N tensile force for a period of 10 seconds Min;the specimen must subject to 0°,90°,180°,270°direction. Force to be applied at end of overmold
	Visual inspection,Test shall be done in sequences defined in EIA364-1000.01		105°C without applied voltage for 120 hours. 105°C without applied voltage for 72 hours when used as preconditioning in EIA 364-1000.01 (EIA364-18)
Environmental Performance and others			
Thermal Shock	Appearance	No Damage	10 Cycles –55°C and +85°C. The USB connectors under test must be mated. (EIA 364-32)
Constant temperature and humidity	Visual inspection,Test shall be done in sequences defined in EIA 364-1000.01.		Cycle the connector or socket between 25°C±3°C at 80%±3% RH and 65°C±3°C at 50%±3% RH, ramp times should be 0.5 hour and dwell times should be 1.0 hour. 24 cycles (EIA 364-31)
Temperature Cycling	Appearance	No Damage	105°C without applied voltage for 120 hours. 105°C without applied voltage for 72 hours when used as preconditioning in EIA 364-1000.01. (EIA 364-17)
	Contact Resistance	40mΩ Max.	
Salt Spray	Appearance	No Damage	Subject mated connectors to 24 hours at 35°C with 5% Salt-solution concentration. (MIL-STD-202F, Method 101D, Test Condition B)
	Contact Resistance	10mΩ Max. change for post test	

Test item	Requirement		Procedure
Temperature Life	Shall meet visual requirement, show no physical damage.		Subject mated connectsorto temperature life at 80°C for 250 hours (EIA 364-17 Test Condition 3 Method A)
Solderability	solder shall cover a minimum of 95% of the surface being immersed		Soldered at temperature 255°C±5°C at a rate of 25.4mm± 6.35 mm per second for in immersion duration 5s. (EIA 364-52)
Resistance to reflow soldering heat	Appearance	No Damage	
Mixed Flowing Gas	Contact Resistance : 30mΩ maximum change from initial per mated contact		70±2% RH, 30±1°C Temp, 10±3 ppb Cl_2, 200±50 ppb NO_2, 10±5 ppb H_2S, 100±20 ppb SO_2, 7 days (EIA 364-65 Class II A)

8. **Test sequence**

Test Item	Test Group							
	A	B	C	D	E	F	G	H
Examination of product	1,8	1,7	1,9	1	1,5	1,5	1	1
Contact Resistance	2,4,6,7	2,6	2,8		2,4	2,4		
Insulation Resistance			3,7					
Dielectric Withstanding Voltage			4,6					
Insertion force		3						
Withdrawal force		4						
Retention Force				2				
Durability		5						
Humidity			5					
Temperature cycling	3							
Salt spray					3			
Thermal Aging	5							
Cold aging						3		
Solder ability							2	
Resistance to soldering heat								2
Test samples/group	2	2	2	2		2	2	2