

Universal Serial Bus (USB) Type-C Connectors and Cable Assemblies



More compact USB Type-C connectors offer greater PCB savings while enabling high-frequency mating in data, consumer and other I/O applications

Features and Benefits

Support for 5.0A of power in plug and receptacles	Reduces battery-charging time by 64% versus micro-USB 2.0's current rating of 1.8A
Mid-plate connector 'tongue' design in receptacle	Ensures high reliability while preventing damage from connector abuse
High-temperature Nylon insert-mold receptacle housing	Increases connector strength to reduce potential shorting between mid-plate and terminals
Single-piece metal shell on cable plug	Provides easy identification and differentiation against non Type-C USB cables
Mylar between plug housing and shell	Prevents potential electrical shorting during mating
High normal force terminal design on plug	Stabilizes electrical performance while supporting higher current-carrying capacity with reduced temperature-rise
Availability of cable options meeting USB 2.0 and 3.1 speeds	Suits a variety of users depending on application requirements



USB Type-C Interconnect Solutions

Applications

Data/Computing/Telecommunications/Networking

- Data centers
- Servers and Workstations
- Personal computers, note and tablet PCs
- Routers, switches, hubs

Consumer

- Smartphones
- Digital cameras and digital video recorders
- Power banks and mobile chargers
- Docking stations
- Adapters and dongles
- Home entertainment systems
- Home appliances
- Gaming devices

Automotive

- Infotainment systems
- Cigarette chargers

Industrial

- Security cameras
- Drones
- Office equipment
- Airplane entertainment systems
- In-room multi-port electric outlets



Customer Convenient Ports



Tablet PCs and Smartphones



Office equipment



Car infotainment systems



Drones

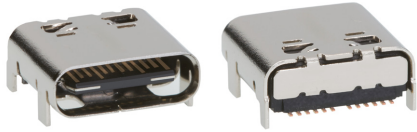


In-room multi-port electric outlets

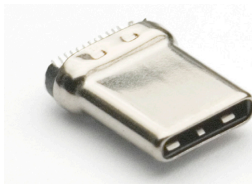
Universal Serial Bus (USB) Type-C Connectors and Cable Assemblies



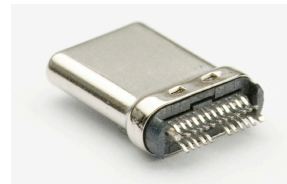
USB Type-C Connectors and Cable Assemblies



Front and rear views of USB Type-C Connector
(Series 105450)



Front and rear views of USB Type-C Straddle-mount Cable Plug
(Series 105444)



Type C-to-A USB 2.0 Cables (480Mbps)
(68798-0001)



Type C-to-C USB 2.0 Cables (480Mbps)
(68798-0002)



Type C-to-C USB 3.1 Cables (Gen 1; 5Gbps)
(68798-0003)



Type C-to-C USB 3.1 Cables (Gen 2; 10Gbps)
(68798-0004)



Type C-to-A USB 2.0 Cables (480Mbps)
(68798-0005)



Type C-to-A USB 3.1 Cables (Gen 2; 10Gbps)
(68798-0006)

Comparison of Various Standard USB Receptacles

	USB 2.0 Type-A	Mini-USB 2.0	Micro-USB 2.0	USB 3.0 Type-A	Micro-USB 3.0	USB Type-C
Circuits	4	5	5	9	10	24
No. of Rows	1	1	1	2	1	2
Pitch (mm)	2.0/2.5	0.80	0.65	2.0/2.5	0.65	0.50
Connector Width (without shell; mm)	12.50 +/-0.10	6.90 +0.05/-0.04	6.90 +0.06/-0.02	12.50 +/-0.10	12.25 +0.06/-0.02	8.34 +0.06/-0.02
Connector Height (without shell; mm)	5.12 +/-0.10	3.10 +0.08/-0.02	1.85 +0.08/-0.02	5.12 +/-0.10	1.85 +0.08/-0.02	2.56 +/-0.04
Receptacle Tongue Depth (mm)	8.38 +/-0.08	4.60 +/-0.05	2.70 +0.05/-0.08	10.15 min.	2.70 +0.05/-0.08	4.45 +/-0.10
Connector Mating Depth (mm)	8.88 +/-0.20	5.50 +0.10/0	3.50 +/-0.10	10.38 ref.	3.50 +/-0.10	4.70 +/-0.20
Connector Depth (mm)	~15.26	~9	5.0-6.8	~16.50	5.0-6.8	7.90
Data Rate	480Mbps	480Mbps	480Mbps	5.0Gbps	5.0Gbps	10.0Gbps (Gen 2)
Data Pairs	1	1	1	2	2	3
Durability (mating cycles)	1,500	5,000	10,000	1,500	10,000	10,000
Unmating Force (final)	10N min.	3N min.	8 to 25N	8N min.	8 to 25N	6 to 20N
Reversible	No	No	No	No	No	Yes
Current (power/signal)	1.5A	1.0A	1.8 / 0.5A	1.8 / 0.25A	1.8 / 0.25A	5.0 / 0.25 [†]
Terminal Insertion	Post-insert	Post-insert	Insert-mold	Post-insert	Insert-mold	Insert-mold

With reversible plugging capabilities, the USB Type-C connector is smallest in pitch (0.50mm) but big (5.0A) in current-carrying capacity. Above the rest (of preceding USB standards), Type-C connectors feature maximum data throughput (10Gbps) and, with similar-end USB 3.1 Type-C cables, enables power charging in either direction.

[†]Remark: Current values for Type-C Connector comprise the following:

5A max. for total VBUS pins (Pin A4, A9, B4, B9)

1.25A max. for Vconn (B5 of plug) with return path through the corresponding GND pins (Pin A1, A12, B1, B12)

0.25A min. for all other contacts

Specifications

Connector and Plug

Reference Information

Packaging: Tape and Reel
 Mates With: Series 105450 receptacle with Type-C cables or cable plug
 Series 105444 cable plug with Series 105450 receptacle
 Terminal Used: Copper Alloy
 Designed In: Millimeters
 RoHS: Yes
 Halogen Free: Yes
 Glow Wire Compliant: No

Electrical

Voltage (max.): 30V (DC/AC) max.
 Current (max.): 5.0A
 Contact Resistance: 40 (initial) max.; 50 milliohms after test
 Dielectric Withstanding Voltage: 100 VAC
 Insulation Resistance: 100 Megohms min.

Mechanical

Contact Retention to Housing: Insert-mold
 Mating Force: 5 to 20N
 Unmating Force: 8 to 20N (1-30 cycles); 6 to 20N (after 10,000 insertion/extraction cycles)
 Durability (min.): 10,000 cycles

Physical

Housing: High Temperature Nylon (HTN) (receptacle) LCP (plug)
 Contact: Copper Alloy
 Plating: Contact Area — Gold Flash over 0.76µm Palladium/Nickel (Pd/Ni) (receptacle) — 0.76µm Gold (plug)
 Solder Tail Area — 0.05µm Gold (Au) min. (receptacle) — 3.05µm Matte Tin (Sn) min. (plug)
 Underplating — 2µm Nickel (Ni) min. overall
 PCB Thickness: 0.60 to 0.70mm (receptacle); 0.80mm (plug)
 Operating Temperature: -30 to +85°C

Cable Assemblies

Reference Information

Packaging: Bag
 Mates With: Type-C (series 105450) receptacle or USB 2.0 Type A receptacle (105057 and 48416)
 Designed In: Millimeters
 RoHS: Yes
 Halogen Free: No
 Glow Wire Compliant: No

Electrical

Voltage (max.): 30 Volts DC max.
 Current (max.): 3.0A
 Contact Resistance (max.): 40 milliohms (initial); 50 milliohms after test
 Insulation Resistance: 10 Megohms
 Dielectric Withstanding Voltage: 100 VAC

Mechanical

Mating Force: 5 to 20N
 Unmating Force: 8 to 20N (1-30 insertion/extraction cycles); 6 to 20N (after 10,000 insertion/extraction cycles)
 Durability (min.): 10,000

Physical

Housing: LCP
 Contact: Copper Alloy
 Plating: Contact Area — 0.76µm Gold min
 Solder Tail Area — 3.05µm Matte Tin min
 Underplating — 2.03µm Nickel overall
 Operating Temperature: -10 to +50°C

Ordering Information

Connector and Plug

Part No.	Component	Circuits	Mounting Style	Termination
105450-0101	Right Angle Receptacle	24	Top-mount	SMT with 4 Through-hole soldertabs
105444-0001	Right Angle Cable Plug	22	Straddle-mount	SMT

Cable Assemblies

Part No.	Classification	End-to-End Cable Connectors (Cable Length)	Cable Speed	Cable Color
68798-0002	Standard	Type C-to-C USB 2.0 (1m)	480Mbps	Black
68798-0003		Type C-to-C USB 3.1 (1m)	5Gbps (Gen 1)	Black
68798-0004		Type C-to-C USB 3.1 (0.8m)	10Gbps (Gen 2)	Black
68798-0001	Legacy	Type C-to-A USB 2.0 (1m)	480Mbps	Black
68798-0005		Type C-to-A USB 2.0 (1m)	480Mbps	White
68798-0006		Type C-to-A USB 3.1 (0.6m)	10Gbps (Gen 2)	Black