



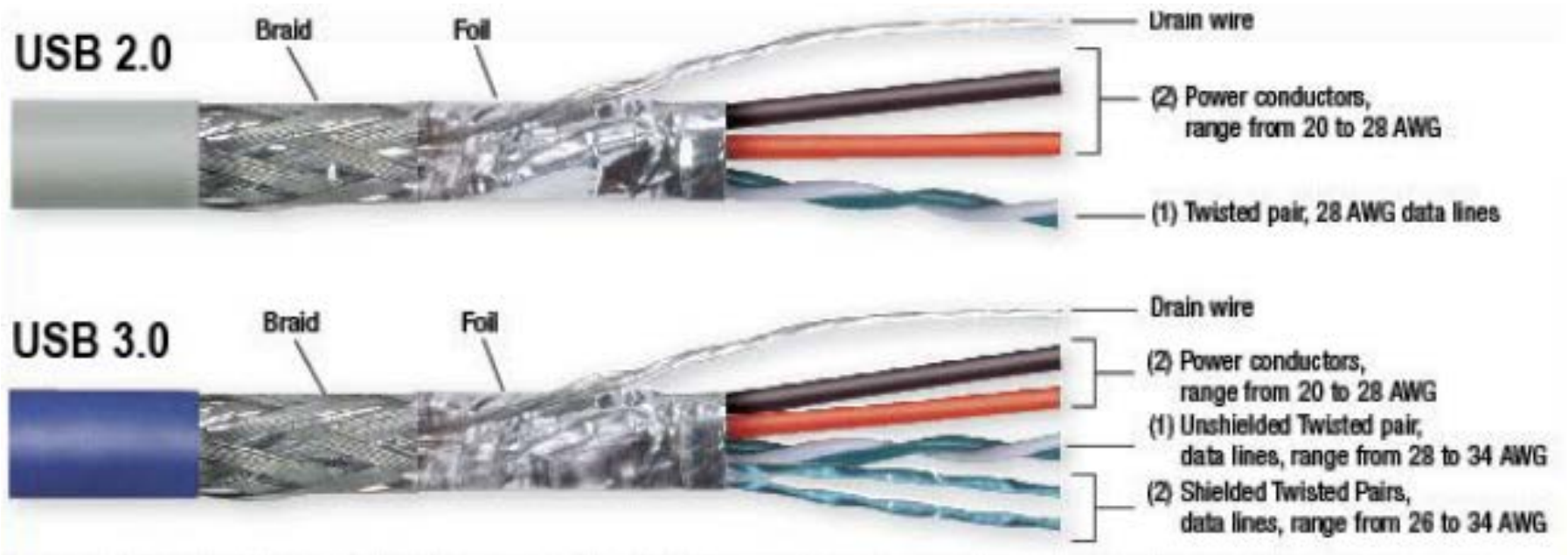
# COMPILACIÓN DE DATOS SOBRE CONEXIONES USB

V 1.0 – Febrero de 2018 – Alfonso Méndez

# Velocidades de los diferentes tipos de Bus

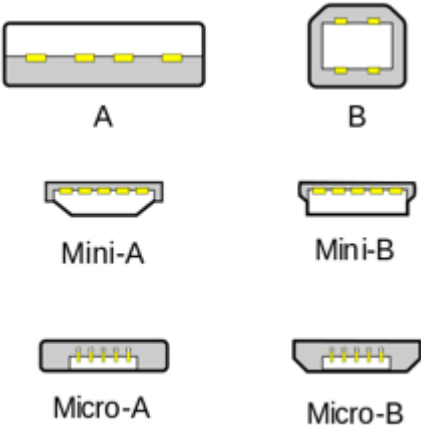
<i>Dispositivos externos</i>		<i>PCI Express</i>		<i>Almacenamiento interno</i>	
Firewire 400	400 Mb/s	PCI Express 1.x (x1)	250 MB/s	ATA (UDMA 5)	100 MB/s
Firewire 800	800 Mb/s	PCI Express 2.0 (x1)	500 MB/s	PATA (UDMA 6)	133 MB/s
Firewire s1600	1,6 Gb/s	PCI Express 3.0 (x1)	1 GB/s	SATA I	1,5 Gb/s
Firewire s 3200	3,2 Gb/s	PCI Express 1.x (x8)	2 GB/s	SATA II	3 Gb/s
USB 1.0	1,6 Mb/s	PCI Express 2.0 (x8)	4 GB/s	SATA III	6 Gb/s
USB 1.1	12 Mb/s	PCI Express 3.0 (x8)	8 GB/s		
USB 2.0	480 Mb/s	PCI Express 1.x (x16)	4 GB/s		
e-SATA	2,4 Gb/s	PCI Express 2.0 (x16)	8 GB/s		
USB 3.0	4,8 Gb/s	PCI Express 3.0 (x16)	16 GB/s		
USB 3.1 o C	10 Gb/s				
Thunderbolt	10 Gb/s				
Thunderbolt 2	20 Gb/s				
Thunderbolt 3	40 Gb/s				

## Características cables USB

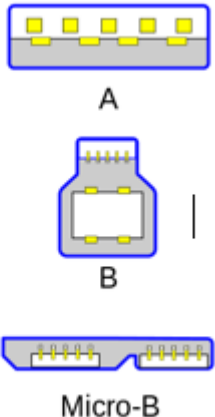


# Formas de los conectores

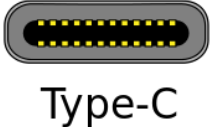
## USB 1.1 – 2.0



## USB 3.0



## USB 3.1 (C)



## eSATA



## Thunderbolt 2



## Thunderbolt 3



# Nomenclatura conectores

Jack / plug / male

Receptacle / Port / Female



# Características eléctricas

<i>Tecnología</i>	<i>Fabricante</i>	<i>Versión</i>	<i>Tensión de salida</i>	<i>Corriente máxima de salida</i>	<i>Potencia máxima de salida</i>	<i>Longitud máxima conexión</i>	<i>Velocidad máxima de transmisión</i>
USB		1.1				5 m	12 Mbps
USB		2.0	5 V	500 mA	2,5 W	5 m	480 Mps
USB		3.0		900 mA	4,5 W	5 m	4,8 Gbps
USB		3.1	5 V - 20 V	900 mA - 5A	100 W	1 m	10 Gbps
Quick Charge	Qualcomm	1.0	5 V	2 A	10 W		
		2.0	5 V, 9 V y 12 V	2 A, 2 A y 1,67 A	18 W		
		3.0	3,6 V - 6,5 V	3 A	19,5 W		
			6,5 v - 9 V	2 A	18 W		
			9 V - 12 V	1,5 A	18 W		
4.0 4.0+			28 W				
<i>Tecnologías adaptativas de carga tanto en corriente como en tensión</i>	AiPower	Aukey		adapt.	2,4 A		
	iSmart+	RAVPower	2.0	adapt.			
	PowerIQ	Anker	2.0	adapt.	18 W		

# Patillaje

## USB 2.0

### Mini B plug

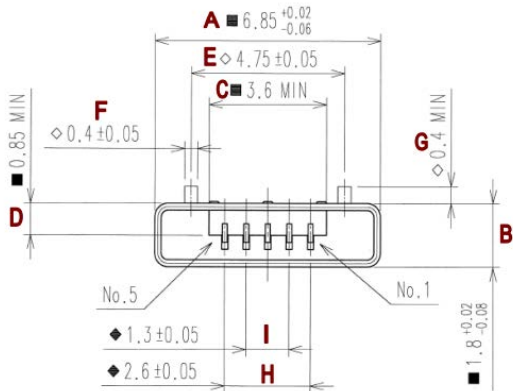


Pin	Name	Cable color	Description
1	VCC	Red	+5 VDC
2	D-	White	Data -
3	D+	Green	Data +
4	ID		May be N/C, GND or used as an attached device presence indicator (tied to GND with resistor)
5	GND	Black	Ground

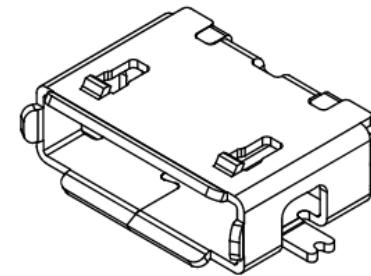
### Mini B receptacle



### Micro USB A plug

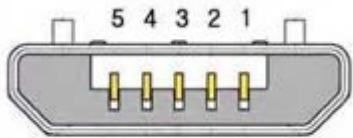


### Micro USB A receptacle

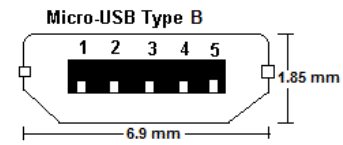
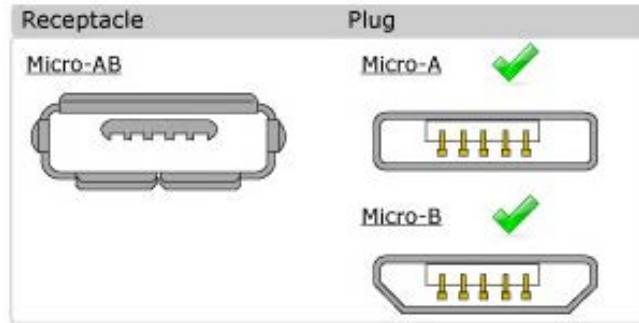


Pin	Name	Cable color	Description
1	VCC	Red	+5 VDC
2	D-	White	Data -
3	D+	Green	Data +
4	ID		May be N/C, GND or used as an attached device presence indicator (tied to GND with resistor)
5	GND	Black	Ground

## Micro USB B plug

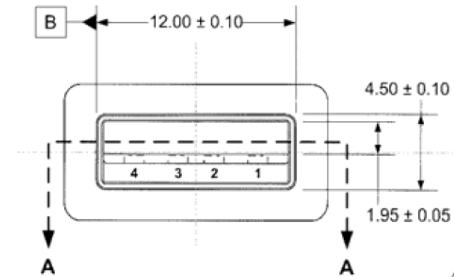
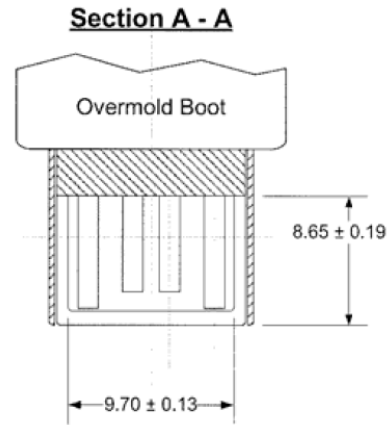


## Micro USB B receptacle



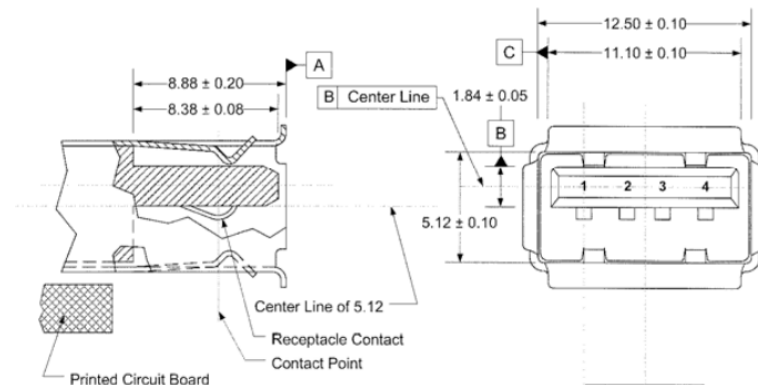


## A plug

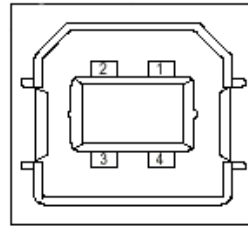
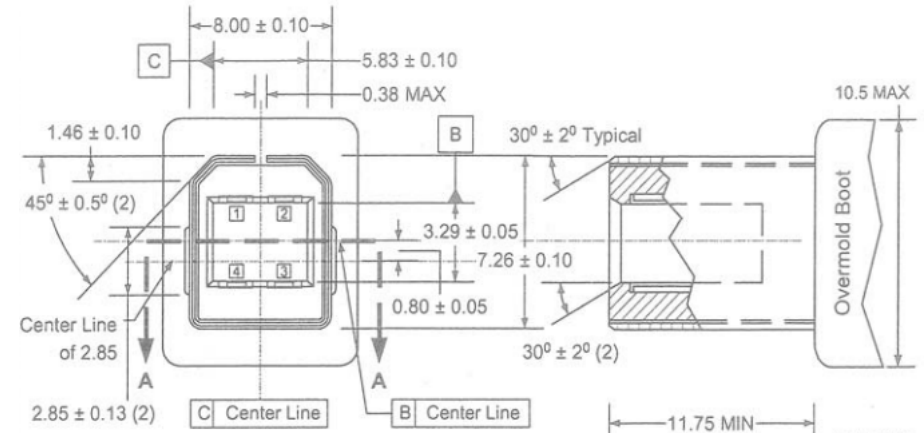


## A receptacle

Pin	Signal	Color	Description
1	VCC	Red	+5V
2	D-	White	Data -
3	D+	Green	Data +
4	GND	Black	Ground

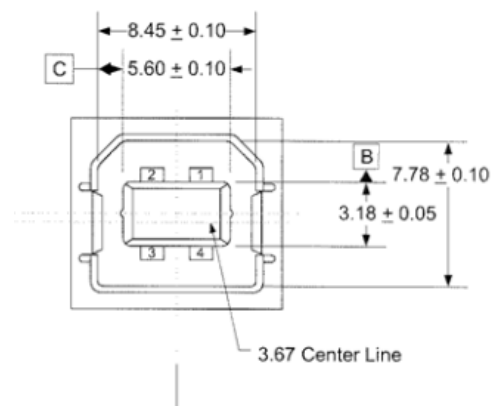
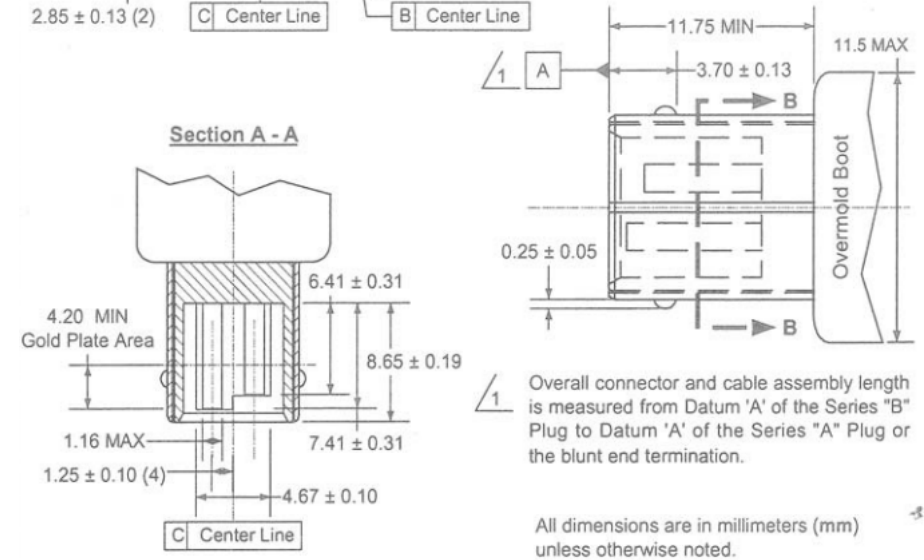


## B plug



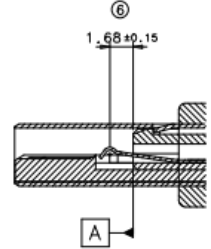
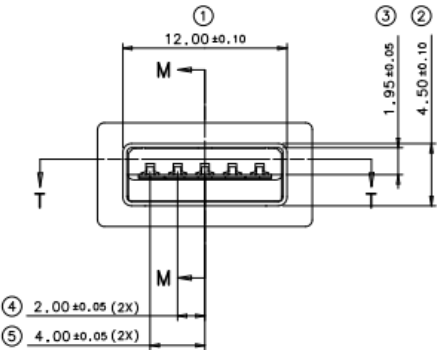
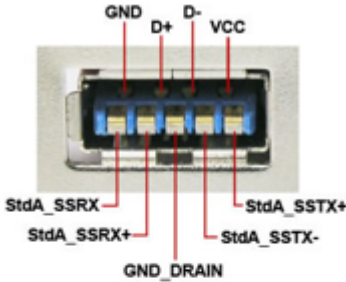
- 1=Vbus (5V)
- 2=D-
- 3=D+
- 4=GND

## B receptacle



# USB 3.0

## A plug

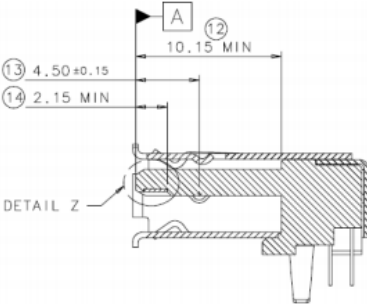
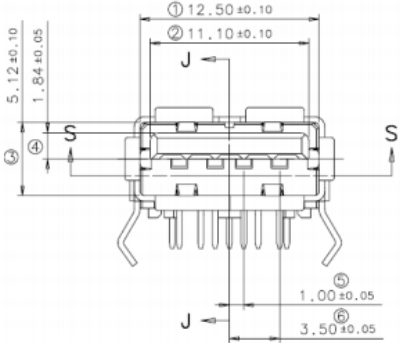


SECTION M-M

## A receptacle

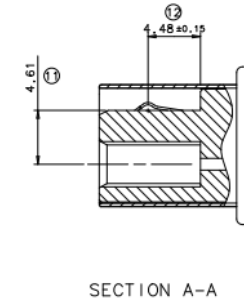
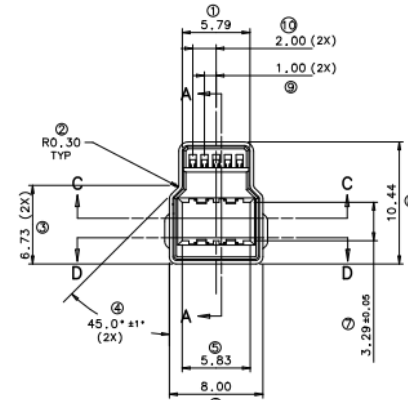
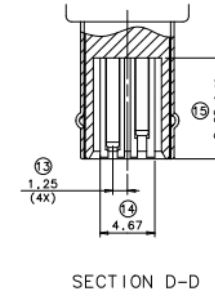
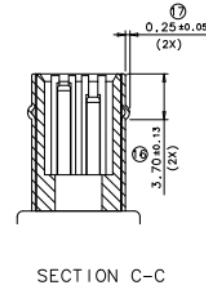


1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black
5	StdA_SSRX-	Blue
6	StdA_SSRX+	Yellow
7	GND_DRAIN	GROUND
8	StdA_SSTX-	Purple
9	StdA_SSTX+	Orange
Shell	Shield	Connector Shell

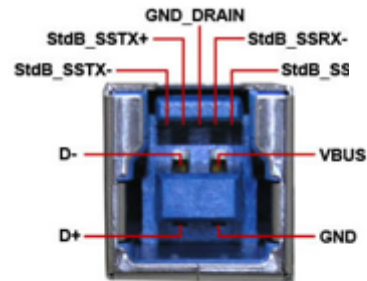


SECTION J-J

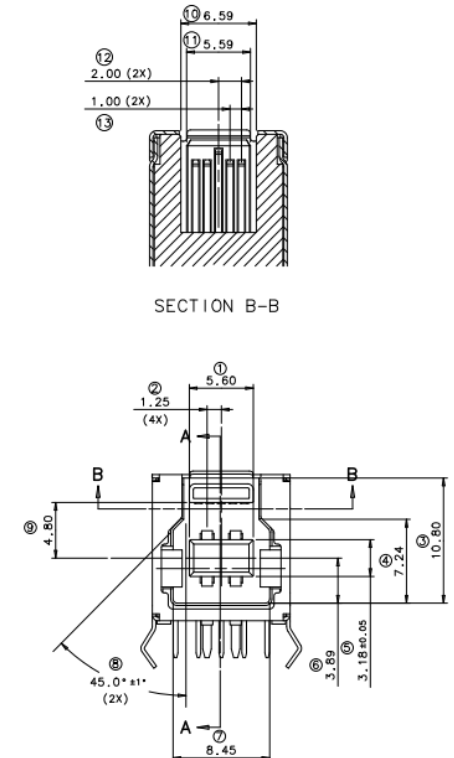
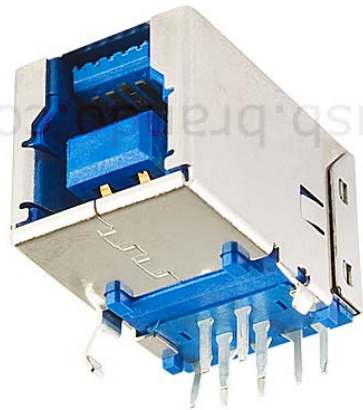
## B plug



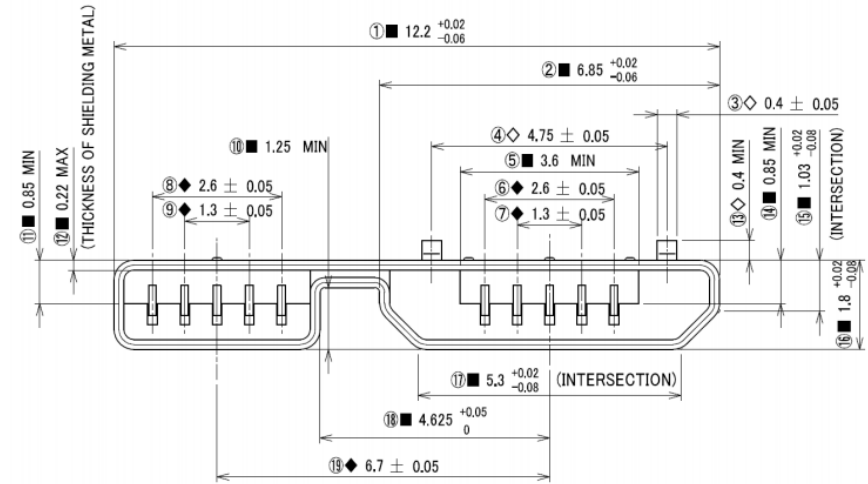
## B receptacle



1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black
5	StdA_SSTX-	Blue
6	StdA_SSTX+	Yellow
7	GND_DRAIN	GROUND
8	StdA_SSRX-	Purple
9	StdA_SSRX+	Orange
Shell	Shield	Connector Shell

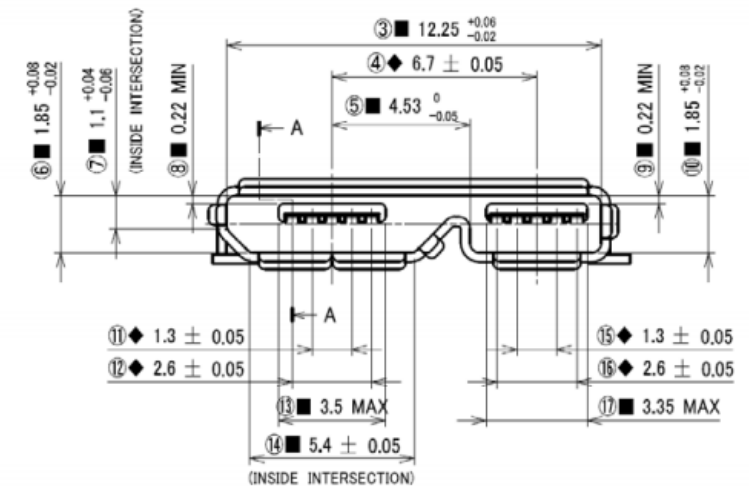


## Micro-B plug



Pin Number	Pin Name	Description
1	VBUS	+5V
2	USB D-	USB 2.0 differential pair
3	USB D+	USB 2.0 differential pair
4	OTG ID	USB OTG ID for identifying lines
5	GND	Ground
6	USB3 SSTX-	USB 3.0 signal transmission line
7	USB3 SSTX+	USB 3.0 signal transmission line
8	GND	Ground
9	USB3 SSRX-	USB 3.0 signal receiving line
10	USB3 SSRX+	USB 3.0 signal receiving line

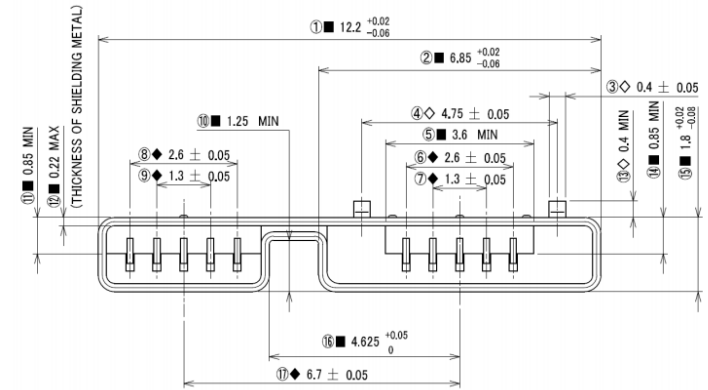
## Micro-B receptacle



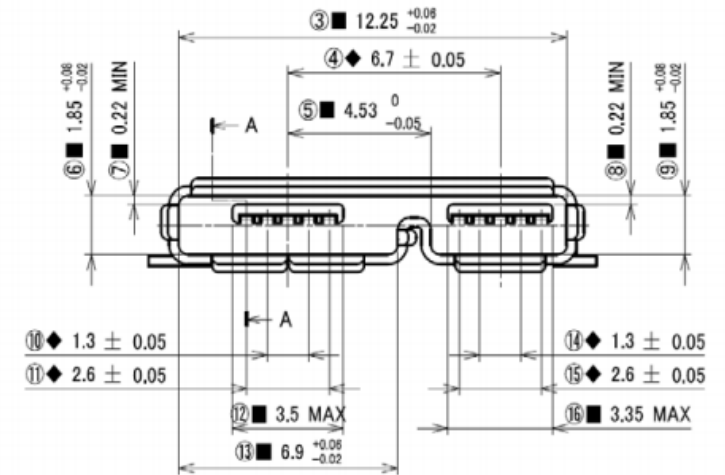
# Micro-A plug

Receptacle	Plug
USB3.0 Micro-AB	USB3.0 Micro-A
	USB3.0 Micro-B

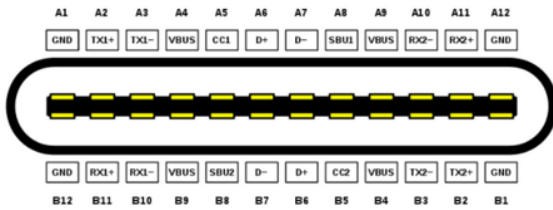
USB3.0 AB receptacle accepts both USB3.0 micro A and micro B plugs.



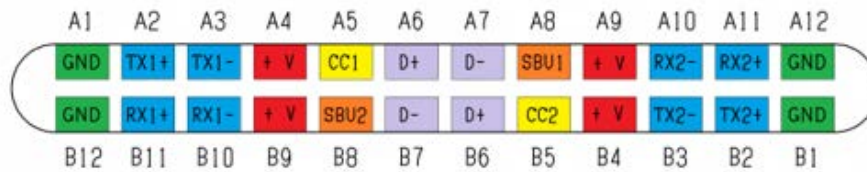
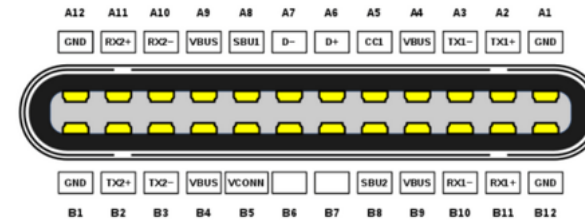
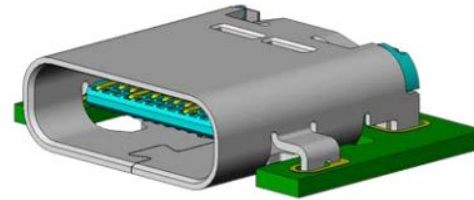
# Micro-A receptacle



# USB 3.1 (micro USB C plug)



# USB 3.1 (micro USB C port)



- USB3.1 Super speed+ 10Gbps
- Secondary Bus
- USB2.0 High speed 480Mbps
- USB Power Delivery Communication