

Amphenol

COMMUNICATIONS SOLUTIONS

AICC CMIO PRODUCT OVERVIEW USB 2.0 & 3.X

Business Unit: CMIO

Presenter:

September 16, 2022

USB Family Overview

Revision	Issue Date	Brand Name	Bits/sec	Package Logo	Port & Cable Logo	USB-C® Trident Charging Logo
USB 1.0	Jan 1996	Low Speed Full Speed	1.5 Mbps 12 Mbps			
USB 1.1	Aug 1998	Full Speed With updated	1.5 Mbps 12 Mbps			
USB 2.0	April 2000	High Speed	480 Mbps			
USB 3.0 <i>USB 3.2 Gen 1x1</i>	Nov 12, 2008 <i>USB3.1 Gen1</i>	SuperSpeed USB 5Gbps	5 Gbps			
USB 3.1 <i>USB 3.2 Gen 2x1</i>	July 26, 2013 <i>USB3.1 Gen2</i>	SuperSpeed USB 10Gbps	10 Gbps			
USB 3.2 <i>USB 3.2 Gen 2x2</i>	Sep 22, 2017	SuperSpeed USB 20Gbps	20 Gbps			
USB4 <i>USB4 Gen 2x2</i>	Sep 3, 2019	USB4™ 20Gbps	20 Gbps			
USB4 <i>USB4 Gen 3x2</i>	Sep 3, 2019	USB4™ 40Gbps	40 Gbps			



(USB4 A / B ?)

TYPE C

GRL

GRANITE RIVER LABS

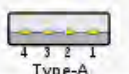


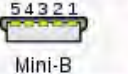
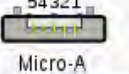

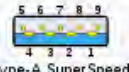


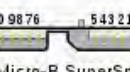

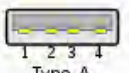
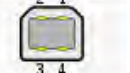





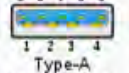

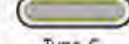
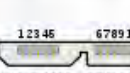

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USB Interface & Features

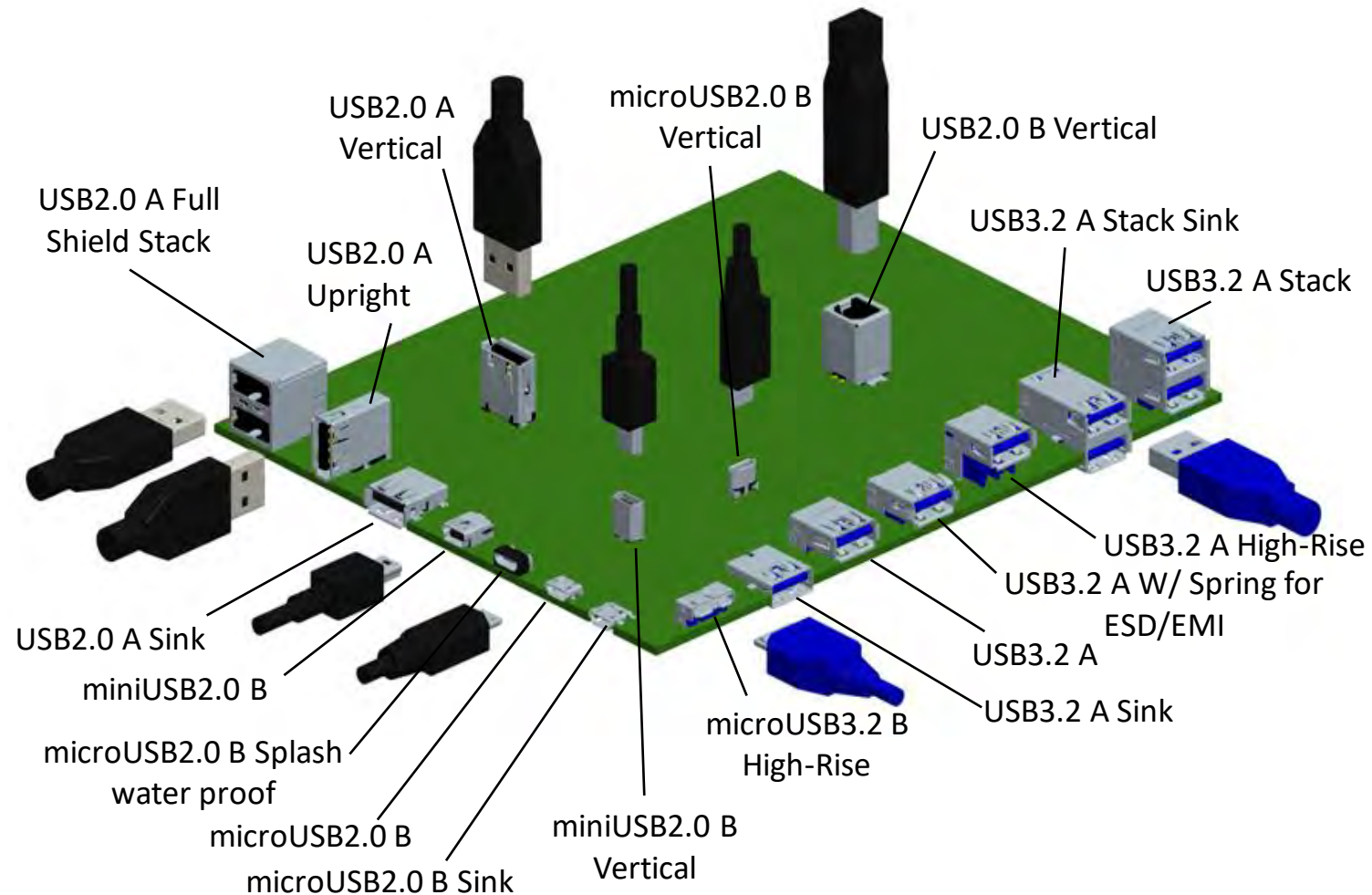
USB 3.0 / USB 3.1, 3.2 Gen 1 (5 Gbit/s) was renamed twice. The current name being **USB 3.2 Gen 1**. Likewise, **USB 3.1/ 3.2 , USB 3.2 Gen 2 (10 Gbit/s)** was renamed to **USB 3.2 Gen 2** with the introduction of the 20 Gbit/s, **USB 3.2 (20 Gbit/s, type C)** which is named **USB 3.2 Gen 2 x 2**.

USB 4 feature

- Supports two-lane operation over USB type-C cable
- Supports up to 40Gbps over 40Gbps certified cable
- Multiple data and display protocols to efficiently share the total available bandwidth over the bus
- Backward compatibility with USB 3.2, USB 2.0 and Thunderbolt 3
- Enables multiple simultaneous data and display protocols.

Revision		Type-A	Type-B	Type-C	Mini-A	Mini-B	Mini-AB	Micro-A	Micro-B	Micro-AB
Plug	2	 Type-A	 Type-B	Not existed	 Mini-A	 Mini-B	Not existed	 Micro-A	 Micro-B	Not existed
	3.2	 Type-A SuperSpeed	 Type-B SuperSpeed		Deprecated	Deprecated	Not existed	Deprecated	 Micro-B SuperSpeed	 Micro-AB SuperSpeed
Receptacle	2	 Type-A	 Type-B	Not existed	 Mini-A	 Mini-B	 Mini-AB	Not existed	 Micro-B	 Micro-AB
	3.2	 Type-A SuperSpeed	 Type-B SuperSpeed	 Type-C	Deprecated	Deprecated	Deprecated	Not existed	 Micro-B SuperSpeed	 Micro-AB SuperSpeed
Application		PC	Scanner Printer	Laptop PC tablet	Portable Device		Universal interface for microA, & B only	Cell phone Tablet		Universal interface for microA, & B only

Universal Series Bus Interconnects Application



Market Application:

- NAS
- Storage
- Infotainment
- Smart TV
- Server storage
- Telepresence Device
- Tablet PC
- Health care
- Gaming
- Mobile phone
- POS system
- Media player
- DSC
- Set top boxes
- Industrial PC.



USB Products

Universal Serial Bus was developed to integrate a variety of existing PC I/O ports into a single interface with hot-plugging, automatic configuration capabilities and increased bandwidth to enhance serial I/O throughput for a wide range of peripherals.

USB3.2 GEN2 Products Benefits

- Delivers 10Gbps USB data rate, Over 20X performance increase over USB 2.0
- Optimized Power Efficiency
- Backward compatible with USB 2.0
- Fast Sync-N-Go

SERVER STORAGE / NETWORKING



Amphenol Provides the solutions including:

The standard 'A' and reverse Series of receptacles are available in right angle, Upright, Sink, single and stacked dual-port through hole versions. The range of standard Series 'B' connectors, includes both vertical and right angle and cable plug version receptacles

External IO – USB Families (Receptacle / Plug)

USB Plug	USB Plug Product Application		
	Board Mount Vertical	Board Mount	Cabling
μUSB 2.0 B	GMCB055	NA	NA
USB 3.1 A (GEN2) 10Gps		GSB4164	GSB417

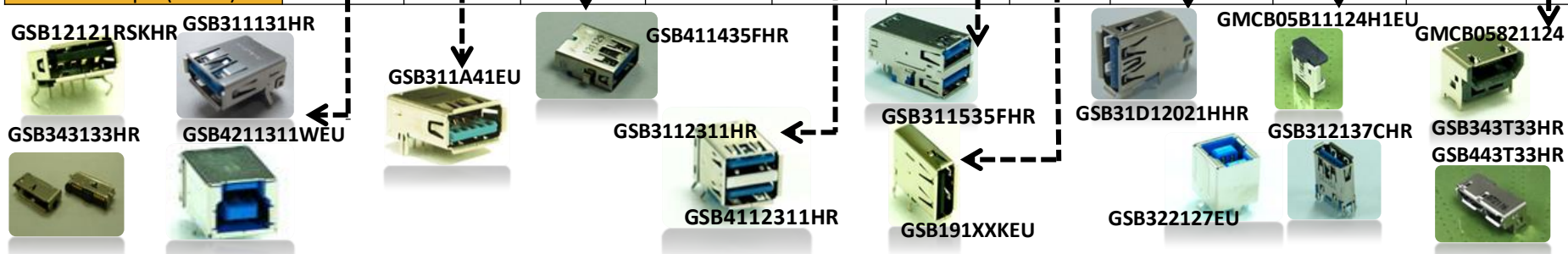


GSB416445CHR
GSB416441CEU



GSB417131HR

USB Types	Product Application (STD:standard 1 port, RVS: reverse, V/T: vertical)							Hi temp material		
	STD	RVS	Sink	RVS Sink	Stack	Stack Sink	Upright	Upright RVS	V/T	High-Rise
USB 2.0 A (480Mbps)	GSB121	GSB12B	GSB126	GSB12J	GSB122	GSB125	GSB191	GSB191XXXF1C 9HR	GSB111	
USB 2.0 B	GSB221								GSB211	
μUSB 2.0 B	GMCB053		GMCB05A	GMCB05D					GMCB05B	GMCB05821124
μUSB 2.0 AB	GMCB05C									GMCB05821134
miniUSB 2.0 B	GMSB053								GMSB051	
USB 3.2 A (GEN1) 5Gps	GSB3111	GSB311A	GSB3114		GSB3112	GSB3115		GSB31D1	GSB3121	GSB311J
USB 3.2 B (GEN1)	GSB3211								GSB3221	
USB 3.2 μB (GEN1)	GSB343X								GSB344	GSB343T
USB 3.2 μAB (GEN1)	GSB353									
USB 3.2 A (GEN2) 10Gps	GSB4111				GSB4112	GSB4115			GSB4121	GSB411J
USB 3.2 B (GEN2)	GSB4211								GSB4221	
USB 3.2 μB (GEN2)	GSB443X									GSB443T



USB 3.2 GEN2 PRODUCT OVERVIEW- GSB4X

Features & Benefits

USB3.2 GEN2 A, B type Specification compliance.

- 5 metal friction lock grounding fingers and Polarization plastic design ensure plug retention.
- Rugged Gold-plated leaf contact withstand up to 5000 cycles.
- High temperature plastic for SMT process and Halogen Free solution.
- Full metal shielding for EMI / RFI / ESD protection.

USB3.2 GEN2 Micro B type . Specification compliance.

- Stable signal transmission.
- Materials use for lead-free reflow process, Halogen Free , and RoHS.
- 6 Soldered Pads at shell ensure No Damage when : Peel Strength 150N Min applied. Wrenching Strength 25N Max applied .
- Greater real estate space savings.
- Reliable Co-planarity within a 0.08mm.
- Full metal shielding for EMI / RFI / ESD protection.
- Rugged Gold-plated leaf contact withstand up to 10,000 cycles.

USB 3.2 GEN2 plug Features & Benefits

- Fully compliant with USB3.2 GEN2 specification.
- Rugged Gold-plated leaf contact withstand up to 5000 cycles.
- process and Halogen Free solution.
- Application for Board to Board and wire to Board use.



USB3.2 A GEN2 : Top Sell Products & New Product line

- **Competitive price to support New customers**
- **Robust & Enhance Design of High Reliability**
- **High Capacity**
- **Delivery on time**



- ✓ **Function Improvement New tooling release**
- ✓ **10K high Durability**
- ✓ **10Gbps New release**
- ✓ **SMT & PIP Process available.**

A Stack Sink
H=10.71
GSB41153411AHR



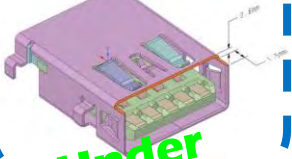
A Type, Standard R/A DIP.
GSB4111XXXHR



A Stack High Rise
GSB41123XXXHR



A Reverse Sink
Offset=- 0.35mm
GSB411BXXXEU



Under Developing

A Vertical
GSB412XXXCHR



A Stack Standard
GSB41123XXXHR



A Upright, UD
GSB4116XXX



A Reverse Standard
GSB411AXX HR



Under Developing

USB 3.2 GEN1 Product Overview Part no: GSB3X Series

USB3.2 GEN1 Products

Also known as SuperSpeed USB, this upgraded interface offers as:

- Delivers 5 Gbps USB data rate, Over 10X performance increase over USB 2.0
- Optimized Power Efficiency
- Backward compatible with USB 2.0
- Fast Sync-N-Go

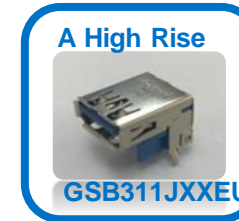
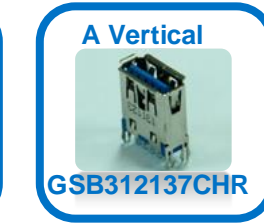
Features & Benefits

USB3.2 GEN1 A, B type 5 Gbps data rate specification compliance.

- 5 metal friction lock grounding fingers and Polarization plastic design ensure plug retention.
- Rugged Gold-plated leaf contact withstand up to 5000 cycles.
- High temperature plastic for SMT process and Halogen Free solution.
- Full metal shielding for EMI / RFI / ESD protection.

USB3.2 GEN1 Micro AB & B type 5 Gbps data rate standard compliance.

- Stable signal transmission.
- Materials use for lead-free reflow process, Halogen Free, and RoHS.
- 6 Soldered Pads at shell ensure No Damage when :
Peel Strength 150N Min applied.
Wrenching Strength 25N Max applied .
- Greater real estate space savings.
- Reliable Co-planarity within a 0.08mm.
- Full metal shielding for EMI / RFI / ESD protection.
- Rugged Gold-plated leaf contact withstand up to 10,000 cycles.



USB 2.0 Product Overview

Part no: GSB1X Series

USB2.0 Products

The Universal Serial Bus was developed in 1996 to integrate a variety of existing PC I/O ports into a single interface with hot-plugging, automatic configuration capabilities and increased bandwidth to enhance serial I/O throughput for a wide range of peripherals. Available in standard, mini and micro versions, USB products connect a variety of different peripherals to this common interface standard.

Features & Benefits

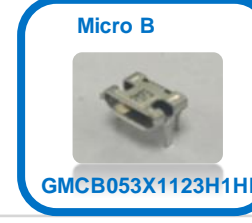
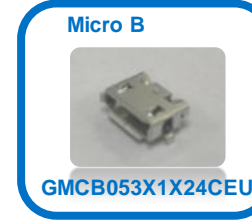
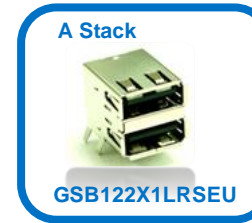
Standard A, B

- 4 Circuits.
- USB 2.0 specification compliance
- Terminal design Providing high reliable normal force and contact resistance.
- High-speed 480 Mbps transmission.
- Halogen Free , and RoHS Compliance.
- Reliable Co-planarity for SMT process.



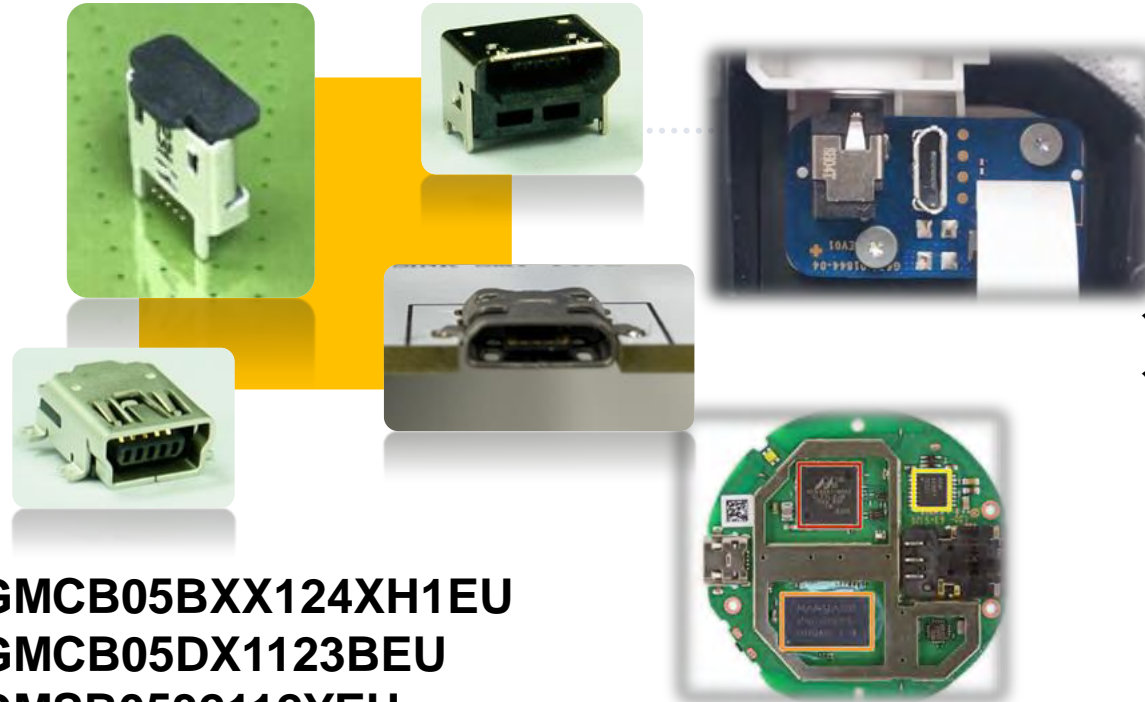
mini USB / microUSB Features & Benefits

- 5 Circuits.
- USB 2.0 specification compliance.
- Terminal design Providing high reliable normal force and contact resistance.
- Stable signal high-speed up to 480 Mbps transmission.
- High temperature plastic for lead-free reflow process and Halogen Free solution.
- 4 Solder Pad at shell ensure mounting Force.
- Greater real estate space savings.
- Reliable Co-planarity for SMT process.



USB2.0, micro B, Vertical Dip Type / Right Angle reverse SMT

USB2.0 miniUSB / micro USB Type High-Rise



GMCB05BXX124XH1EU
GMCB05DX1123BEU
GMSB0532112YEU
GMCB0581X24EU



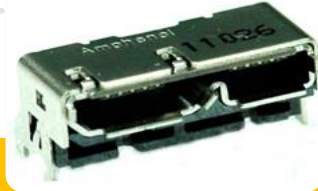
- ✓ **Application: Home-hub, TV stick**
- ✓ **Capacity: 600K ~ 1.2KK monthly**



USB2.0, mini/ micro B, Right Angle SMT

USB3.2, GEN1, Right Angle SMT

USB3.2 GEN1, micro B Type High-Rise



GSB343T33HR



GMSB053X112C1HR
GMCB05AX0123YHR
GSB3131XXJ1HR



- ✓ **Application: Set Top Box /HDD**
- ✓ **Total Capacity: 1KK / monthly**

USB3.2, GEN1, A Type Standard Stack



GSB3115XXXFXHR

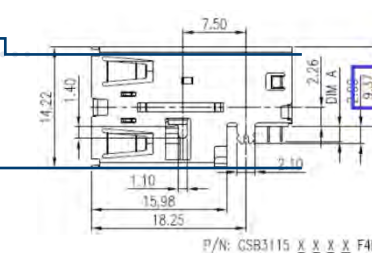
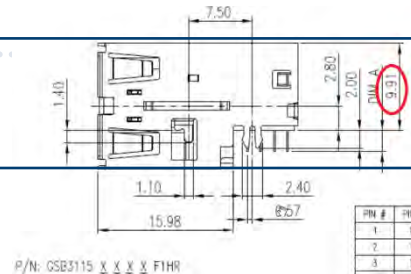
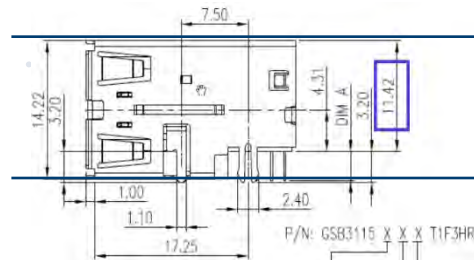


- ✓ **Application: Server**
- ✓ **Capacity: 500K / monthly**

GSB3115XXXT1F3HR

GSB3115XXXXF1HR

GSB3115XXXXF4HR



USB3.2, GEN2, Type Stacked Sink

USB3.2, GEN2, Type Stacked High Rise

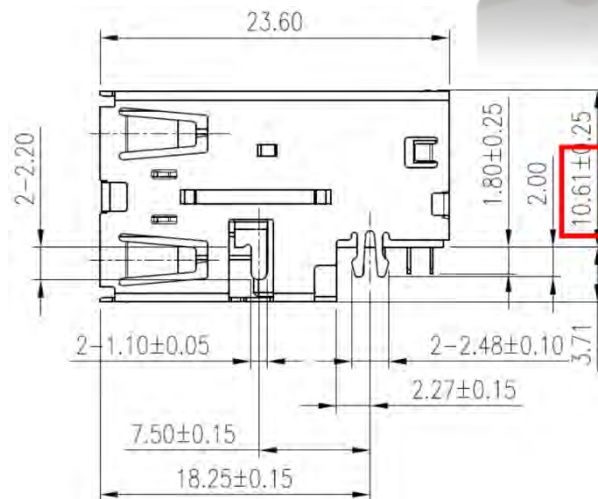


GSB41153412AHR

GSB411J3512HR



- ✓ **Application: Workstation, Server**
- ✓ **Server Next Generation**
- ✓ **Capacity: 500K / monthly**



CMIO P/N	Product Description	Application	Capacity monthly	Benefits & Features
GSB411J3511HR	USB3,A,Stack,RA,H-R	Server	80K	10Gbps, high durability
GSB41153411AHR	USB3,A,Stack,RA, Sink	Server	80K	10Gbps, high durability
GSB4112312HR	USB3,A,Stack,RA, DIP	General	80K	https://www.usb.org/single-product/5965 . TID No: 5965, high durability
GSB1E12156FHR	USB2.0, A 45° angle Dip	Public Transportation	30K	Use friendly charger 45° inserting for public transportation
GMCB05521123HHR	USB3,A,Stack,RA, DIP	POS Card reader	50K	Vertical customized design
GSB3112311P1HR	USB3, A, RA, DIP Pre-Tin	IPC	60K	Material upgrade high reliability , & shielding pin Pre-Tin plated for Superior solderability



CMIO_USB Low Cost BEST Practice

CMIO P/N	Product Description	EAU (K) Capacity	Benefits & Features
GMCB05A00123YHR	microUSB B Sink R/A SMT	3,600	MicroUSB B <i>short body Sink</i> for space saving
105019301012A	microUSB B SMT	6,000	<i>MicroUSB B ultra short body</i> for space saving
GMSB0530112C1HR	USB 2.0 mini SMT	3,600	Mini USB B short body for <i>space saving with robust shielding pin</i>
GSB313111J1HR	USB3, A, RA, SMT	1,200	USB3. A Short body SMT for space saving
GSB31113XXXHR	USB3, A, RA, DIP	5,000	USB3. A, 10K high durability.



CMIO_MicroB/ MiniB Competitive Product Line

CMIO P/N	Gender	USB Version	Data Rate	Position	Orientation	Termination	Height, mm	Benefits & Features
105019301012A	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle	SMT	2.45	Ultra short body, 5.05mm
GMCB05A00123YHR	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle, Sink	SMT	1.65	Short body, 5.85mm
GMCB05B11124H1EU	Receptacle	USB2.0, micro B	480Mbps	5	Vertical	SMT	6.7	Customized design,
GMCB05A21124HEU	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle, Sink	SMT	0.85	Customized design
GMCB05D11123BEU	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle, Reverse Sink	SMT	1.13	Customized design
GMCB05521123HHR	Plug	USB2.0, micro B	480Mbps	5	Vertical	SMT	13	Robust Latch, housing shrouded plug shell
GMCB05311124CEU	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle	SMT	2.45	Market type & Cost saving, Robust shielding pin
GMCB05311124CEU	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle	SMT	2.48	Market type
GMCB05821124EU	Receptacle	USB2.0, micro B	480Mbps	5	Right Angle	SMT	5.17	Customized design, High Rise
GMSB0532112YEU	Receptacle	USB2.0, mini B	480Mbps	5	Right Angle	SMT	3.9	Market type
GMSB0530112C1HR	Receptacle	USB2.0, mini B	480Mbps	5	Right Angle	SMT	3.9	Short body, Robust shielding pin
GSB343133HR	Receptacle	USB3.2, GEN1, micro B	5Gbps	10	Right Angle	SMT	2.8	Market type
GSB343K33HR	Receptacle	USB3.2, GEN1, micro B	5Gbps	10	Right Angle	SMT	2.8	Robust shielding pin
GSB343T33HR	Receptacle	USB3.2, GEN1, micro B	5Gbps	10	Right Angle	SMT	5.45	High Rise & Robust 2 layers' shell
GSB443133HR	Receptacle	USB3.2, GEN2, micro B	10Gbps	10	Right Angle	SMT	2.8	Market type
GSB443K33HR	Receptacle	USB3.2, GEN2, micro B	10Gbps	10	Right Angle	SMT	2.8	Robust shielding pin
GSB443T33HR	Receptacle	USB3.2, GEN2, micro B	10Gbps	10	Right Angle	SMT	5.45	High Rise & Robust 2 layers' shell

Halogen Free



RoHS Compliance

Thank you

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Product Manager

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