Amphenol

High Speed Interconnects

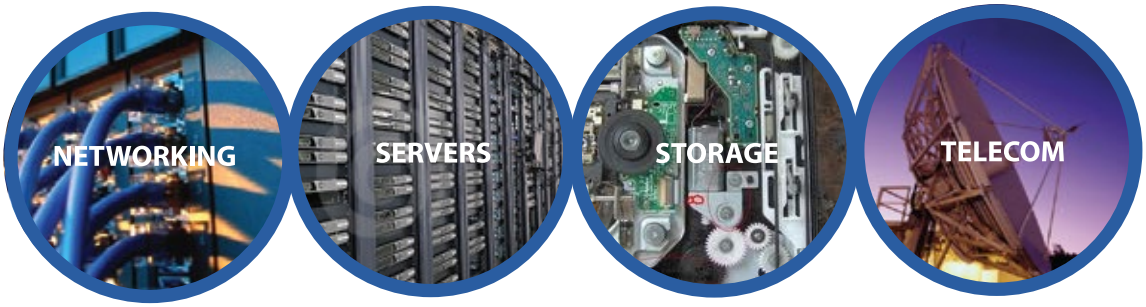
I/O Products

Now you're connected

Amphenol High Speed Interconnects

THE COMPANY

Amphenol is a global provider of interconnect solutions to the designers and manufacturers of worldwide networking systems. With our design creativity and cost effectiveness, Amphenol leads the way in interconnect development for internet equipment, infrastructure, enterprise networks, and appliances. Whether industry standard or specific designs are required, Amphenol provides customers with products capable of performing at the leading edge of today's high speed technology. Our expertise in understanding and supporting our customers' various design needs has earned Amphenol a reputation of excellence and quality among the world's leading users of high speed components.



HIGH SPEED CONNECTORS

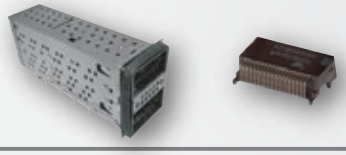
Amphenol offers a full range of high speed connectors with data rates ranging from 1 Gbps to 240 Gbps and beyond, meeting our customers' various high speed connector requirements. Products include the ExpressPort™ Series (SFP+, QSFP+), CXP, SFP, QSFP, Mini-SAS, Mini-SAS HD, XFP, CFP2, and CFP4.

BENEFITS

- Increased platform density for scaling improved performance in a defined physical space
- Servers that can scale I/O and processing power independently
- Racks of servers that can be managed as one autonomous unit
- Servers that can share I/O resources
- True "plug-and-play" I/O connectivity
- Extensive range of SFP/IPF connector and cage solutions to support Fiber Channel, Infiniband, Ethernet, and Gigabit technology
- Next generation ExpressPort™ connectors provide premium level performance for SFP+ and QSFP+ interfaces
- Data speeds of ExpressPort™ connectors can reach up to 40 Gbps per channel

INNOVATIVE technology
better CONNECTED

Table of Contents

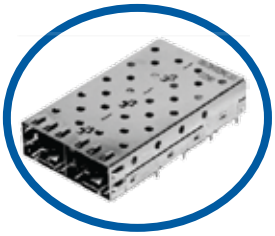
SFP Series	UE75 Series	1xN Connector	4
	U77 Series	1xN Cage	4
	UE78/UE86 Series	2xN Combo	6
ExpressPort™ SFP+	UE76 Series	1xN Connector	8
	U77 Series	1xN Cage	8
	UE86 Series	2xN Combo	10
UltraPort™ SFP+ Series	UE86 Series	Connector	12
	UE76 Series	Cage	14
	U77 Series	Connector	14
ExpressPort™ QSFP / QSFP+ Series 	FS1 Series	1xN Connector	16
	U90 Series	1xN Cage	16
	U90 Series	2xN Combo	18
UltraPort™ QSFP+ Series	U95 Series	Connector	20
	U95 Series	2xN Combo	22
	FS1 Series	Cage	22
CXP Series	U91 Series	CXP Combo	24
Mini-SAS	FS1 Series	Connector	26
	FSX Series	Cage	26
Mini-SAS HD	U92 Series	HD Combo	28
XFP Series	UE75 Series	Connector	30
	U79 Series	Cage	30
CFP2/CFP4	U99 Series	Host Connector	32
	U56 Series	Plug Connector	32
	U98 Series	Cage	32

SFP 1xN

UE75-A20-3000T

Amphenol's SFP interconnect system consists of a 20-position connector enclosed in a metal cage mounted to a host PCB.

Amphenol's single port SFP connectors are rated up to 6 Gbps. The connector accepts multiple transceivers per INF-8074i and combines, transmits, and receives functions in a low cost, compact, and flexible format. The cages have a two-piece construction with enhanced transceiver mating tabs available in a press-fit version or a solder tail version. Longer and shorter pins are available as custom options. Single row versions (1xN) consist of SMT connectors used with a separate single row cage (press-fit or solder tail).



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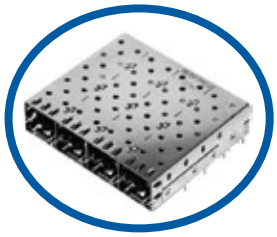

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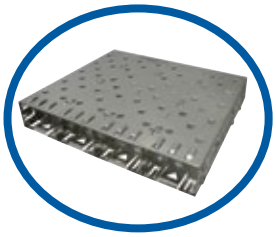


U77-A4113-0100

Specification Highlights

The interconnect system is comprised of a cage assembly which is used with 20-position SFP connectors complying with MSA Agreement INF-8074i.

General Characteristics
- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364

Mechanical Characteristics
- Accepts Multiple Transceivers per INF-8074i
- Compliant Press-Fit Pins or Solder Tails (1x1 Cages)
- Durability: 250 Mating Cycles min

Electrical Characteristics
- Hot Swappable
- Operating Voltage: 3.3 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 70 mΩ max
- Spring Fingers for Superior EMI Grounding

Packaging
- Tape and Reel Packaging: Connector or Cage
- Tray Packaging: Cage of all Sizes
- Bulk Packaging: Dust Cover

Materials
- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel or Tin
  - Light Pipe: Optical Grade Polycarbonate
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
  - EMI Ground Tabs: Stainless Steel
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Gold or Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating
- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations (Rows x Ports per Row)
- 1x1
- 1x2
- 1x4
- 1x6

Options
- Dust Cover
- Light Pipe
- Heat Sink (Standard Fin for Final Cage Combo)
- Enhanced EMI Performance Cage

U77-C6114-2011

U77-E1128-2001

Ordering Information

SFP Connector

UE75 - A 20 - X 0 0 X X

UE75 — SERIES DESIGNATION (RoHS)

A — STYLE
- **A** - R/A Single Surface Mount Connector

20 — NUMBER OF POSITIONS
- **20** - 20 Positions

X — CONTACT PLATING
- **2** - 30 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **3** - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
- **5** - 15 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **6** - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

0 — OPTION 1
- **0** - Standard

0 — OPTION 2
- **0** - Standard

X — OPTION 3
- 0 - Standard

X — PACKAGING
- **J** - Tape and Reel Packaging (480 per Reel)
- **T** - Tape and Reel Packaging (500 per Reel)

SFP Cage

U77 - X X X X X - X X X X

U77 — SERIES DESIGNATION

X — STYLE
- **A** - One Row
- **C** - One Row Cage; Light Pipe Combo (on Top)
- **E** - One Row Cage; Heat Sink Combo
- **F** - One Row Cage; 1 degree Angle (For 1x1 Only)

X — NUMBER OF PORTS IN ROW
- **1** - Single in Row
- **2** - Inline 1x2
- **4** - Inline 1x4
- **6** - Inline 1x6

X — CHASSIS GROUNDING
- **1** - Metal Grounding Tabs
- **2** - Inner and Outer Flexible Spring Fingers

X — HEAT SINK / LIGHT PIPE OPTION
- **1** - No Heat Sink / Light Pipe
- **2** - Heat Sink
- **3** - Light Pipe (for 1xN Cage Only)

X — PCB MOUNTING OPTION
- **X** - Various Options Available
  Consult Sales or Website for Details

X — PLATING
- **1** - Bright Tin (for Wave Solder)
- **2** - Nickel
- **3** - Matte Tin (for Reflow 245 degrees)

X — DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

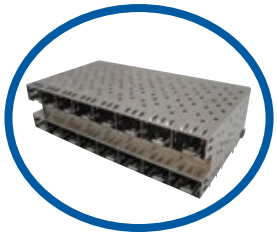
X — OPTION 1
- **0** - Standard
- **1** - Cage With Light Pipe on Top
- **8** - Cage with Half Moon Mid G-Pins

X — PACKAGING
- **1** - Tray Packaging (ACC Re-Packed)
- **T** - Tape and Reel Packaging (for 1x1 Only)

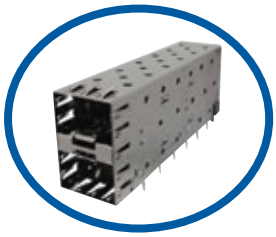
SFP 2xN

Amphenol's SFP interconnect system consists of a 20-position connector enclosed in a metal cage mounted to a host PCB.

Amphenol's stacked SFP combos are rated up to 6 Gbps. The connector accepts multiple transceivers per INF-8074i and combines, transmits, and receives functions in a low cost, compact, and flexible format. The cages have a two-piece construction with enhanced transceiver mating tabs available in a press-fit version or a solder tail version. Longer and shorter pins are available as custom options. Stacked versions (2xN) consist of a 2-row cage with integrated 2-row connectors.



UE78-B8126-00321



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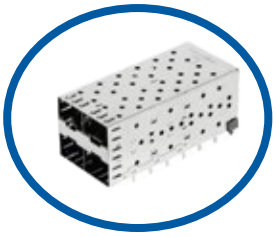


UE78-B2127-00321

Specification Highlights

The interconnect system is comprised of a cage assembly which is used with 20-position SFP connectors complying with MSA Agreement INF-8074i.

General Characteristics

- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364

Mechanical Characteristics

- Accepts Multiple Transceivers per INF-8074i
- Compliant Press-Fit Pins or Solder Tails (1x1 Cages)
- Durability: 250 Mating Cycles min

Electrical Characteristics

- Hot Swappable
- Operating Voltage: 3.3 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 70 mΩ max
- Spring Fingers for Superior EMI Grounding

Packaging

- Tape and Reel Packaging: Connector or Cage
- Tray Packaging: Cage of all Sizes
- Bulk Packaging: Dust Cover

Materials

- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel or Tin
  - Light Pipe: Optical Grade Polycarbonate
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
  - EMI Ground Tabs: Stainless Steel
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Gold or Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations (Rows x Ports per Row)

- 2x1
- 2x2
- 2x4
- 2x5
- 2x6
- 2x8

Options

- Dust Cover
- Light Pipe
- Heat Sink (Standard Fin for Final Cage Combo)
- Enhanced EMI Performance Cage

UE86-K2127-10321

UE78-B4127-00321

Ordering Information

SFP 2xN Combo
(Cage / Connector)

UEXX - X X X 2 X - X X X X 1

UEXX — SERIES DESIGNATION
- **UE78** - Standard SFP Cage and Connector (RoHS)
- **UE86** - Standard SFP Cage and Connector with Light Pipes (RoHS)

X — STYLE
- **B** - Stacked Connector and Cage Combo (UE78 Series)
- **D** - 2xN, Small Light Pipe Openings (UE86 Series)
- **K** - 2xN, Large Light Pipe Openings (UE86 Series)
- **L** - 2xN, Low Profile Combo (No Light Pipe) (UE78 Series)

X — NUMBER OF PORTS IN ROW
- **1** - 2x1
- **2** - 2x2
- **4** - 2x4
- **5** - 2x5
- **6** - 2x6
- **8** - 2x8

X — EMI SHIELDING
- **1** - Standard
- **2** - Bottom Mylar Tape, No Mid Ground Pins
- **3** - No Mid Ground Pins

2
- **2** - Standard

PACKAGING — 1
- **1** - Tray Packaging (Stacked)

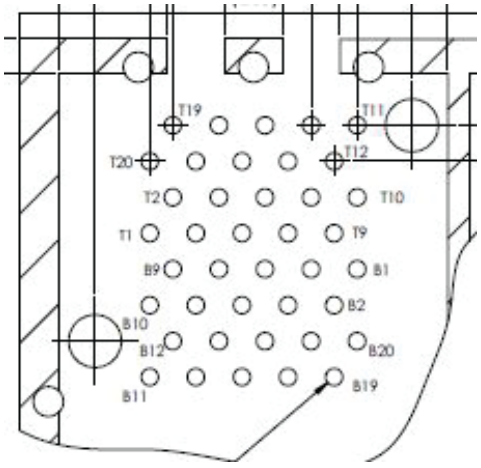
X — PLATING OPTION: CAGE
- **1** - Bright Tin (for Wave Soldering)
- **2** - Nickel
- **3** - Matte Tin (for SMT Soldering)

X — PLATING OPTION: CONNECTOR
- **X** - Various Options Available
  Consult Sales or Website for Details

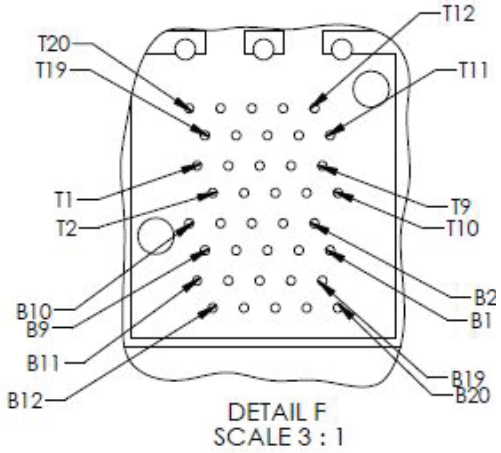
X — DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

X — HEAT SINK / LIGHT PIPE OPTION
- **0** - No Heat Sink or Light Pipe
- **X** - Various Options Available
  Consult Sales or Website for Details

X — PCB MOUNTING OPTION
- **7** - Standard
- **X** - Various Customer Specific Options Available
  Consult Sales or Website for Details



UE78 Series Footprint



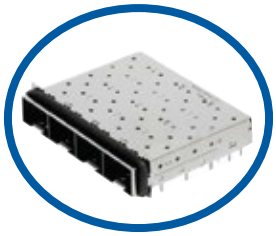
UE86 Series Footprint

ExpressPort™ SFP+ 1xN

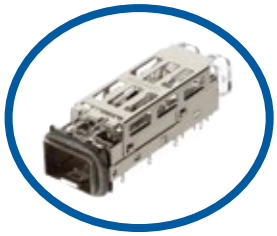
UE76-A20-3010T

Amphenol's ExpressPort™ SFP+ 1xN connector, when combined with the ExpressPort™ SFP+ cage, provides data transfer speeds of up to 16 Gbps. The design of the ExpressPort™ SFP+ connector minimizes impedance discontinuities and reflections at high data rates, and provides a 10 to 20 dB improvement in Near-End Crosstalk.

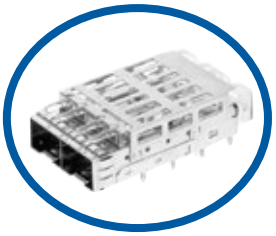
Amphenol's unique ExpressPort™ SFP+ cage construction features EMI shielding available in the form of metal spring fingers or elastomeric gaskets. These cages also eliminate ventilation holes near the front of the cage to prevent potential catch points for the mating module EMI springs. Additional features available include lightpipes (which can be purchased with cages or separately), heat sinks, and other custom features.



U77-A441M-2081



U77-C1419-2001



U77-C261M-2081

Specification Highlights

The interconnect system is comprised of a cage assembly which is used with 20-position SFP+ connectors complying with SFF-8081 and SFF-8083. Ganged cages comply with industry standard SFF-8433.

General Characteristics

- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364

Mechanical Characteristics

- Accepts Multiple Transceivers per SFF-8431
- Compliant Press-Fit Pins or Solder Tails (for 1x1 Cages)
- Durability: 250 Mating Cycles min

Electrical Characteristics

- Hot Swappable
- Operating Voltage: 3.3 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 70 mΩ max

Packaging

- Tape and Reel Packaging: Connector or 1x1 Cage
- Tray Packaging: Cage of all Sizes
- Bulk Packaging: Dust Cover

Materials

- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel or Tin
  - Light Pipe: Optical Grade Polycarbonate
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Gold or Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations (Rows x Ports per Row)

- 1x1
- 1x2
- 1x3
- 1x4
- 1x6

Options

- Dust Cover
- Round Light Pipe
- Heat Sink
- EMI Shielding
  - Metal Spring Fingers
  - Conductive Elastomeric Gasket

U77-C461M-2081

UE76-A20-3000

Ordering Information

ExpressPort™ SFP+ Connector

UE76 - A 20 - X X X X X

UE76 — SERIES DESIGNATION (RoHS)

A — STYLE
- **A** - R/A Single Surface Mount Connector

20 — NUMBER OF POSITIONS
- **20** - 20 Positions

X — CONTACT PLATING
- **2** - 30 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **3** - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
- **5** - 15 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **6** - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

X — OPTION 1
- **0** - Standard
- **6** - 25 Gbps

X — OPTION 2
- **0** - Standard
- **1** - Resonance Cancelation Features

X — OPTION 3
- **0** - Standard

X — PACKAGING
- **J** - Tape and Reel Packaging (480 per Reel)
- **T** - Tape and Reel Packaging (500 per Reel)

ExpressPort™ SFP+ Cage

U77 - X X X X X X - X X X X

U77 — SERIES DESIGNATION (RoHS)

X — STYLE
- **A** - One Row
- **C** - One Row Cage; Light Pipe Combo (on Top)
- **E** - One Row Cage; Heat Sink Combo (Fin)
- **F** - One Row Cage; 1 degree Angle (1x1 Only)

X — NUMBER OF PORTS IN ROW
- **1** - Single in Row
- **2** - Inline 1x2
- **3** - Inline 1x3
- **4** - Inline 1x4
- **6** - Inline 1x6

X — CHASSIS GROUNDING
- **3** - Metal Spring Fingers (No Bottom Latch Cover)
- **4** - Elastomeric Gasket
- **6** - Metal Spring Fingers (1 Piece Design Bottom Latch Cover)

X — HEAT SINK / LIGHT PIPE OPTION
- **1** - No Heat Sink / Light Pipe Option
- **2** - Heat Sink Option
- **3** - Light Pipe Option (for 1xN Cage Only)

X — PCB MOUNTING OPTION
- **X** - Various Options Available
  Consult Sales or Website for Details

X — PLATING
- **1** - Bright Tin (for Wave Solder)
- **2** - Nickel
- **3** - Matte Tin (for Reflow 245 degrees)

X — DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

X — OPTION 1
- **0** - Standard
- **7** - Cage with Extra Bottom Spring Fingers, No Bottom Mid G-Pins
- **8** - Cage with Half-Moon Mid G-Pins
- **9** - Cage with Extra Bottom Spring Fingers and Half Moon Mid G-Pins

X — PACKAGING
- **1** - Tray Packaging (ACC Re-Packed)
- **T** - Tape and Reel Packaging (for 1x1 Only)

Telephone: (416)-291-4401
Website: www.amphenol-highspeed.com
Email: cages@amphenol-highspeed.com

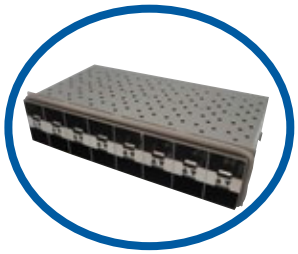
All specifications are subject to change without notice.

ExpressPort™ SFP+ 2xN

UE86-D2527-20321

Amphenol's ExpressPort™ SFP+ 2xN Combo provides data transfer speeds of up to 16 Gbps per port. ExpressPort™ SFP+ 2xN Combos consist of an integrated stacked connector system and a cage with compliant press-fit pins.

Amphenol's unique ExpressPort™ SFP+ cage construction features EMI shielding available in the form of an elastomeric gasket or metal spring fingers. These cages also eliminate ventilation holes near the front of the cage to prevent potential catch points for the mating module EMI springs.



UE86-K8427-20321

UE86-D1427-10321

UE86-D4627-10321

Specification Highlights

The interconnect system is comprised of a 2-row stacked, 20-position, 0.8 mm pitch SFP+ connector and cage assembly as one unit with all press-fit construction.

General Characteristics
- RoHS Compliant
- Press-fit Cage and Connector Combo for min 1.57 +/- 10% mm (0.0625") PCB Thickness
- Industry Standard EIA-364

Mechanical Characteristics
- Card Entry Slot Accepts 1.0 mm Thick Integrated Circuit Cards
- Durability: 250 Mating Cycles min

Electrical Characteristics
- Hot Swappable
- Operating Voltage: 3.3 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 70 mΩ max

Packaging
- Tray Packaging: Cage and Connector Assembly
- Bulk Packaging: Dust Cover

Materials
- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel or Tin
  - Light Pipe: Optical Grade Polycarbonate
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating
- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations (Rows x Ports per Row)
- 2x1
- 2x2
- 2x4
- 2x5
- 2x6
- 2x8

Options
- Dust Cover
- Light Pipe
  - 4 Light Pipes per 2x1
  - 2 Inner Light Pipes per 2x1
  - 2 Outer Light Pipes per 2x1
- EMI Shielding
  - Metal Spring Fingers
  - Conductive Elastomeric Gasket

UE86-K2427-10321

UE86-K442C-20321

Ordering Information

ExpressPort™ SFP+ 2xN Combo
(Cage / Connector)

UE86 - X X X X X - X X X X 1

UE86 SERIES DESIGNATION
UE86 - RoHS SFP+ Cage and Connector (Lead Free)

X STYLE
B - 2xN, No Light Pipe
D - 2xN, Small Light Pipe Openings
K - 2xN, Large Light Pipe Openings
L - 2xN, Low Profile Combo (No Light Pipe)

X NUMBER OF PORTS IN ROW
1 - 2x1
2 - 2x2
4 - 2x4
5 - 2x5
6 - 2x6
8 - 2x8

X CHASSIS GROUNDING
4 - Elastomeric Gasket
5 - Elastomeric Gasket, Bottom Mylar Tape
6 - Metal Spring Fingers

X MOUNTING TYPE: CONNECTOR
2 - Standard Press Fit Pins (12 Gbps)
5 - Small Press Fit Pins for High Speed Termination (16 Gbps)

PACKAGING 1
1 - Tray Packaging (Stacked)

PLATING OPTION: CAGE X
1 - Bright Tin
2 - Nickel
3 - Matte Tin

PLATING OPTION: CONNECTOR X
X - Various Options Available
Consult Sales or Website for Details

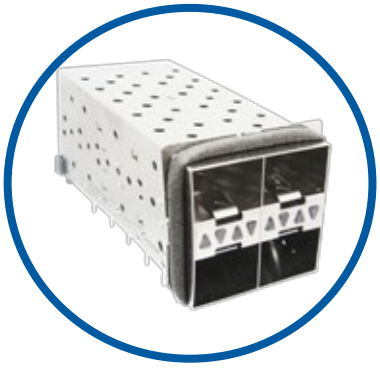
DUST COVER OPTION X
0 - Without Dust Cover
D - With Dust Cover (Shipped Loose)

LIGHT PIPE OPTION X
0 - No Light Pipe
1 - 4 Light Pipes per 2x1
2 - 2 Inner Light Pipes per 2x1
3 - 2 Outer Light Pipes per 2x1

MOUNTING TYPE: CAGE X
7 - Standard 2xN Cage
C - Enhanced EMI Cage

UltraPort™ SFP+ Stacked

The UltraPort SFP+ interconnect system is comprised of a 20-position hot swappable I/O connector enclosed in a metal cage mounted to a host PCB. It supports 32Gbps applications with a backward compatibility for next generation Ethernet and Fibre Channel applications. Stacked versions (2XN) consist of a 2-row cage with integrated connectors. The entire assembly is press-fit pin compliant.



Specification Highlights

The UltraPort SFP+ interconnect system is comprised of a 20-position, 2-row integrated connector.

General Characteristics
- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364
- Packaging: Tape and Reel
- Halogen Free

Mechanical Characteristics
- Durability: 250 Mating Cycles min

Electrical Characteristics
- Hot Swappable
- Allows Module Swapping
- Operating Voltage: 30V AC
- Operating Current: 0.5 A
- Spring Contacts for Superior EMI Grounding
- Contact Resistance: 10 mΩ max
- Insulation Resistance: 1000MΩ min
- DWV: 300V DC for 60 Seconds
- Differential Impedance: 100Ω+/-10Ω

Packaging
- Tray Packaging: Cage and Connector Assembly

Materials
- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel
  - Spring Clip: Copper Alloy, Nickel Plating
- Connector
  - Contact Base Material: Gold
  - Contact Plating: Nickel on Mating Area,
  - Tin-Lead Over Nickel on Termination
  - Housings: Glass Reinforced, Thermoplastic
  - UL94V-0 Rated

Temperature Rating
- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to 105°C

Configurations (Rows x Ports per Row)
- 2x1
- 2x2
- 2x4
- 2x5
- 2x6
- 2x8

Options
- Thermoplastic Dust Covers

Ordering Information

UltraPort™ Stacked SFP+

UE86 - 3G X X 2 0 - X 0 X 6 1

UE86 — **SERIES DESIGNATION**
UE86 -Standard SFP+ Cage and Connector with Light Pipes (RoHS)

3G — **STYLE**
3G- 3rd generation 25/32G applications

X — **NUMBER OF PORTS IN ROW**
1 - 2x1
2 - 2x2
4 - 2x4
5 - 2x5
6 - 2x6
8 - 2x8

X — **CHASIS EMI OPTIONS**
4-Gasket
6-Spring Finger

TRAY PACKAGING — 1
1 - Tray packaging (stacked)

PLATING OPTION: CAGE — 6
6 - Pre-Plating

PLATING OPTION: CONNECTOR — X
X - Various Options Available
Consult Sales or Website for Details

DUST COVER OPTIONS — X
0 - Without Dust Covers
D - With Dust Covers

LIGHT PIPE OPTIONS — X
X - Various Options Available
Consult Sales or Website for Details

MOUNTING TYPE: CAGE — 0
0 - Standard Cage

MOUNTING TYPE: CONNECTOR — 2
2 - Standard Press Fit Pins

UltraPort™ SFP+ SMT Connector and Cages

The UltraPort SFP+ interconnect system is comprised of a 20-position hot swappable I/O connector enclosed in a metal cage mounted to a host PCB. It supports 32Gbps applications with a backward compatibility for next generation Ethernet and Fibre Channel applications. Amphenol's UltraPort SFP+ connector shares the same exceptional mating interface and EMI cage dimensions as the SFP+ form factor. The cages are built for use with several board thicknesses and assembly processes to accommodate server and switch applications with great cost savings. The connector accepts multiple transceivers per INF-8081 and combines, transmits, and receives functions in a low cost, compact and flexible format. We offer a wide variety of cage configurations, which have a two-piece construction with enhanced transceiver mating tabs available in press-fit or solder tail versions.

U77-3GA6X1M-X091

UE76-3G20-X600T

Specification Highlights

The UltraPort SFP+ interconnect system is comprised of a 20-position hot swappable I/O connector. It supports 32 Gbps applications with a backward compatibility for next generation Ethernet and Fibre Channel applications

General Characteristics
- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364
- Halogen Free

Electrical Characteristic
- Operating voltage: 30 V AC
- Rated current: 0.5 A
- Dielectric withstanding voltage: 300V AC
- Insulation resistance: 1000 MΩ
- Differential impedance: 100Ω +/-10Ω

Packaging
- Tape and Reel

Materials
- Cage:
  - Base Material: Copper alloy
  - Plating: Nickel plating, bright tin or matte tin over nickel
- Connector:
  - Base Material: Copper alloy
  - Plating: Gold over Nickel in contact areas
  - Housing: Lead-free solder reflow process compatible thermoplastic, UL 94 V-0 rated

Temperature Rating
- Operating temperature: -55° to +85°
- Storage temperature: -55° to +85°

Configurations (Rows x Ports/Row)
- 1x1
- 1x2
- 1x4
- 1x6

UltraPort™ SFP+ Connector

UE76 - 3G 20 - X 6 0 0 T

- **UE76** — SERIES DESIGNATION (RoHS)
- **3G** — 3rd Generation- 25/32G Ganged Connector
- **20** — 20 SMT connector
- **X** — PLATING
  - **2-** 0.76um Gold at mating area gold flash in termination
  - **3-** 0.76um Gold at mating area gold flash 3.0-7.62um matte tin in termination
  - **5-** 0.38um Gold at mating area gold flash in termination
  - **6-** 0.38um gold at mating area 3.0-7.62um matte tin in termination
- **6** — OPTION 1
- **0** — OPTION 2
- **0** — OPTION 3
- **T** — PACKAGING
  - T- Tape and reel packaging

UltraPort™ SFP+ Cage

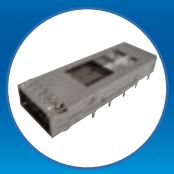
U77 - 3G A X X X X - X X X X

- **U77** — SERIES DESIGNATION (RoHS)
- **3G** — 3rd Generation- 25/32G Ganged Cage
- **A** — STYLE
  - A - One Row
- **X** — NUMBER OF PORT IN ROW
  - N-1XN(N=1,2,3,4,6,8)
- **X** — EMI CHASSIS GROUNDING
  - 4 - Gasket
  - 6 - Spring Finger
- **X** — HEAT SINK AND LIGHT PIPE OPTION
  - 1- No Heat Sink/ Light Pipe
- **X** — PLATING OPTIONS FOR CAGE
  - 2-Nickel Plating
  - 3-Matte Tin Plating
  - 6-Silver-Nickel Material (No Plating)
- **X** — PCB MOUNTING OPTION
  - X - Various Options Available
  - Consult Sales or Website for Details
- **X** — DUST COVER OPTION
  - 0 - Without Dust Covers
  - D - With Dust Covers
- **X** — OPTION 1
  - 7 - Cage with Extra Bottom Spring Fingers, No Bottom Mid G-Pins
- **X** — PACKAGING
  - 1-Tray Packaging
  - T - Tape and Reel Packaging

Telephone: (416)-291-4401 Website: www.amphenol-highspeed.com Email: cages@amphenol-highspeed.com

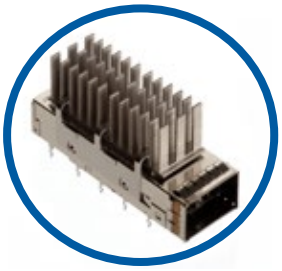
All specifications are subject to change without notice.

ExpressPort™ QSFP+ / QSFP

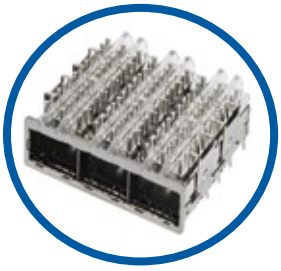


U90-C101-1000

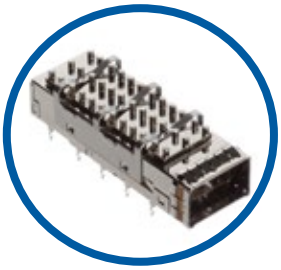
The ExpressPort™ QSFP+/QSFP interconnect system is comprised of a 38 position 0.8mm picth SMT connector, and a press-fit cage desgined to comply with the Quad Small Form-factor Pluggable(QSFP) Transciever inteneded for extral connections. High speed serial interconnect application include clusters, servers, and storage devices.



U90-XXX1-1XXX



U90-G351-101A



U90-XXX1-1XXX

Specification Highlights

The QSFP interconnect system is comprised of a press-fit cage assembly which is used with 38-position connectors complying with QSFP Transceiver Specifications.

Signal Integrity Characteristics
QSFP, ExpressPort™ QSFP+

- Return Loss: -12 dB
- Near-End Isolation: -30 dB (frequencies up to 3 GHz)
- Insertion Loss: -1 dB max
- Rise Time for Impedance Measurement: 35 ps
- Within Pair Skew: 1 ps
- NEXT: ≤ 2%

Packaging

- Tape and Reel Packaging: Connector or 1x1 Cage
- Tray Packaging: Cage of all Sizes
- Bulk Packaging: Dust Cover

Temperature Rating

- Operating Temperature: -40°C to +85°C
- Storage Temperature: -40°C to +85°C

Configurations (Rows x Ports per Row)

- 1x1 • 1x2 • 1x3 • 1x4 • 1x6

Options

- Dust Cover
- Light Pipe
  - Round 1.4 mm
  - Square 2.6x2.6 mm
- Heat Sink
- Cage Design
  - Through or Behind the Bezel

Materials

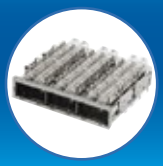
- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel or Tin
  - Light Pipe: Optical Grade Polycarbonate
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Terminations and Grounding Tabs
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Mechanical Characteristics

- Cage is Keyed According to QSFP MSA
  - QSFP+: SFF-8436
  - E-Series: SFF-8672
- Durability: 250 Mating Cycles min
- Connector Insertion Froce: 40 N max
- Connector Withdrawal Force: 30 N max

Electrical Characteristics

- Hot Swappable
- Operating Voltage: 30V
- Operating Current: 0.5A
- Differential Impedance: 100 Ω +/- 10Ω
- DWV: 300 V AC
- Insulation Resistance: 1000MΩ min
- Contact Resistance: 70 mΩ max



U90-G351-101A

FS1-R38-2000

Ordering Information

Connectors:

QSFP
ExpressPort™ QSFP+

FS1-X38-X0XX-XX

FS1 — **SERIES DESIGNATION (RoHS)**

X38 — **R38** - 38 Position Connector (QSFP 10G, ExpressPort™ QSFP+ 12G+ & 16G)

X — **PLATING**
- **2** - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
- **3** - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

0 — **0** - Standard

XX — **SPECIAL**

QSFP+ (12 Gbps and Up)
- **00** - No Resonance Dampening, No Hold Down Tabs
- **01** - No Resonance Dampening, Hold Down Tabs

QSFP+ (16 Gbps)
- **10** - Resonance Dampening, No Hold Down Tabs
- **11** - Resonance Dampening, Hold Down Tabs
- **10** - Resonance Dampening, No Hold Down Tabs

XX — **OPTIONS**
- **00** - QSFP Connector
- **0A** - Connector with Hold Down Tabs
- **A2** - QSFP+ Connector

Cages:

QSFP
ExpressPort™ QSFP+

U90-XXXX1-1XXX

U90 — **SERIES DESIGNATION (RoHS)**

X — **STYLE**
- **A** - One Row Cage 0°, Through the Bezel (No Light Pipe)
- **C** - One Row Cage 1°, Through the Bezel (1x1 Only, No Light Pipe)
- **D** - One Row Cage 0°, Hybrid with Elastomeric Gasket
- **G** - One Row Cage 0°, Behind the Bezel
- **H** - One Row Cage 0°, Through the Bezel with Optional Light Pipe
- **K** - One Row Cage 0°, Through the Bezel with No Heat Sink Opening
- **L** - One Row Cage 0°, No Pins on Back Wall
- **P** - One Row Cage 0°, Behind the Bezel with Low Profile Heat Sink and Clip
- **R** - One Row Cage 0°, Through the Bezel with Low Profile Heat Sink
- **T** - One Row Cage 0°, Through the Bezel with Low Profile Heat Sink and Clip and Optional Light Pipe

X — **NUMBER OF PORTS IN ROW**
- **1** - 1x1
- **3** - 1x3
- **4** - 1x4
- **6** - 1x6

X — **HEAT SINK OPTION**
- **1** - No Heat Sink or Clip Shipped
- **2** - Fin Style (Black Oxide) Heat Sink and Clip (H = 6.5 mm)
- **3** - Fin Style (Black Oxide) Heat Sink and Clip (H = 4.2 mm)
- **4** - Fin Style (Black Oxide) Heat Sink and Clip (H = 13.5 mm)
- **5** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 6.5 mm)
- **6** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 4.2 mm)
- **7** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 13.5 mm)
- **D** - Pin-Fin Style (Black Oxide) Heat Sink and Clip (H = 6.5 mm)
- **E** - Pin-Fin Style (Black Oxide) Heat Sink and Clip (H = 4.2 mm)
- **F** - Pin-Fin Style (Black Oxide) Heat Sink and Clip (H = 13.5 mm)
- **N** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H = 6.5 mm)
- **P** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H = 4.2 mm)
- **R** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H = 13.5 mm)

1 — **APPLICATION**
- **1** - Press Fit Pins (2.5 mm Long)

1 — **PLATING**
- **1** - Nickel

X — **DUST COVER OPTION**
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

X — **LIGHT PIPE OPTION**
- **0** - Without Light Pipe
- **1** - Round 1.4 mm Outlet Light Pipe, No EMI gasket
- **3** - Square 2.6x2.6 mm Outlet Light Pipe, No EMI gasket

X — **PACKAGING**
- **1** - Tray Packaging
- **T** - Tape and Reel Packaging (1x1 Only)
- **A** - Tray Packaging Heat Sink and Clip or Light Pipe Shipped Assembled

Telephone: (416)-291-4401 Website: www.amphenol-highspeed.com Email: cages@amphenol-highspeed.com

All specifications are subject to change without notice.

ExpressPort™ QSFP+ (Stacked)

The QSFP+ Stacked Combo interconnect system consists of a 2-row, 38 position, 0.8 mm pitch connector designed to be compatible with the Quad Small Form-factor Pluggable (QSFP) Transceiver Specifications. The connector system is capable of data rates up to 16 Gbps per channel (four channels) and is intended for external connections (38 positions per port). High speed serial interconnect applications include clusters, servers, and storage devices.

U90-B105-4061-120

U90-B105-4061-120
(front view)

Specification Highlights

The interconnect system is comprised of a 2-row, 38-position, 0.8 mm pitch connector and cage assembly as one unit complying with SFF-8436.

General Characteristics

- RoHS Compliant
- Industry Standard Footprint
- Press-fit Cage and Connector Combo for min 1.57 mm (0.0625") PCB thickness

Mechanical Characteristics

- Durability: 250 Mating Cycles min
- Insertion Force: 40 N max
- Withdrawal Force: 30 N max

Electrical Characteristics

- Operating Voltage: 30 V
- Operating Current: 0.5 A
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 80 mΩ max

Packaging

- Tray Packaging: Cage of all Sizes

Materials

- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel
  - Light Pipe: Optical Grade Polycarbonate
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Terminations and Grounding Tabs
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -40°C to +85°C
- Storage Temperature: -40°C to +85°C

Configurations (Rows x Ports per Row)

- 2x1
- 2x2
- 2x3
- 2x4
- 2x6

Options

- Dust Cover
- Heat Sink
- Light Pipe
- EMI Shielding

Stacked QSFP+

U90-BXXX-4XX1-XX0

U90 SERIES DESIGNATION (RoHS)

B STYLE
- **B** - Standard

X NUMBER OF PORTS IN ROW
- **1** - 2x1
- **2** - 2x2
- **3** - 2x3
- **4** - 2x4
- **6** - 2x6

X HEAT SINK OPTION
- **0** - No Heat Sink or Clip Shipped
- **X** - Options Available Upon Request
  Contact Sales for Details

X APPLICATION
- **5** - Press Fit Pins (2 mm Long)
- **X** - Options Available Upon Request
  Contact Sales for Details

4 CAGE AND CONNECTOR CONTACT PLATING
- **4** - 0.76 µm Min. Gold over 1.27-3.81 µm of Nickel on Mating Area; 0.381-1.52 µm of Matte Tin Over 1.27-3.81 µm of Nickel on Press Fit Tail Area; Nickel Plating for Cage

X DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

X CONNECTOR FOOT PRINT
- **0** - Standard

X VENT HOLES AND EMI COVER
- **0** - With Large Vent Holes and EMI Cover
- **1** - With Large Vent Holes, No EMI Cover
- **2** - With Small Vent Holes and EMI Cover
- **3** - With Small Vent Holes, No EMI Cover
- **4** - With Rectangular Vent Holes and EMI Cover
- **5** - With Rectangular Vent Holes, No EMI Cover
- **6** - With Large Vent Holes and Heat Sink

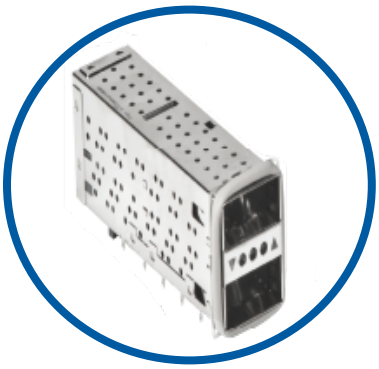
X EMI GASKET
- **1** - Chomerics 1273 Conductive Elastomer
- **2** - Chomerics S6305 Conductive Elastomer
- **3** - Through the Bezel

1 PACKAGING
- **1** - Tray Packaging

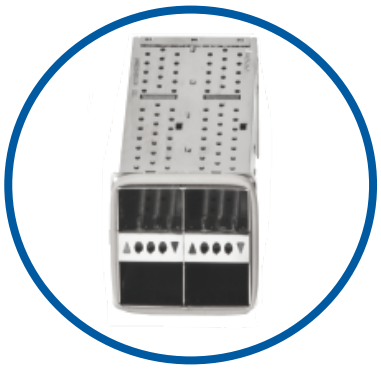
X LIGHT PIPES OPTION
- **6** - With Light Pipes (Triangular Outlet); Left Arrow Pointing Bottom Outlet and Right Arrow Pointing Top Port
- **7** - Without Light Pipes
- **8** - With Light Pipes; Left Arrow Pointing Top Port and Right Arrow Pointing Bottom Port

UltraPort™ QSFP+ Stacked

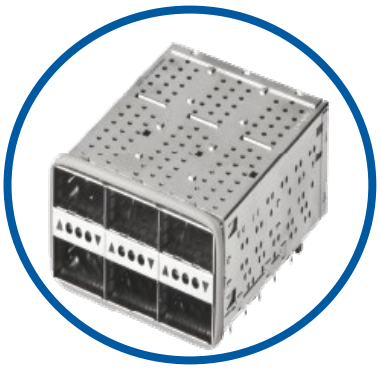
The UltraPort™ QSFP+ interconnect system is comprised of a 38-position, 0.8mm pitch connector built for use in high speed serial applications. Each port offers 4 channels to increase port density which contributes to more board real estate and immense cost savings. High speed serial interconnect applications include clusters, servers, and storage devices.



P-U95-Z105-XXX1-XX1



P-U95-Z205-XXX1-XX1



P-U95-Z305-XXX1-XX1

Specification Highlights

The UltraPort™ QSFP+ interconnect system is comprised of a 38-position, 0.8mm pitch connector built for use in high speed serial applications and supports 32 Gbps per channel. Each port offers 4 channels to increase port density.

General Characteristics

- RoHS Compliant
- Industry Standard Footprint
- Belly-to-belly Mount
- Combos are tray packed
- Dust cover for front face is available (bulk packed)

Connector Mechanical Characteristics

- Insertion force: 40 N maximum
- Withdrawal force: 30 N maximum
- Durability: 250 mating cycles

Connector Electrical Characteristics

- Maximum current: 0.5A per contact
- Maximum voltage: 30V per contact
- LLCR: 80 mΩ max
- Insulation Resistance: 1000 MΩ at 100V DC for 60 seconds
- DWV: 300V minimum DC for 60 seconds

Available Configurations (Rows x Ports/Row)

- 2x1,2x2,2x3,2x4

Material Requirements

Electrical connector chicklets:

- Contact area to have 15 µ" and 30 µ" gold option, over 50 µ" nickel on mating area
- Press fit termination to have 100-300 µ" nickel
- Molding body LCP

Housing: Glass-reinforced thermoplastic, UL 94 V-0 rated
Cage: Copper alloy, tin over nickel or nickel only plating

Temperature Rating

Temperature rise: Meets the requirement of 30° C ΔT
Operating and storage temperature: -40° to +85° C

Available Options

- Various EMI Shielding Options
- Heat Sinks
- Light Pipes
- Dust Covers
- Through and Behind the Bezel and Hybrid Cage Options

Supports Multiple Data Transfer Protocols

- Infiniband : 4x SDR/DDR/QDR/HDR
- 100 Gigabit Ethernet

UltraPort™ Stacked QSFP+

U95 - Z X 0 5 - X X X 1 - X X 1

U95 SERIES DESIGNATION (RoHS)

Z STYLE
Z-Standard

X NUMBER OF PORTS IN ROW
1 - 2x1
2 - 2x2
3 - 2x3
4 - 2x4
6 - 2x6

0 HEAT SINK OPTION
0 - No Heat Sink or Clip Shipped

5 APPLICATION
5 - Press Fit Pins (2 mm Long)

X CAGE AND CONNECTOR CONTACT PLATING
4 - 0.76 µm Min. Gold over 1.27-3.81 µm of Nickel on Mating Area; 0.381-1.52 µm of Matte Tin Over 1.27-3.81 µm of Nickel on Press Fit Tail Area; Nickel Plating for Cage

X DUST COVER OPTION
0 - Without Dust Cover
D - With Dust Cover

1 CONNECTOR FOOT PRINT
1-Standard

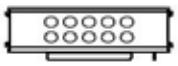
X VENT HOLES AND EMI COVER
0 - With Large Vent Holes and EMI Cover
2 - With Small Vent Holes and EMI Cover
4 - With Rectangular Vent Holes and EMI Cover

X EMI GASKET
1 - Chomerics 1273 Conductive Elastomer
2 - Chomerics S6305 Conductive Elastomer
3 - Through the Bezel

1 PACKAGING
1 - Tray Packaging

X LIGHT PIPES OPTION
6 - With Light Pipes (Triangular Outlet); Left Arrow Pointing Bottom Outlet and Right Arrow Pointing Top Port
7 - Without Light Pipes
8 - With Light Pipes; Left Arrow Pointing Top Port and Right Arrow Pointing Bottom Port

VENT HOLE FOR PART NUMBER U95-Z205-XX71-X01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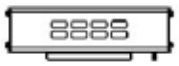
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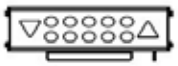
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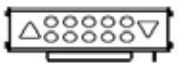
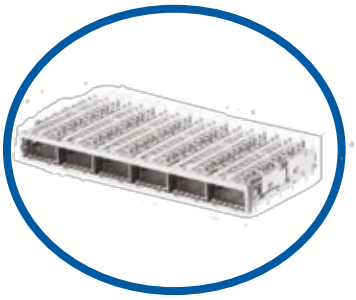

VENT HOLE FOR PART NUMBER U95-Z205-XX81-X21

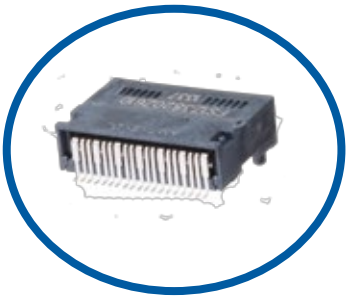
VENT HOLE FOR PART NUMBER U95-Z205-XX81-X41

UltraPort™ QSFP+ SMT Connector and Cages

The UltraPort™ QSFP+ interconnect system is comprised of a 38-position, 0.8mm pitch connector built for use in high speed serial applications. Each port offers 4 channels to increase port density which contributes to more board real estate and immense cost savings. The UltraPort™ QSFP+ connecter supports next generation 100G+ applications and transmits up to 40 Gbps per-serial-lane making it the fastest connector in the QSFP+ market. It features a stamped and formed contact design providing improved mechanical durability and resonance dampening features for superior performance. The design minimizes crosstalk and transmission line impedance discontinuity across the connector interface at speeds up to 32 Gbps.



U95-T6X1-1XXX



FS1-Z38-20Z6-10

U95-T1X1-1XXX

Specification Highlights

General Characteristics
- RoHS Compliant
- Industry Standard Footprint (SFF 8665)
- Belly-to-belly Mount

Available Configurations (Rows x Ports/Row)
- 1x1,1x2,1x3,1x4,1x6

Connector Mechanical Characteristics
- Insertion force: 40 N maximum
- Withdrawal force: 30 N maximum
- Durability: 300 mating cycles

Connector Electrical Characteristics
- Maximum current: 0.5A per contact
- Maximum voltage: 30V per contact
- LLCR: 80 mΩ max
- Insulation Resistance: 1000 MΩ at 100V DC for 60 seconds
- DWV: 300V minimum DC for 60 seconds

Available Options
- Various EMI Shielding Options
- Heat Sinks
- Light Pipes
- Dust Covers
- Through and Behind the Bezel and Hybrid Cage Options

Material Requirements

Contacts:
- Base material : Phosphor Bronze
- Contact Normal Force : 60g nominal
- Formed edge
- Plating :
  - Mating area : 30 microinches (0.76 µm) µ" min Gold over 50 µ" (1.27µm) min Nickel
  - Solder tails :100 microinches (2.54 µm) µ" min Tin over 50 µ" (1.27µm) min Nickel
- Housing: Black color, glass-reinforced, lead-free solder reflow process compatible thermoplastic, UL94V-0 rated
- Resonance dampening feature: Conductive polymer

Temperature Rating

Temperature rise: Meets the requirement of 30° C ΔT
Operating and storage temperature: -40° to +85° C

Signal Integrity
- Insertion loss : Max 1.0 dB at 16 GHz
- Return loss : Less than -10 dB at 18 GHz
- Common mode conversion : Lesss than
- 7.0 dB at 18 GHz
- NEXT (Near End Cross Talk) less than
- 50 dB range of 1MHz to 20GHz
- FEXT (Far End Cross Talk) less than
- 30 dB range of 1MHz to 20GHz

Connectors:

QSFP+

UltraPort™ QSFP+

FS1-Z38-X0Z6-10

FS1 SERIES DESIGNATION (RoHS)

Z38 Standard

X PLATING
- **2** - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
- **3** - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

0 - **0** - Standard

Z Standard

6 Standard

10 SPECIAL
- **10** - Resonance Dampening, No Hold Down Tabs

Cages:

QSFP+

UltraPort™ QSFP+

U95-TXX1-1XXX

U95 SERIES DESIGNATION (RoHS)

T STYLE
- **T** - One Row Cage 0°, Through the Bezel with Heat Sink and Clip and Optional LP

X NUMBER OF PORTS IN ROW
- **1** - 1x1
- **6** - 1x6

X HEAT SINK OPTION
- **1** - No Heat Sink or Clip Shipped
- **5** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 6.5 mm)
- **6** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 4.2 mm)
- **7** - Pin Style (Nickel Plated) Heat Sink and Clip (H = 13.5 mm)
- **N** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H = 6.5 mm)
- **P** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H = 4.2 mm)
- **R** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip (H =13.5 mm)
- **Y** - Extruded Custom Heat Sink for Front to Back Air Flow (Nickel Plated) and Clip (H=6.94 mm)
- **W** - Extruded Custom Heat Sink for Front to Back Air Flow (Nickel Plated) and Clip (H=8.72 mm)

1 APPLICATION
- **1** - Press Fit Pins (2.5 mm Long)

1 PLATING
- **1** - Nickel

X DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

X LIGHT PIPE OPTION
- **0** - Without Light Pipe
- **1** - Dual Barrel Light Pipe - Round Outlet
- **7** - Single Barrel Light Pipe -Round Outlet

X PACKAGING
- **1** - Tray Packaging (Light Pipe and/or Heat Sink Shipped Loose if Ordered)
- **A** - Tray Packaging (Light Pipe and/or Heat Sink Assembled to the Cage)

CXP

U91-A111-1001-30

Amphenol's CXP connector comes in a one-piece press-fit assmebly system with twelve channels of up to 20 Gbps, resulting in 240 Gbps of total bandwidth - the fastest and most dense I/O on the market today. This allows our CXP to go beyond the 100 Gigabit Ethernet IEEE 802.3ba and the Infiniband CXP12x QDR standards. It also enables pluggable copper or optical cables to increase the flexibility of system-level hardware for end users. The CXP interconnect system is ideal for network switches, routers, severs, and storage devices.

U91-A121-100A-30

U91-A121-100A-30
(bottom view)

U91-A1A1-100A-30

Specification Highlights

The CXP interconnect system is comprised of an 84 position, 2-row press-fit connector, and a cage assembly as one unit complying with SFF-8642.

General Characteristics
- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364

Mechanical Characteristics
- Insertion Force for an MSA Compliant Transceiver: 150 N max
- Unmating Force: 50 N max
- Durability: 250 Mating Cycles min

Electrical Characteristics
- Hot Swappable
- Operating Voltage: 30 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min

Packaging
- Tray Packaging: Cage and Connector Assembly
- Bulk Packaging: Dust Cover

Materials
- Cage
  - Base Material: Zinc Alloy
  - Plating: Nickel
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Cage Cover: Stainless Steel
  - Mounting Screw: AISI 1010 Steel
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating
- Operating Temperature: -40°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations
- 1x1
- Custom Solutions Available

Options
- Dust Cover
- Heat Sink
- EMI Shielding
  - Conductive Elastomeric Gasket
  - Metal Spring Fingers
- Keying
  - Key #1 (Left) InfiniBand™
  - Key #2 (Right) Ethernet

Dust Cover

Ordering Information

CXP Combo

(Cage / Connector)

U91 - X 1 X X - 1 X X X - 3 X

U91 — **SERIES DESIGNATION (RoHS)**

X — **STYLE**
- **A** - One Row 0°, Standard Footprint
- **D** - One Row 0°, Enhanced Footprint
- **E** - One Row 0°, Long Connector, Belly-to-Belly Application
- **F** - One Row 0°, Short Connector, Belly-to-Belly Application

1 — **NUMBER OF PORTS IN ROW**
- **1** - 1x1

X — **HEAT SINK OPTION**
- **1** - No Heat Sink or Clip Shipped
- **2** - Square Pin (Black Oxide) Heat Sink, and Clip
- **5** - Round Pin (Black Oxide) Heat Sink, and Clip
- **A** - Square Pin (Nickel Plated) Heat Sink, and Clip
- **D** - Round Pin (Nickel Plated) Heat Sink, and Clip
- **G** - Square Pin (Chromate Passivation) Heat Sink, and Clip
- **K** - Round Pin (Chromate Passivation) Heat Sink, and Clip

X — **KEYING**
- **0** - No Key
- **1** - Key #1 (Left) InfiniBand™
- **2** - Key #2 (Right) Ethernet

1 — **CAGE PLATING**
- **1** - Nickel

MOUNTING SCREWS — **X**
- **0** - No Screws
- **1** - With Mounting Screws (Standard Length of M2 x 0.4, 6 mm long)

CONTACT PLATING — **3**
- **3** - Mating Area Plating 0.76 µm Gold Over 1.27 µm to 3.81 µm of Nickel; Press Fit Tail Area Plating 0.381 µm to 1.52 µm of Matte Tin Over 1.27 µm to 3.81µm of Nickel

PACKAGING — **X**
- **1** - Tray Packaging
- **A** - Tray Packaging: Heat Sink and Clip Shipped Assembled

LIGHT PIPE OPTION — **X**
- **0** - Without Light Pipe
- **X** - Various Options Available Consult Sales or Website for Details

DUST COVER OPTION — **X**
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

Mini-SAS

FS2-SF2-16C1

The Mini-SAS external I/O connector system consists of a die-cast metal cage and a Compact MultiLane SMT Connector, featuring proven "cut edge" style contacts. Providing four serial send/receive channels per port, this connector system is designed to satisfy the needs for gigabit serial data transmission applications with signal speeds across the connector interface of 6 Gbps per channel.

The cage is mounted separately to the body so that the stress imposed by insertion and removal of the cable plug does not affect the signal/body solder joints. The connector is available with unique solder hold-down tabs designed to provide additional mechanical robustness in demanding applications.

FS1-SF4-14E1

FS2-S02-14F1

FS1-S02-14E2-LP

Specification Highlights

The Mini-SAS interconnect system is comprised of a cage assembly which is used with 26-position, 0.8mm pitch connectors complying with SFF-8086 and SFF-8088.

Mechanical Characteristics

- Co-Planarity Specification: 0.1 mm
- Connector Insertion Force: 55.5 N max
- Connector Withdrawal Force: 49.0 N max
- Durability: 250 Mating Cycles min
- Reverse Keying for Active Copper Cables per SAS 2.0

Electrical Characteristics

- Operating Voltage: 30 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 80 mΩ max
- Near-End Isolation: -40 dB (frequencies up to 3 GHz)
- Insertion Loss: 1.0 dB max (frequencies up to 1.6 GHz)
- Rise Time for Impedance Measurement: 50 ps
- Within Pair Skew: 5 ps

Packaging

- Tape and Reel Packaging: Connector
- Tray Packaging: Cage
- Bulk Packaging: Mounting Screw or Dust Cover

Materials

- Cage
  - Base Material: Zinc Alloy
  - Plating: Nickel
  - Mounting Screw: AISI 1010 Steel
  - Light Pipe: Optical Grade Polycarbonate
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -55°C to +85°C
- Storage Temperature: -55°C to +85°C

Configurations (Rows x Ports per Row)

- 1x1
- 1x2
- 1x4

Options

- Dust Cover
- Light Pipe
- EMI Shielding
  - Conductive Elastomeric Gasket
  - Soft Shield Foam Gasket
  - Stainless Steel Gasket
- Cage Inclination from Printed Circuit Board
  - 0 degree Angle
  - 1 degree Angle (PCI Applications)
- Keying

FS1-R26-2000

FS2-SF1-12C1

Ordering Information

Mini-SAS Connector

FS1 - R26 - X 0 0 X

FS1 SERIES DESIGNATION (RoHS)

R26 STYLE
R26 - 26 position connector

X PLATING
2 - 30 µ" Gold in Mating Area; 100 µ" Matte Tin on Tails over Nickel Underplate
3 - 15 µ" Gold in Mating Area; 100 µ" Matte Tin on Tails over Nickel Underplate

0 (4th position)
0 - Standard

0 (5th position)
0 - Standard

X OPTIONS
0 - Standard Connector
1 - Connector with Hold Down Tabs

Mini-SAS Cage

FSX - S XX - 1 X XX - XX

FSX SERIES DESIGNATION
FS1 - Standard
FS2 - With SAS 2.0 Guide Keyway
FSA - With SAS 2.1 Guide Keyway

S
S - Shell

XX SIZE
01 - 1x, 1 degree
F1 - 1x, 0 degree
02 - 2x, 1 degree
F2 - 2x, 0 degree
F4 - 4x, 0 degree

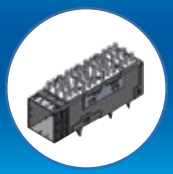
1 PLATING
1 - Nickel (RoHS)

X KEYING
0 - No Key
1 - Key #1
2 - Key #2
4 - Key #4 Universal SAS Port
6 - Key #6
7 - Key #7
24 - Key #2 and #4 (SAS Out)
46 - Key #4 and #6 (SAS In)
D22 - Left Port Key #2 & #4 / Right Port Key #2 & #4
D66 - Left Port Key #4 & #6 / Right Port Key #4 & #6
D26 - Left Port Key #2 & #4 / Right Port Key #4 & #6
D62 - Left Port Key #4 & #6 / Right Port Key #2 & #4

XX LIGHT PIPE OPTION
Blank - No Light Pipe
LP - 2 Barrel Light Pipes (1 Light Pipe per Port)

XX OPTIONS
C1 - Conductive Elastomer Gasket, 8 mm Long Mounting Screw, No Lock Washer
C2 - Conductive Elastomer Gasket, No Mounting Screw
C3 - Conductive Elastomer Gasket, 10 mm Long Mounting Screw with Lock Washer
E1 - Stainless Steel Gasket, 8 mm Long Mounting Screw, No Lock Washer
E2 - Stainless Steel Gasket, No Mounting Screw
E3 - Stainless Steel Gasket, 10 mm Long Mounting Screw with Lock Washer
F1 - Foam Gasket, 8 mm Long Mounting Screw, No Lock Washer
F2 - Foam Gasket, No Mounting Screw
F3 - Foam Gasket, 10 mm Long Mounting Screw with Lock Washer

Mini-SAS HD



U92-A150-1D0A-30

Amphenol's Mini-SAS High Density Interconnect is the next generation SAS system, with 4x, 8x, and 16x cable-plugging options to provide faster data transmission and more bandwidth for end users. The Mini-SAS HD connector system has a 2-row, right-angle connector with 12 Gbps per channel. Each connector handles 4 lanes of data for up to 48 Gbps of total bandwidth. Ganged options are also available up to a 1x4 configuration for up to 192 Gbps of total bandwidth. This connector will mate with active copper and optical cable assemblies, as well as active pluggable modules for extended-length applications in data centers. Main applications for Mini-SAS HD include HBA Servers, storage devices, switches, and rack-mounted computers.

U92-A110-1001-30

U92-A210-1001-30

U92-A410-1001-30

Specification Highlights

The Mini-SAS HD interconnect system is comprised of a 36-position, 2-row press-fit connector, and a stamped and formed cage assembly as one unit complying with SFF-8644.

General Characteristics

- RoHS Compliant
- Industry Standard Footprint
- Industry Standard EIA-364

Mechanical Characteristics

- Durability: 250 Mating Cycles min

Electrical Characteristics

- Hot Swappable
- Operating Voltage: 30 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 10 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- EMI Spring Fingers for Superior EMI Performance

Packaging

- Tray Packaging: Cage and Connector Assembly
- Bulk Packaging: Dust Cover or Mounting Screw

Materials

- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
  - Mounting Screw: AISI 1010 Steel
  - EMI Spring Finger: Copper Alloy with Nickel Plating
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -40°C to +85°C
- Storage Temperature: -55°C to +105°C

Configurations (Rows x Ports per Row)

- 1x1
- 1x2
- 1x4

Options

- Dust Cover
- Heat Sink
- Light Pipe

U92-A410-1001-30

Ordering Information

Mini-SAS HD Combo
(Cage / Connector)

U92-AXXX-1XXX-XX

U92 — SERIES DESIGNATION (RoHS)

A — STYLE
- **A** - One Row Cage 0 degrees

X — NUMBER OF PORTS IN ROW
- **1** - 1x1
- **2** - 1x2
- **4** - 1x4

X — HEAT SINK OPTION
- **1** - No Heat Sink or Clip Shipped
- **2** - Fin Style (Black Oxide) Heat Sink and Clip
- **5** - Pin Style (Nickel Plated) Heat Sink and Clip
- **A** - Fin Style (Nickel Plated) Heat Sink and Clip
- **D** - Pin-Fin Style (Black Oxide) Heat Sink and Clip
- **G** - Pin Style (Black Oxide) Heat Sink and Clip
- **K** - Pin Style (Chromate Passivation) Heat Sink and Clip
- **N** - Pin-Fin Style (Nickel Plated) Heat Sink and Clip

X — EMI Shielding
- **0** - Standard EMI Fingers
- **1** - Extended EMI Fingers

1 — CAGE PLATING
- **1** - Nickel

X — MOUNTING SCREWS
- **0** - No Screws
- **1** - Mounting Screws (Standard Length of M2 x 0.4, 4.3 mm Long)

X — CONTACT PLATING
- **3** - Mating Area Plating 0.76 µm Gold Over 1.27 µm to 3.81 µm of Nickel; Press Fit Tail Area Plating 0.381 µm to 1.52 µm of Matte Tin Over 1.27 µm to 3.81µm of Nickel
- 7 - Same as 3, but with enhanced chicklet

X — PACKAGING
- **1** - Tray Packaging
- **T** - Tape and Reel Packaging
- **A** - Tray Packaging Heat Sink and Clip or Light Pipe Shipped Assembled

X — LIGHT PIPE OPTION
- **0** - Standard
- **2** - 2 Round Light Pipes Per Port, on Top of the Cage

X — DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

XFP

UE75-A30-3000T

The XFP interconnect system is capable of a 10 Gbps data rate and is intended for external I/O connections. High speed serial interconnect applications include clusters, servers, and storage devices. Its single row cage configuration requires less space and is a lower cost alternative to parallel-optics VSR. XFP also requires less than one-third the power and physical space of an MSA interconnect with parallel interface. It has a single footprint for all links, and is hot-pluggable.

The ExpressPort™ XFP+ Connector is designed to extend performance to 14 Gbps. Several EMI shielding options such as an elastomeric gasket or mylar tape are also available.

U79-A1G1-2001

U79-A141-2D01

Specification Highlights

The XFP interconnect system is comprised of a press-fit cage assembly which is used with 30-position, 0.8 mm pitch SMT connectors complying with INF-8077i.

Mechanical Characteristics

- Insertion Force: 40 N max (Cage and Connector)
- Withdrawal Force: 30 N max (Cage and Connector)
- Cage Retention: 180 N min (Latch Strength)
- Durability: 250 Mating Cycles min

Electrical Characteristics

- Operating Voltage: 30 V
- Operating Current: 0.5 A
- Differential Impedance: 100 Ω +/- 5 Ω
- DWV: 300 V AC
- Insulation Resistance: 1000 MΩ min
- Contact Resistance: 70 mΩ max
- Near-End Isolation: -40 dB
- Insertion Loss: 1.0 dB max

Packaging

- Tape and Reel Packaging: Connector or Cage
- Tray Packaging: Cage
- Bulk Packaging: Dust Cover

Materials

- Cage
  - Base Material: Copper Alloy
  - Plating: Nickel
  - Front Flange: Zinc Alloy
  - Heat Sink: Aluminum Alloy
  - Heat Sink Clip: Stainless Steel
  - Dust Cover: Thermoplastic
- Connector
  - Contact Base Material: Copper Alloy
  - Contact Plating: Gold on Mating Area, Gold or Matte Tin on Termination
  - Housings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rated

Temperature Rating

- Operating Temperature: -40°C to +85°C
- Storage Temperature: -40°C to +85°C

Options

- Heat Sink
- Dust Cover
- EMI Shielding
  - Conductive Elastomeric Gasket at Back of Cage
  - Mylar Tape

XFP Connector

UE7X - A 30 - X 0 0 X T

UE7X SERIES DESIGNATION (RoHS)
- **UE75** - Standard XFP Connector
- **UE76** - ExpressPort™ XFP+ Connector

A STYLE
- **A** - R/A Single Surface Mount Connector

30 NUMBER OF POSITIONS
- **30** - 30 Positions (Single XFP)

X CONTACT PLATING
- **2** - 30 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **3** - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
- **5** - 15 µ" Gold Plating on Mating Area; Gold Flash on Termination
- **6** - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

T PACKAGING
- **T** - Tape and Reel Packaging (500 per Reel)

X LUBRICANT OPTION
- **0** - Non Lubricated
- **1** - Lubricant Added

0
- **0** - Standard

0 OPTION 1
- **0** - Standard

XFP Cage

U79 - A 1 X 1 - 2 X X X

U79 SERIES DESIGNATION

A STYLE
- **A** - 1 Row

1 NUMBER OF PORTS IN ROW
- **1** - Single in Row

X HEAT SINK OPTION
- **0** - No Heat Sink, Only Clip is Shipped
- **1** - No Heat Sink or Clip Shipped
- **2** - Standard Height Fin Heat Sink (7 mm) and Clip
- **3** - PCI Height Fin Heat Sink (4.2 mm) and Clip
- **4** - Tall Fin Heat Sink (13.5 mm) and Clip
- **G** - 45° Standard Height Fin Heat Sink (7mm) and Clip

1
- **1** - Standard

X PACKAGING
- **1** - Tray Packaging (Heat Sink and Clip Shipped Separately)
- **T** - Tape and Reel (Heat Sink and Clip Shipped Separately)
- **B** - Tray Packaging (Clip Shipped Assembled to Cage)

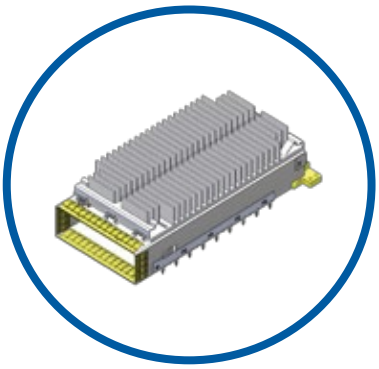
X OPTION 1
- **0** - Standard
- **1** - High Conductivity Rear Lower EMI Gasket
- **2** - Mylar Tape Attached to Bottom Cage Wall

X DUST COVER OPTION
- **0** - Without Dust Cover
- **D** - With Dust Cover (Shipped Loose)

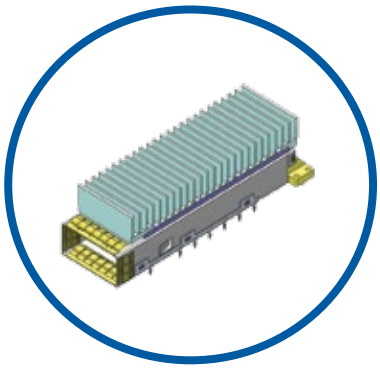
2 PLATING
- **2** - Nickel

CFP2 / CFP4

The CFP2 and CFP4 (surface mount receptacle connector) are considered as a candidate of future generation of multi hundred Gbps system. Both are 0.6mm pitch with the CFP2 having 104 positions and the CFP4 having 56 positions. They are rated for 28 Gbps per channel with resonance dampening for improved signal integrity. Both the CFP2 and CFP4 have a plug connector on the mating interface that improves accuracy and aids in achieving high speed performance.



P-U20-KCFP2-1XXX



P-U98-C1X1-X0XX

Specification Highlights

The CFP2 and CFP4 interconnect systems are comprised of insert molding assemblies for top side contacts and press-fit cage assemblies. Both CFP2 and CFP4 have a plug connector on the mating interface that improves accuracy and aids in achieving high speed performance.

General Characteristics

- Complies with IEEE and ITU-T applications
- 0.6mm contact pitch
- CFP2 has 104 positions, CFP4 has 56 positions.
- Rated for 25 Gbps per ch. with resonance dampening for improved signal integrity.
- Module and host systems are hot pluggable, not damaged by insertion/removal
- Integrated kickout spring with cage assembly for CFP4

Materials

- Cage
  - oBase Material: Copper Alloy
  - oPlating: Nickel
  - oHeat Sink: Aluminum Alloy
  - oHeat Sink Clip: Stainless Steel
  - oDust Cover: Thermoplastic
  - oConnector cover: Zinc Alloy
- Connector
  - oContact Base Material: Phosphor Bronze
  - oContact Plating: Gold on Mating Area, Matte Tin on Termination
  - oHousings: Glass Reinforced, Lead-Free Solder Reflow Process Compatible Thermoplastic, UL94V-0 Rate d
  - oResonance Dampening Feature: Conductive Polymer

Electrical Characteristics

- Operating Voltage: 3.3 V
- Operating Current: 1.875A

Key Features

- Two piece electrical connector for superior electrical performance and superior mechanical integrity
- Supports LC, MTP12 and MTP24 optical connector types
- Alternative solutions to limitations of QSFP+: thermal, jitter budget and reach

Mechanical Characteristics

- Maximum Insertion Force: 80N (Cage and Connector)
- Maximum Extraction Force: 80N (Cage and Connector)
- Minimum Cage Retention: 180N
- Minimum Module Retention: 90 N
- Durability: 200 Mating Cycles min

Applications

- Supports 40Gbit/s and 100Gbit/s interfaces for Ethernet (IEEE802.3), Telecommunication (ITU-T) and other optical networking applications
- Supports single mode and multimode fiber optics
- Accommodates a wide range of power dissipations and applications
- Nominal signalling rate of 25Gbit/s per ch.

Options

- Heat Sink and Clip
  - oStandard: Aluminum Alloy
  - oCustom designs available
- EMI Gasket
- Connector Cover
- Dust Cover

CFP2/CFP4 Host Connector

U99 - X XXX - X 0 0 T

U99 SERIES DESIGNATION

X STYLE
B - CFP2 Connector
C - CFP4 Connector

XXX NUMBER OF POSITIONS
104 - CFP2 Connector
056 - CFP4 Connector (To be Tooled)

PACKAGING (T)
T - Tape and Reel Packaging

OPTION 2 (0)
0 - Standard

OPTION 1 (0)
0 - Standard

CONTACT PLATING (1)
2 - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
3 - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

CFP2/CFP4 Plug Connector

U56 - X XXX - X 0 0 T

U56 SERIES DESIGNATION

X STYLE
B - CFP2 Connector
C - CFP4 Connector

XXX NUMBER OF POSITIONS
104 - CFP2 Connector
056 - CFP4 Connector (To be Tooled)

PACKAGING (T)
T - Tape and Reel Packaging

OPTION 2 (0)
0 - Standard

OPTION 1 (0)
0 - Standard

CONTACT PLATING (1)
2 - 30 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination
3 - 15 µ" Gold Plating on Mating Area; Matte Tin Plating on Termination

CFP2/CFP4 Cage

U98 - X X X X - X 0 X X

U98 SERIES DESIGNATION

X STYLE
B - CFP2 single row
C - CFP4 single row

X NUMBER OF PORT IN ROW
1 - Nx1 ports
2 - Nx2 ports
3- Nx3 ports (To be Tooled)
4 - Nx4 ports (To be Tooled)
6 - Nx6 ports (To be Tooled)

X HEAT SINK OPTION
1 - No Heat Sink and No Clip Shipped
2 -Standard Heat Sink (Hard Coat Anodized) And Clip

PACKAGING (X)
1 - Tray Packaging

CONNECTOR COVER (X)
0 -With Connector Cover, No Kickout Spring
* **A** -Without Connector Cover or Kickout Spring
* **B** -Without Connector Cover, With Kickout Spring
C -With Connector Cover & Kickout Spring
*CPF2 Only

OPTIONAL DUST COVER (X)
0 - Without Dust Cover
D - With Dust Cover (Ship Loose)

PLATING (X)
1 - Nickel

MYLAR TAPE OPTION (X)
1 -Standard (No Mylar Tape)
2 -With Mylar Tape on Bottom Cage

Notes

Notes

Amphenol

High Speed Interconnects

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