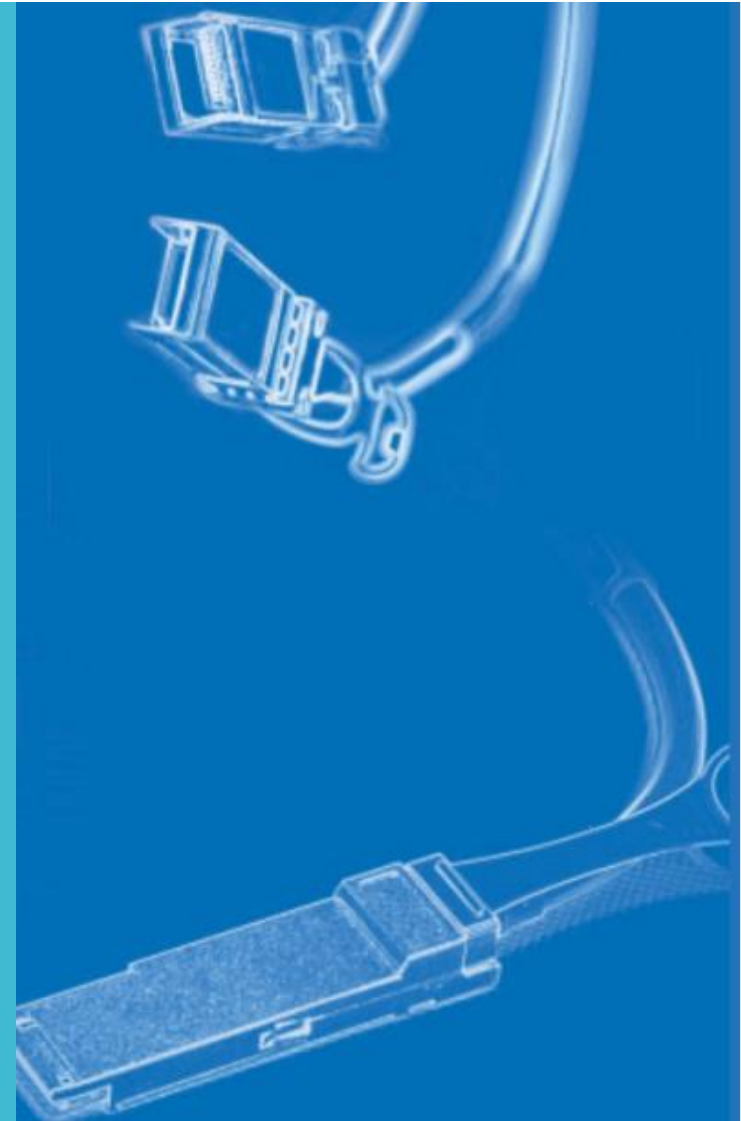


Product Presentation

Transceiver, DAC, AOC,
For All Applications

Jumbo-Sun Technology Co., Ltd.



Product and Application



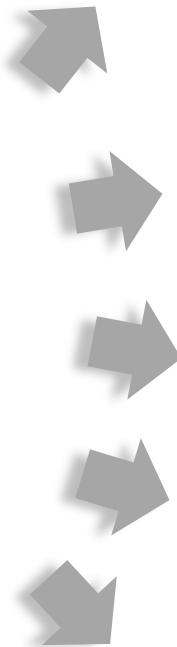
DAC



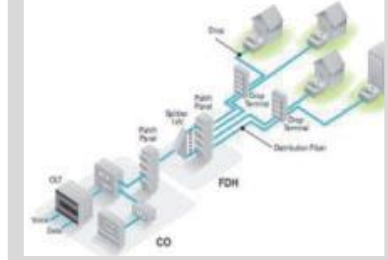
AOC



Transceiver



Wireless LTE&5G



FTTX



Smart Grid



Video Surveillance



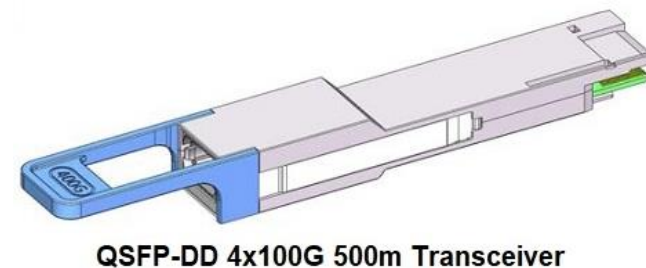
Data Center



Transport &
Datacom

400G QSFP DD

- ✓ Supports 425Gbps
- ✓ OSFP MSA Compliant
- ✓ 400GBASE-LR8 duplex SMF (8x50G PAM4)
- ✓ 400GBASE-DR4 parallel SMF (4x100G PAM4)
- ✓ I2C interface with integrated Digital Diagnostic Monitoring



400G QSFP-DD optical transceivers varying from 8x50G to 4X100G architectures.

They are compliant with the IEEE 802.3bs and QSFP-DD MSA, which are used for the applications for 400G Ethernet, Data Centers and Cloud Networks.

Product Model	Data Rate (Gbit/s)	Reach	TX	RX	Power Consumption	Temp (°C)
QSFP-DD SR8	400G	100m	850nm VCSEL	PIN	<9W	0-70
QSFP-DD LR8	400G	10km	1274-1309nm LWDM EML	PIN	<14W	0-70
QSFP-DD DR4	400G	500m	1310nm EML	PIN	<12W	0-70
QSFP-DD FR4	400G	2km	EML CWDM	PIN	<12W	0-70
QSFP-DD LR4	400G	10km	1296-1309nm LWDM EML	PIN	<12W	0-70
QSFP-DD CWDM4	200G	2km	CWDM	PIN	<8W	0-70
QSFP-DD 4WDM-10	200G	10km	CWDM	PIN	<8W	0-70
QSFP-DD LR4	200G	10km	11296-1309nm	PIN	<12W	0-70

100G QSFP28

- ✓ Supports 103.1 / 112Gbps aggregate bit rates
- ✓ Up to 100m transmission on MMF OM4 and 2/10/20/30/40km over SMF.
- ✓ Hot-Pluggable QSFP Footprint
- ✓ Compliant with QSFP MSA Specification
- ✓ I2C interface with integrated Digital Diagnostic Monitoring
- ✓ 4x25G electrical interface



QSFP28-SR₄



QSFP28-LR₄



QSFP28-PSM₄



QSFP28-CWDM₄

100G QSFP28 series includes SR₄, CWDM₄, LR₄, PSM₄ and ER₄, using LC or MPO receptacle, with the features of QSFP28 MSA Compliant, IEEE802.3bm Compliant, low power consumption and high reliability, suitable for 100G data center network and OTN network.

Product Model	Data Rate (Gbit/s)	Reach	TX	RX	TX_Min (dBm)	TX_Max (dBm)	Rx Sensitivity (dBm)	Power Consumption	Temp (deg C)
QSFP28 SR ₄	100G	100m	850nm VCSEL	PIN	-8.4	2.4	-10.3	<2.5W	0~70
QSFP28 LR ₄	100G 112G	10km	1294 - 1310nm DML/EML	PIN	-4.3 -2.5	4.5 2.9	-10.6 -8.8	<4.0W <4.5W	0~70
QSFP28 CWDM ₄	100G	2km	DFB CWDM	PIN	-6.5	2.5	-11.5	<3.5W	0~70
QSFP28 CWDM ₄ -10	100G	10km	DFB CWDM	PIN	-6.5	2.5	-13.0	<3.5W	0~70
QSFP28 PSM ₄	100G	2km	1310nm DFB	PIN	-5.5	2.0	-10.2	<3.5W	0~70
QSFP28 ER ₄ Lite	100G 112G	30km (Non-FEC) /40km	1294 - 1310nm EML	APD	-2.5 -0.7	6.5 6.5	-14.85 -18.7	<4.5W	0~70

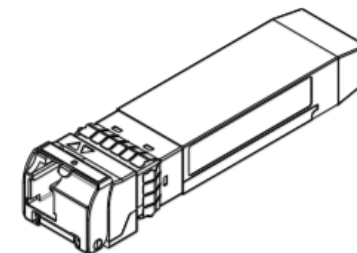
25G SFP28

- ✓ Operating Data Rate Support 24.33Gbps and 25.78Gbps Distances up to 100m ,10km, 20km, 30km and 40km
- ✓ Duplex LC Connector Interface, Hot Pluggable
- ✓ Compliant with MSA SFP+ Specification SFF-8402
- ✓ Built-in Dual CDR

The 25GBASE SFP28 (Small Form-Factor Pluggable) portfolio offers customers a wide variety of high-density and low-power 25 Gigabit Ethernet connectivity options for data center and high-performance computing networks applications.

The 25G SR,LR SFP28 optical transceiver, with the features of IEEE802.3by, SFF-8472, low consumption and high reliability.

They are designed for applications of Data Centers, 5G Network, 25G Ethernet and Fiber Channel.



Model Name	Data Rate	Reach (km)	Wavelength (nm)	TX output (dBm)	RX Sensitivity (dBm)	Power Consumption	Interface
SFP28 SR	25G	100m	850	-9.1 ~ 2.4	-11	<1W	LC
SFP28 eSR	25G	300m	1310	-7 ~ 2	-10	<1.2W	LC
SFP28 LR	25G	10km	1310	-5 ~ 2	-10.6	<1W	LC
SFP28 ER	25G	40km	1310	-1.6 ~ 6	-19.6	<1.8W	LC
SFP28 Bidi LR	25G	10km	1270/1330	-5 ~ 2	-18	<1.2W	LC
SFP28 Bidi ER	25G	30km	1270/1330	0 ~ 5	-13.3	<1.4W	LC
SFP28 LWDM	25G	40km	LWDM	-1.6 ~ 6	-19	<1.8W	LC

40G QSFP+

- ✓ QSFP+ MSA, SFF-8436 compatible
- ✓ Electrically hot-pluggable
- ✓ Digital Diagnostics Monitoring Interface
- ✓ InfiniBand SDR, DDR and QDR applications

Full family of 40G QSFP+ optical transceivers include SR4, eSR4, IR4, LR4, ER4, LX4 series with features of using LC/MPO Receptacles, IEEE 802.3ba and SFF-8436 Compliant, Low Power Consumption, Small Size and High-speed. Each channel is capable of transferring data at 10Gbps and supports a total of 40Gbps.



Product Description	Data Rate	Reach	TX	RX	TX_Min (dBm)	TX_Max (dBm)	Rx Sensitivity (dBm)	Power Consumption	Temp (deg C)
QSFP+ SR4	40G	100m	850nm VCSEL	PIN	-7.6	1	-9.5	<1.5w	0~70
QSFP+ eSR4	40G	300m	850nm VCSEL	PIN	-7.3	1	-9.9	<1.5w	0~70
QSFP+ IR4	40G	2km	DFB CWDM	PIN	-7	2.3	-11.7	<3.5w	0~70
QSFP+ LR4	40G	10km	DFB CWDM	PIN	-7	2.3	-13.7	<3.5w	0~70
QSFP+ ER4 Lite	40G	30km	DFB CWDM	APD	-2	2.3	-12.0	<3.5w	0~70
QSFP+ ER4	40G	40km	DFB CWDM	APD	-2.7	4.5	-19.0	<3.5w	0~70
QSFP+ PSM IR4	40G	1.4km	1310nm FP	PIN	-5.5	1.5	-11.5	<3.5w	0~70
QSFP+ PSM LR4	40G	10km	1310nm DFB	PIN	-5.5	1.5	-12.6	<3.5w	0~70
QSFP+ LX4	40G	150m/2km	DFB CWDM	PIN	-5/-7	3.5/2.3	-7/-11.7	<3.5w	0~70

10G SFP+ 10G CWDM 10G DWDM

- ✓ Compliant to SFP+ Electrical MSA SFF-8431
- ✓ Compliant to SFP+ Mechanical MSA SFF-8432
- ✓ Multi rate of up to 11.3Gb/s
- ✓ 10G Ethernet compliance or SDH/SONET
- ✓ Transmission distance up to 100km (SM fiber)



SFP+ transceiver are multi-purpose optical modules for 10Gbit/s data transmission applications at 850nm, 1310nm and 1550nm.

The transceivers are ideally suited for datacom and storage area network (SAN/NAS) applications based on the IEEE 802.3ae and Fibre Channel standards, Fiber Channel.

Both CWDM SFP+ and DWDM SFP+ transceivers are based on the popular SFP form factor.

CWDM SFP+ transceiver can support 18 wavelengths from 1270nm to 1610nm, and its transmission distance is from 20km to 80km. It is an important part in CWDM system.

DWDM SFP+ transceiver operates at nominal DWDM wavelengths from CH17-CH61, supporting a transmission distance up to 80km.

Form Factor	Part Number	Data Rate	Reach (km)	Wavelength (nm)	TX output (dBm)	RX Sensitivity (dBm)	Power Consumption	Interface	Temp
SFP+	SFP+-SR	10G	300m	850	-6 ~ -1	-10	<1.0W	LC	0~70
SFP+	SFP+-LR Lite	10G	2	1310	-6 ~ -0.5	-14.4	<1.2W	LC	0~70
SFP+	SFP+-LR	10G	10	1310	-6 ~ -0.5	-14.4	<1.2W	LC	0~70
SFP+	SFP+-ER	10G	40	1550	-1 ~ 3	-16	<1.4W	LC	0~70
SFP+	SFP+-ZR	10G	80	1550	-1 ~ 4	-23	<1.5W	LC	0~70
SFP+ CWDM	SFP+-CWDMXX-ER	10G	40	CWDM	-1 ~ 3	-16	<1.5W	LC	0~70
SFP+ CWDM	SFP+-CWDMXX-ZR	10G	80	CWDM	-1 ~ 4	-23	<1.6W	LC	0~70
SFP+ DWDM	SFP+-DWDMXX-ER	10G	40	DWDM (100G HZ)	-1 ~ 3	-16	<1.5W	LC	0~70
SFP+ DWDM	SFP+-DWDMXX-ZR	10G	80	DWDM (100G HZ)	-1 ~ 4	-23	<1.6W	LC	0~70

Conventional SFP+ module has two ports - the TX for the transmit port and the RX for receive port, but BiDi SFP+ transceiver has only one port to transmit and receive optical information on separate wavelength. With the reduction of fiber strands by half, the number of patch cords and patch panel ports can be reduced accordingly. Working with BiDi SFP+ optical modules, the capacity and reliability can be increased by simultaneously operating at more than one wavelength to transmit and receive on a single strand.



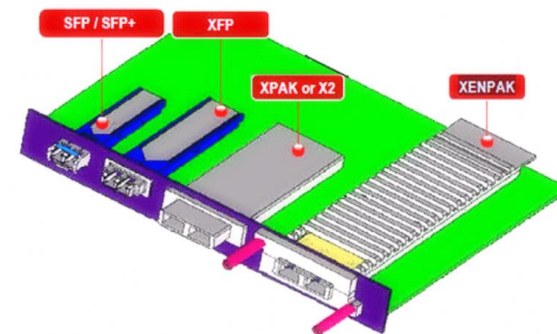
10G SFP+ BIDI

- ✓ Compliant to IEEE 802.3ae 10GBASE-BX
- ✓ SFF-8472 Digital Diagnostic Function
- ✓ Simplex LC Connector
- ✓ 1330TX/1270RX, 1270TX/1330RX at 10, 20, 40, 60km
- ✓ 1490TX/1550RX/1550TX/1490RX at 80km

Form Factor	Part Number	Data Rate	Reach (km)	Wavelength (nm)	TX output (dBm)	RX Sensitivity (dBm)	Power Consumption	Interface	Temp
SFP+ BIDI	SFP-10G-BU-10 SFP-10G-BD-10	10G	10	1270nm/1330nm	-6 ~ -1	-14.4	<1.0W	LC	0~70
SFP+ BIDI	SFP-10G-BU-20 SFP-10G-BD-20	10G	20	1270nm/1330nm	-6 ~ -0.5	-15	<1.0W	LC	0~70
SFP+ BIDI	SFP-10G-BU-40 SFP-10G-BD-40	10G	40	1270nm/1330nm	0 ~ 5	-15	<1.0W	LC	0~70
SFP+ BIDI	SFP-10G-BU-60 SFP-10G-BD-60	10G	60	1270nm/1330nm	0 ~ 5	-20	<1.5W	LC	0~70
SFP+ BIDI	SFP-10G-BU-80 SFP-10G-BD-80	10G	80	1490nm/1550nm	0 ~ 4	-23	<1.5W	LC	0~70
XFP BIDI	SFP-10G-BU-10 SFP-10G-BD-10	10G	10	1270nm/1330nm	-5 ~ 0	-15	<2.0W	LC	0~70
XFP BIDI	SFP-10G-BU-40 SFP-10G-BD-40	10G	40	1270nm/1330nm	0 ~ 5	-15	<2.0W	LC	0~70
XFP BIDI	SFP-10G-BU-60 SFP-10G-BD-60	10G	60	1270nm/1330nm	0 ~ 5	-20	<2.0W	LC	0~70
XFP BIDI	SFP-10G-BU-80 SFP-10G-BD-80	10G	80	1490nm/1550nm	-1 ~ 4	-24	<2.5W	LC	0~70

10G X2 / 10G XENPAK

- ✓ Hot pluggable X2 MSA form factor
- ✓ Hot pluggable XENPAK MSA form factor
- ✓ SC connector, single mode fiber
- ✓ Full duplex transmission mode
- ✓ Digital Optics Monitoring (DOM)



X2 Optics are a standardized form factor for 10 Gbps fiber optics transponders. Both 10G Ethernet and 10G Fibre Channel versions are available.

X2 optics are used in datacom optical links only (not telecom), and they are smaller than XENPAK transponder

Type	Model No.	Data Rate	Wave length	Media Type	Distance	Temp.	Connector	DDM
X2	X2-SR	10 Gbps	850nm	MM	300 m	0 to 70°C	SC	Y
X2	X2-LR	10 Gbps	1310nm	SM	10 km	0 to 70°C	SC	Y
X2	X2-ER	10 Gbps	1550nm	SM	40 km	0 to 70°C	SC	Y
X2	X2-ZR	10 Gbps	1550nm	SM	80 km	0 to 70°C	SC	Y
XENPAK	XENPAK-SR	10 Gbps	850nm	MM	300 m	0 to 70°C	SC	Y
XENPAK	XENPAK-LR	10 Gbps	1310nm	SM	10 km	0 to 70°C	SC	Y
XENPAK	XENPAK-ER	10 Gbps	1550nm	SM	40 km	0 to 70°C	SC	Y
XENPAK	XENPAK-ZR	10 Gbps	1550nm	SM	80 km	0 to 70°C	SC	Y

10G XFP

- ✓ Supports 8.5G, 9.95Gb/s to 11.3Gb/s bit rates
- ✓ IEC 60825-1 Class 1/CDRH Class 1 laser eye safety.
- ✓ Hot-pluggable XFP footprint
- ✓ Built-in digital diagnostic functions, DDMI



XFP - transceivers for include 10 Gigabit Ethernet, 10 Gbit/s Fibre Channel, SONET at OC-192 rates, SDH at STM-64, 10 Gbit/s Optical Transport Network (OTN) OTU-2, and parallel optics links.

XFP modules use an LC fiber connector type to achieve high density. The XFP specification was developed by the XFP Multi Source Agreement Group.

Form Factor	Part Number	Data Rate	Reach (km)	Wavelength (nm)	TX output (dBm)	RX Sensitivity (dBm)	Power Consumption	Interface	Temp
XFP	XFP-SR	10G	0.3	850	-6 ~ -1	-10	<2.0W	LC	0~70
XFP	XFP-LR	10G	10	1310	-6 ~ -1	-15	<2.0W	LC	0~70
XFP	XFP-ER	10G	40	1550	-1 ~ 4	-16.5	<2.5W	LC	0~70
XFP	XFP-ZR	10G	80	1550	0 ~ 5	-24	<3W	LC	0~70
XFP CWDM	XFP-CWDMXX-ER	10G	40	CWDM	-1 ~ 4	-16.5	<2.5W	LC	0~70
XFP CWDM	XFP-CWDMXX-ZR	10G	40	CWDM	0 ~ 4	-24	<3W	LC	0~70
XFP CWDM	XFP-DWDMXX-ER-50	10G	40	DWDM (50G HZ)	-1 ~ 4	-16.5	<2.5W	LC	0~70
XFP CWDM	XFP-DWDMXX-ER	10G	40	DWDM (100G HZ)	-1 ~ 4	-16.5	<2.5W	LC	0~70
XFP CWDM	XFP-DWDMXX-ZR-50	10G	80	DWDM (50G HZ)	0 ~ 5	-24	<3W	LC	0~70
XFP DWDM	XFP-DWDMXX-ZR	10G	80	DWDM (100G HZ)	0 ~ 5	-24	<3W	LC	0~70

1G SFP 1G GBIC

- ✓ Operating Data Rate up to 1.25Gbps
- ✓ Compliant with SFP MSA Specification
- ✓ Compliant with SFF-8472

Small form-factor pluggable (SFP) transceiver is a compact, hot-pluggable transceiver used for both telecommunication and data communications applications. SFP transceiver supports SONET, Gigabit Ethernet, Fiber Channel, and other communications standards. Customers have a lot of flexible options: 1.25G SFP, SFP SDH, SFP BIDI, SFP CWDM and SFP DWDM.

Product Model	Rate(bps)	Wave(nm)	TX Power (dBm)	RX Sens. (dBm)	Rx Tx	Reach	Temp (deg C)	DDM*
JS-S320SXD	1.25G	850	-4 ~ -9.5	<-18	PIN VCSE L	550m	0~70	Y
SFP-MLXD	1.25G	1310	-1 ~ -9	<-19	PIN FP	2KM	0~70	Y
JS-S430LXD	1.25G	1310	-3 ~ -9.5	<-20	PIN FP	10KM	0~70	Y
SFP-LXD-20	1.25G	1310	-2 ~ -8	<-23	PIN FP	20KM	0~70	Y
JS-S500LHXD	1.25G	1310	+1 ~ -4	<-24	PIN DFB	40KM	0~70	Y
SFP-1550EXD	1.25G	1550	+1 ~ -4	<-24	PIN DFB	40KM	0~70	Y
JS-S600ZXD	1.25G	1550	+5 ~ 0	<-24	PIN DFB	80KM	0~70	Y
SFP-EZXD	1.25G	1550	+5 ~ 0	<-27	APD DFB	120KM	0~70	Y

Part Number	Rate(bps)	Wave(nm)	TX Power (dBm)	RX Sens. (dBm)	Rx Tx	Reach	Temp (deg C)	DDM
WS-G5483	1.25G	Copper				100m	0~70	N
WS-G5484	1.25G	850	-18~0	-9~-3	PIN VCES L	550m	0~70	N
WS-G5486	1.25G	1310	-22~-3	-10~-3	PIN FP	10KM	0~70	N
GBIC-EX	1.25G	1310	-22~-3	-4~0	PIN DFB	40KM	0~70	N
WS-G5487	1.25G	1550	-25~-3	0~4	PIN DFB	80KM	0~70	N

Copper

- ✓ 1000 BASE-T with SERDES interface
- ✓ 10/100/1000Base-T with SGMII interface
- ✓ over Cat 5 cable
- ✓ 10Gbps Ethernet over Category 6a/7 Cable

The 1000BASE-T electrical SFP transceivers length is up to 100m over four pair Category 5 UTP cabling. The applications include: Gigabit Ethernet over Cat 5 cable, Switch to switch SerDes or SGMII interface, Switched backplane application, and Media Converter



SFP+ Copper Module 10GBASE-T is high performance and high speed copper transceiver module over Cat 6a/7 cable with a link of 30 m. It is specifically designed for 10 Gigabit Ethernet bidirectional communication. The benefit is that it uses standard-based technology with the familiar RJ45 connector and provides backward compatibility with legacy networks.

Product Model	Form Factor	Rate(bps)	Wave (nm)	MAC Interface	Auto-Negotiation	RX_LOS	Reach	Temp (deg C)	DDM*
10G SFP+									
SFP-10G-T	SFP+	10G	copper	SERDE			30M	0~70	N
1.25G SFP									
SFP-1000T	SFP	1000Mbps	copper	SERDE	Yes	No	100m	0~70	N
SFP-1000T-LOS	SFP	1000Mbps	copper	SERDE	No	Yes	100m	0~70	N
SFP-SGMII-T	SFP	10/100/1000	copper	SGMII	Yes	Yes	100m	0~70	N
100Base SFP									
SFP-100T	SFP	10/100 Mbps	copper	SERDE	Yes	No	100m	0~70	N

1G SFP BIDI SFP CWDM SFP DWDM

SFP BIDI transceiver is used for optical communications in both telecommunication and data bidirectional communications applications.

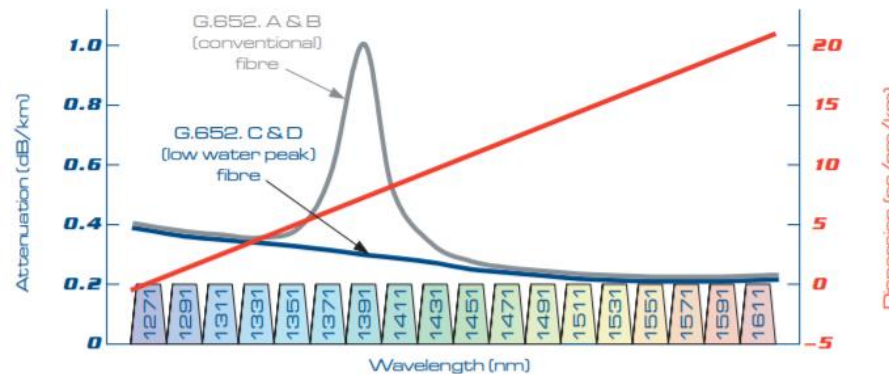
CWDM SFP transceiver & DWDM SFP transceiver provides the high-speed and physical compactness that today's networks require while delivering the deployment flexibility and inventory control that network administrators demand.

Product Model	Data Rate	Reach (km)	Wavelength (nm)	TX output (dBm)	RX Sensitivity (dBm)	Interface	Temp
SFP-1000BX34(43)-03	1.25G	3	1310/1490	-11 ~ -3	-20	Simplex LC	0~70
SFP-1000BX35(53)-03	1.25G	3	1310/1550	-11 ~ -3	-20	Simplex LC	0~70
SFP-1000BX35(53)-10	1.25G	10	1310/1550	-9 ~ -3	-20	Simplex LC	0~70
SFP-1000BX34(43)-20	1.25G	20	1310/1490	-9 ~ -3	-20	Simplex LC	0~70
SFP-1000BX35(53)-20	1.25G	20	1310/1550	-9 ~ -3	-20	Simplex LC	0~70
SFP-1000BX45(54)-20	1.25G	20	1490/1550	-9 ~ -3	-20	Simplex LC	0~70
SFP-1000BX34(43)-40	1.25G	40	1310/1490	-5 ~ 0	-24	Simplex LC	0~70
SFP-1000BX35(53)-40	1.25G	40	1310/1550	-5 ~ 0	-24	Simplex LC	0~70
SFP-1000BX45(54)-40	1.25G	40	1490/1550	-5 ~ 0	-24	Simplex LC	0~70
SFP-1000BX34(43)-80	1.25G	80	1310/1490	0 ~ 5	-26	Simplex LC	0~70
SFP-1000BX35(53)-80	1.25G	80	1310/1550	0 ~ 5	-26	Simplex LC	0~70
SFP-1000BX45(54)-80	1.25G	80	1490/1550	0 ~ 5	-26	Simplex LC	0~70
SFP-1000BX45(54)-120	1.25G	120	1490/1550	0 ~ 5	-31	Simplex LC	0~70
SFP-CWDMXX-20	1.25G	20	CWDM	-9 ~ -3	-20	LC	0~70
SFP-CWDMXX-40	1.25G	40	CWDM	-1 ~ 3	-16	LC	0~70
SFP-CWDMXX-80	1.25G	80	CWDM	-1 ~ 4	-23	LC	0~70
SFP-DWDMXX-40	1.25G	40	DWDM (100G HZ)	-1 ~ 3	-16	LC	0~70
SFP-DWDMXX-80	1.25G	80	DWDM (100G HZ)	-1 ~ 4	-23	LC	0~70

CWDM ITU Channels Guide

CWDM (Coarse Wavelength Division Multiplexing)

CWDM ITU Channels Overview
ITU-T G.694.2 defines 18 wavelengths for CWDM transport ranging from 1270 to 1610 nm, spaced at 20 nm apart.



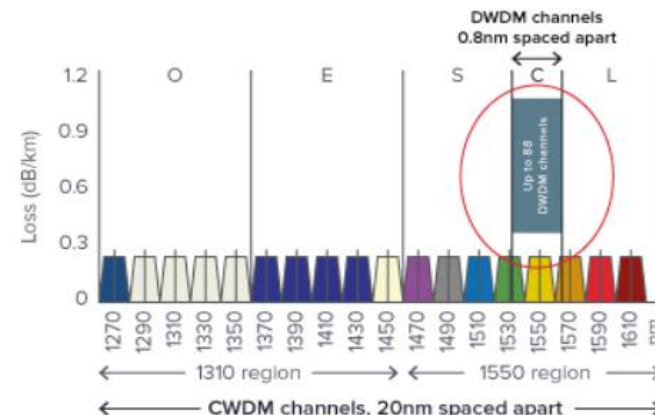
ITU Channel No.	Wavelength (nm)
27	1270
29	1290
31	1310
33	1330
35	1350
37	1370
39	1390
41	1410
43	1430
45	1450
47	1470
49	1490
51	1510
53	1530
55	1550
57	1570
59	1590
61	1610

DWDM ITU Channels Guide

DWDM (Dense Wavelength Division Multiplexing)

DWDM ITU Channels Overview

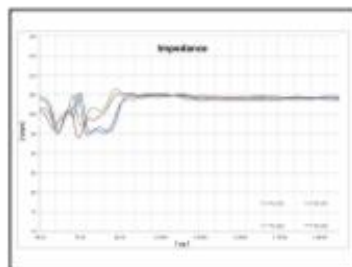
ITU G.694.1 standard DWDM region is from 1528.77nm to 1563.86nm that resides mostly within the C band. DWDM can have 100GHz (0.8nm) wavelength spacing for 40 channels, or 50GHz (0.4nm) spacing for 80 channels.



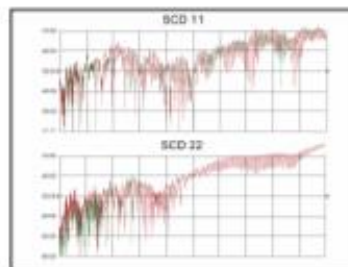
Channel	Frequency (THz)	Center Wavelength (nm)	Channel	Frequency (THz)	Center Wavelength (nm)
C17	191.7	1563.86	C40	194	1545.32
C18	191.8	1563.05	C41	194.1	1544.53
C19	191.9	1562.23	C42	194.2	1543.73
C20	192	1561.41	C43	194.3	1542.94
C21	192.1	1560.61	C44	194.4	1542.14
C22	192.2	1559.79	C45	194.5	1541.35
C23	192.3	1558.98	C46	194.6	1540.56
C24	192.4	1558.17	C47	194.7	1539.77
C25	192.5	1557.36	C48	194.8	1538.98
C26	192.6	1556.55	C49	194.9	1538.19
C27	192.7	1555.75	C50	195	1537.4
C28	192.8	1554.94	C51	195.1	1536.61
C29	192.9	1554.13	C52	195.2	1535.82
C30	193	1553.33	C53	195.3	1535.04
C31	193.1	1552.52	C54	195.4	1534.25
C32	193.2	1551.72	C55	195.5	1533.47
C33	193.3	1550.92	C56	195.6	1532.68
C34	193.4	1550.12	C57	195.7	1531.9
C35	193.5	1549.32	C58	195.8	1531.12
C36	193.6	1548.51	C59	195.9	1530.33
C37	193.7	1547.72	C60	196	1529.55
C38	193.8	1546.92	C61	196.1	1528.77
C39	193.9	1546.12			

DAC

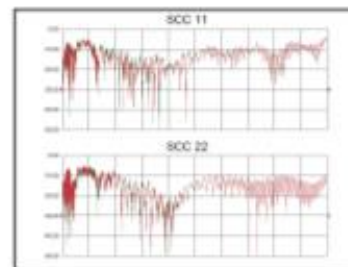
SFP+ DAC (Direct Attach Copper) passive twinax cable is suitable for very short distances transmission and offers a highly cost-effective and low power solution to connect within racks and across adjacent racks.



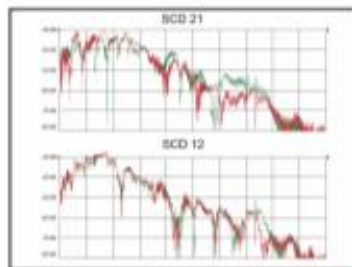
26AWG 5M
Differential Impedance



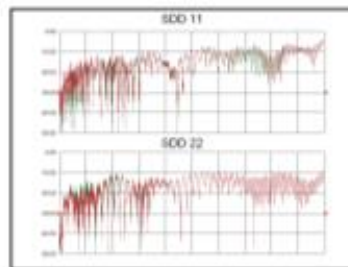
Differential to
Common Mode Return Loss



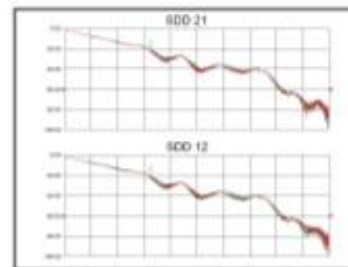
Common mode
reflection coefficient



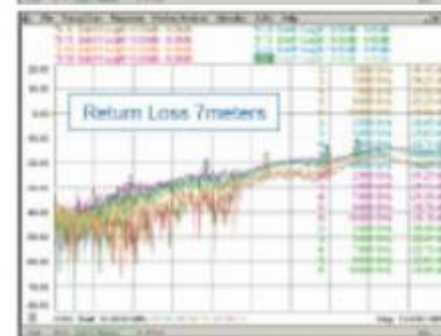
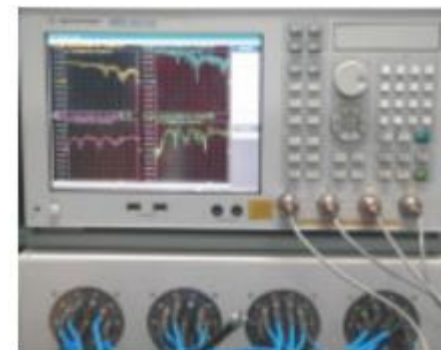
Differential to Common
Mode Conversion Loss



Return Loss



Insertion Loss



100G QSFP28 DAC Series

100G QSFP28 DAC-passive copper cable assembly features eight differential copper pairs, providing four data transmission channels at speeds up to 28Gbps per channel, and meets 100G Ethernet (4x25Gbps) and InfiniBand EDR (Enhanced Data Rate) requirements. These 100G copper cable assembly features a unique construction with individually wrapped twinax pairs, resulting in low insertion loss and low cross talk.

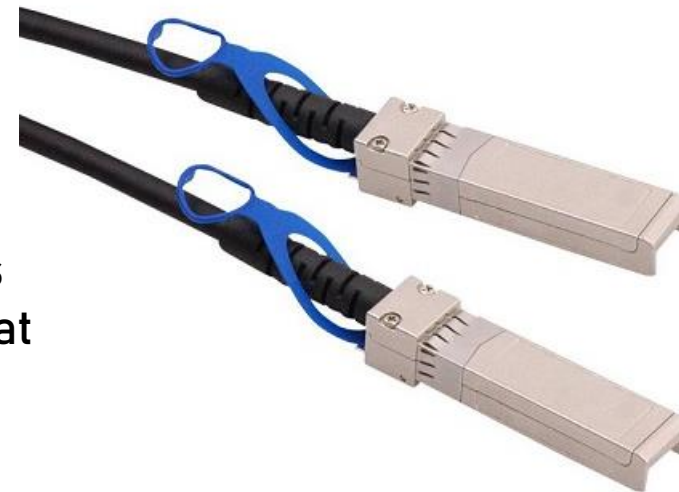


Part Number	Product Description	AWG
100G QSFP28 DAC Cable		
QSFP28-100G-CU1M	100G QSFP28 (EDR) DAC Cable, 1-Meter	30
QSFP28-100G-CU2M	100G QSFP28 (EDR) DAC Cable, 2-Meter	30
QSFP28-100G-CU3M	100G QSFP28 (EDR) DAC Cable, 3-Meter	26
QSFP28-100G-CU5M	100G QSFP28 (EDR) DAC Cable, 5-Meter	26
QSFP28 (100G) to 2 x QSFP28 (50G) Cable		
QSFP28-2Q50G-CU1M	100G QSFP28 to 2x 50G QSFP28 Copper Breakout Cable, 1-Meter	30
QSFP28-2Q50G-CU2M	100G QSFP28 to 2x 50G QSFP28 Copper Breakout Cable, 2-Meter	30
QSFP28-2Q50G-CU3M	100G QSFP28 to 2x 50G QSFP28 Copper Breakout Cable, 3-Meter	30
QSFP28 (100G) to 4 x SFP28 (25G) Cable		
QSFP28-4SFP25G-CU1M	100G QSFP28 to 4x 25G SFP28 Copper Breakout Cable, 1-Meter	30
QSFP28-4SFP25G-CU2M	100G QSFP28 to 4x 25G SFP28 Copper Breakout Cable, 2-Meter	30
QSFP28-4SFP25G-CU3M	100G QSFP28 to 4x 25G SFP28 Copper Breakout Cable, 3-Meter	28
QSFP28-4SFP25G-CU5M	100G QSFP28 to 4x 25G SFP28 Copper Breakout Cable, 5-Meter	26

25G SFP28 DAC Series

The 25G SFP28 DAC passive copper cable is a high speed, cost-effective 25Gbp/s Ethernet connectivity solution designed to meet the growing needs for higher bandwidth in data centers.

The 25G DAC passive copper cable contains a single high-speed copper pair, operating at data rates of up to 25 Gb/s. The cables are compliant with IEEE P802.3by Ethernet standard and SFF-8402 SFP28 standard.



Part Number	Product Description	AWG
25G SFP28 DAC Cable		
SFP28-H25GB-CU1M	25G SFP28 DAC Cable, 1-Meter	30
SFP28-H25GB-CU2M	25G SFP28 DAC Cable, 2-Meter	30
SFP28-H25GB-CU3M	25G SFP28 DAC Cable, 3-Meter	26
SFP28-H25GB-CU5M	25G SFP28 DAC Cable, 5-Meter	26

40G QSFP+ DAC Series

QSFP+ (Quad Small Form-factor Pluggable Plus) Cables Assemblies QSFP+ copper direct-attach cables are suitable for very short distances and offer a highly cost-effective way to establish a 40-Gigabit link between QSFP+ ports of QSFP+ switches within racks and across adjacent racks. These cables are used for 40GbE and Infiniband standards to maximize performance.



Part Number	Product Description	AWG
QSFP+ Copper Direct-attached Cable		
QSFP-H40G-CU0M5	40GBASE-CR4 QSFP+ direct-attach copper cable, 0.5 meter passive	30
QSFP-H40G-CU1M	40GBASE-CR4 QSFP+ direct-attach copper cable, 1 meter passive	30
QSFP-H40G-CU2M	40GBASE-CR4 QSFP+ direct-attach copper cable, 2 meters passive	30
QSFP-H40G-CU3M	40GBASE-CR4 QSFP+ direct-attach copper cable, 3 meters passive	30
QSFP-H40G-CU5M	40GBASE-CR4 QSFP+ direct-attach copper cable, 5 meters passive	28
QSFP-H40G-CU5M-26	40GBASE-CR4 QSFP+ direct-attach copper cable, 5 meters passive	26
SFP+ (40G) to 4x SFP+ (10G) Cable		
QSFP-4SFP10G-CU0M5	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable, 0.5 meter passive	30
QSFP-4SFP10G-CU1M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable, 1 meter passive	30
QSFP-4SFP10G-CU2M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable, 2 meters passive	30
QSFP-4SFP10G-CU3M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable, 3 meters passive	30
QSFP-4SFP10G-CU5M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable, 5 meters passive	26

10G SFP+ DAC Series

The main application for SFP+ DAC is Data centers and High Performance Computing (HPC) for in-rack connections between servers and top-of-rack switches.

SFP+ Direct Attach has a fixed-length cable, typically 1 to 5m (passive cables) or up to 15m (active cables) in length and like 10GBASE-CX4, is low power, low cost and low latency with the added advantages of using less bulky cables and of having the small form factor of SFP+.



Part Number	Product Description	AWG
SFP-H10GB-CU50CM	10G SFP+ Copper Twinax cable 0.5 Meter, passive	30
SFP-H10GB-CU1M	10G SFP+ Copper Twinax cable 1 Meter, passive	30
SFP-H10GB-CU2M	10G SFP+ Copper Twinax cable 2 Meters, passive	30
SFP-H10GB-CU3M	10G SFP+ Copper Twinax cable 3 Meters, passive	30
SFP-H10GB-CU3M-24	10G SFP+ Copper Twinax cable 3 Meters, passive	24
SFP-H10GB-CU5M	10G SFP+ Copper Twinax cable 5 Meters, passive	30
SFP-H10GB-CU5M-24	10G SFP+ Copper Twinax cable 5 Meters, passive	24

Active Optical Cables

AOC (Active Optical Cable) meets the needs of higher speed, greater scalability, better performance and higher reliability in data centers, storage network, and high performance computing applications.

The AOCs utilize multimode fiber with 850-nm VCSELs and PIN PDs. The certificated cables have superior signal integrity and bit-error-rate, which enables reliable operation performance. Compared to conventional copper cables, longer and lighter optical cables enable the ease of complicated data-center cablings.



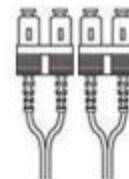
QSFP+/ 8LC+ AOC
QSFP+ to LC Connector (OM3 MMF)



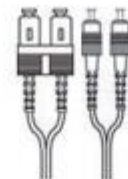
✓ OM3
✓ OM4

Package	Part Number	Data Rate	Reach (km)	Wavelength (nm)	Power Consumption
QSFP28 AOC	JS-AOC-QSFP28-xxM	100G	1~150m	850	<2.5W
QSFP+ AOC	JS-AOC-QSFP+-xxM	40G	1~300m	850	<1.5W
QSFP+ 56G AOC	JS-AOC-QSFP56G-xxM	56G	1~100m	850	<1.5W
SFP28 AOC	JS-AOC-SFP28-xxM	28G	1~150m	850	<1.0W
QSFP28 to SFP28 AOC	JS-AOC-QSFP28-4SFP28-xxM	100G to 28G	1~150m	850	-
QSFP28 to SFP28 AOC	JS-AOC-QSFP28-2X50G-xxM	100G to 50G	1~150m	850	-
QSFP+ to SFP+ AOC	JS-AOC-QSFP-4SFP+-xxM	40G to 10G	1~150m	850	<1.5W
40G QSFP+ to 8x LC AOC	JS-AOC-QSFP-8LC+-xxM	40G to LC	1~300m	850	-
SFP+ AOC	JS-AOC-SFP+-xxM	10G	1~300m	850	-

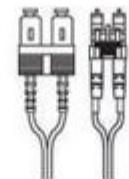
Fiber Cable



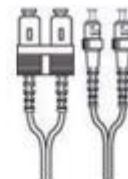
SC-SC



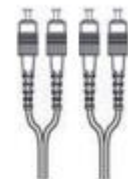
SC-FC



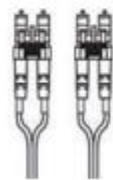
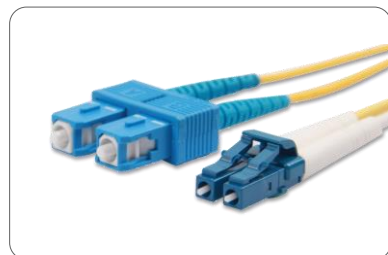
SC-LC



SC-ST



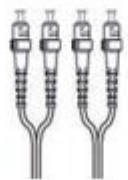
FC-FC



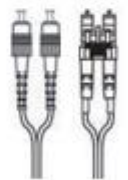
LC-LC



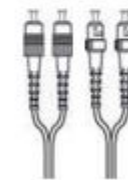
LC-ST



ST-ST



FC-LC

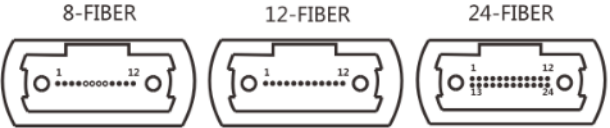


FC-ST

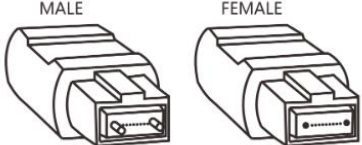
Connector 1	Connector 2	Fiber Mode	Fiber Count	length
SC	-SC	- SM (OS2 9/125μm)	-D	-30cm
LC	-LC	-OM1 (62.5/125μm)	Duplex	-1M
ST	-ST	-OM2 (50/125μm)	-S	-3M
FC	-FC	-OM3 (50/125μm)	Simplex	-5M
SC/APC	-SC/APC	-OM4 (50/125μm)		----
				-100M
				-300M

MPO Cable

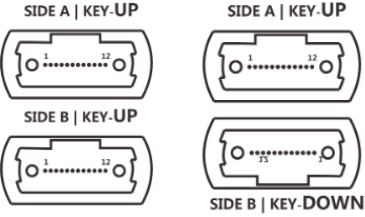
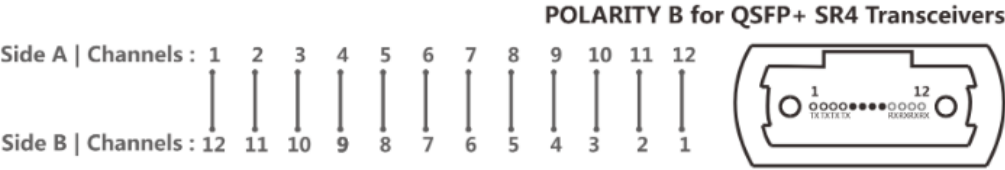
3 Options for MPO Connectors



MPO Connectors (Male with pin/ Female without pin)



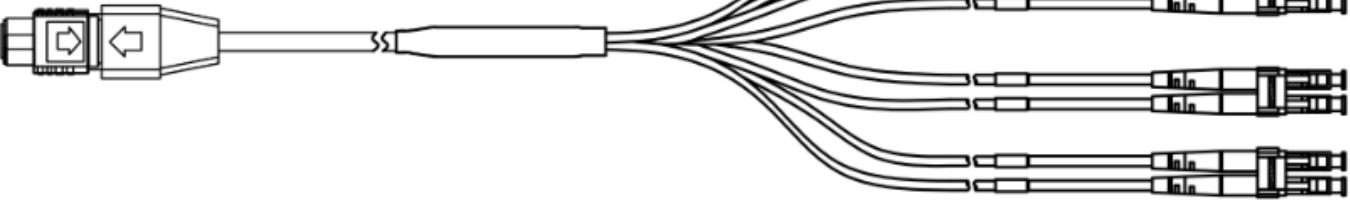
POLARITY B CHANNEL ALIGNMENT - Opposing connectors are both key-up with the fiber channel positions reversed at each end.



MPO-MPO Patch Cord



MPO-8xLc Patch Cord



Connector 1	Connector 2	Fiber Mode	Fiber Count	length
MPO(Female)	-MPO(Female)	- SM (OS2 9/125μm)	8 fiber	-30cm
MPO (Male)	-MPO (Male)	- OM3 (50/125μm)	12 fiber	-1M
MPO/APC (F)	-MPO/APC (F)	- OM4 (50/125μm)	24 fiber	-3M
MPO/APC (M)	-MPO/APC (M)			-5M
	-8xLC			----
	-8xST			-100M
	Key up-up			-300M
	Key up-down			

NIC Card

Unified Networking

- ◇ Full line of 10GbE Converged Network Adapters (CNA)
- ◇ Fibre Channel over Ethernet
- ◇ iSCSI with trusted, native OS support
- ◇ Support for data center bridging with lossless Ethernet

Platform Optimization

- ◇ Integrated PCI Express
- ◇ Direct Data I/O Technology



Part Number	Speed	Controller(s)	Port number	Port type	Compatibility
XL710-40G-1Q-X8	40G	Intel XL710-AM1	1	QSFP+ Port	Intel XL710-QDA1
XL710-40G-2Q-X8		Intel XL710-BM2	2	QSFP+ Ports	Intel XL710-QDA2
710-25G-2S-X8	25G	Intel XXV710	2	SFP28 Ports	Intel XXV710-DA2
X520-10G-1S-X8	10G	Intel 82599	1	SFP+ Port	Intel X520-DA1
X550-10G-T1-X8		Intel ELX550AT	1	RJ-45 Port	Intel X550-T1
X540-10G-1T-X8		Intel X540	1	RJ-45 Port	Intel X540-T1
2724-10G-2S-X8		MCX312B-XCCT	2	SFP+ Ports	MCX312B-XCCT
X520-10G-2S-X8		Intel X520	2	SFP+ Ports	Intel X520-DA2
X540-10G-T2-X8		Intel X540	2	RJ-45 Ports	Intel X540-T2
X550-10G-T2-X8		Intel ELX550AT2	2	RJ-45 Ports	Intel X550-T2

Loopback

Electrical Passive Loopback has Excellent signal integrity, It is used for Economical and flexible all SFP+/SFP28/QSFP+/QSFP28 port testing Board level system testing and Power on validation.



The loopback module is packaged in a standard MSA housing compatible with all SFP+/SFP28/QSFP+/QSFP28 ports. Transmit data from the host is electrically routed, (internal to the loopback module), to the receive data outputs and back to the host.

It provides an economical way to exercise SFP+/SFP28/QSFP/QSFP+ ports during R&D validation, production testing, and field testing.



Technical Parameters

Data Rate	Thickness of Gold-finger	Plug in and out	Attenuation Option	Operating Temperature	+3.3V Supply Voltage	Input/ Output Load Resistance(RL)	Power Option
10 Gbps	15 μ	500 Times	0~5.0dB	0~70°C	3.15~3.45 V	100 $\pm$ 10 Ω	0~2.5W
25 Gbps	15 μ	500 Times	0~5.0dB	0~70°C	3.15~3.45 V	100 $\pm$ 10 Ω	0~2.5W
40 Gbps	15 μ	500 Times	0~5.0dB	0~70°C	3.15~3.45 V	100 $\pm$ 10 Ω	0~3.5W
100 Gbps	15 μ	500 Times	0~5.0dB	0~70°C	3.15~3.45 V	100 $\pm$ 10 Ω	0~3.5W

Media Converter



CVT-100BTFC CVT-100BTFT	10/100Base-TX to 100Base-FX Fiber Converter (SC MM) / (ST MM)
CVT-100BTFC-SM30	10/100Base-TX to 100Base-FX Fiber Converter (SC SM 30Km)
CVT-3002SFP-PLUS	10/100/1000Base-TX TO 1000Base X Converter(LC Slot*1)+內含JS-S320SX (MM LC 500m)
	10/100/1000Base-TX TO 1000Base X Converter(LC Slot*1)+內含JS-S430LX (SM LC 10km)
CVT-3002BTFC-PLUS	1000Base-TX to 1000Base-SX Converter(SC MM) 550M
CVT-3002BTFC(SM-10)-PLUS	1000Base-TX to 1000Base-LX Converter(SC SM 10km)
CVT-5002SFP+	10G Base-R Fiber Optics 10G SFP+ to 10G SFP+ Standalone Media Converter



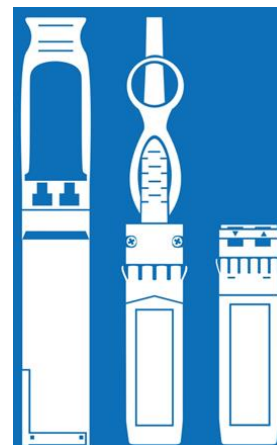
FE-C130SC FE-C130ST	10/100Base-TX to 100Base-FX Fiber Converter (SC MM) / (ST MM)
FE-C130SC.S20	10/100Base-TX to 100Base-FX Fiber Converter (SC SM 20Km)
GE-C110AU	10/100/1000Base-TX TO 1000Base X Converter(LC Slot*1)+內含JS-S320SX (MM LC 500m)
	10/100/1000Base-TX TO 1000Base X Converter(LC Slot*1)+內含JS-S430LX (SM LC 10km)

CUSTOMER SERVICE

■ 3 Days Delivery

For stock items, can be shipped in 1-3 days.

For out of stock items, 90% orders can be shipped in 7-10 working days



■ Warranty Policy

Transceivers **3** year

DAC 1 year

AOC 1 year

Converter & NIC 1 year

■ RMA Process

All products have been thoroughly tested to be free of defects in material and workmanship.

If any product should malfunction while used in its recommended environment during the applicable warranty period, JSTT, at its option, will repair or replace the product at no charge.

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THANKS

