

## 16. SFP Transceiver (Digital Optical Transceiver)



### FEATURE

- Various Data Link
- Hot-Pluggable
- +3.3V Power Supply
- RoHS Compliant
- Excellent Temp. Stability

### APPLICATION

- Giga-bit Ethernet
- SONET
- Wireless Optical Link
- Access Network



## ■ SFP Transceiver (Digital Optical Transceiver)

### 1.25G SFP Transceiver

#### FEATURE

- Compliant with MSA SFP specification, G.959.1, SFF-8472, FC-PI v2.0 Up to 1.25Gbps data rate
- Duplex LC receptacle optical interface compliant
- Single +3.3V power supply
- Hot-pluggable
- International Class1 laser safety certified
- Operating temperature range: Commercial: -5°C~+70°C, Industrial: -40°C~+85°C
- RoHS Compliant
- DDMI function available with internally calibrated mode
- Gigabit Ethernet, Gigabit Fiber Channel, Access Network



#### Ordering Information:

Part Number	Package	Data Rate	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -SF-8G1-01	SFP	1.25G	850nm	550m	VCSEL	LC	PIN	-9.5~0dBm	-21~0dBm
EC -SF-3G1-10	SFP	1.25 G	1310nm	10km	FP	LC	PIN	-10~+3dBm	-25~+3dBm
EC -SF-3G1-20	SFP	1.25 G	1310nm	20km	FP	LC	PIN	-9~+3dBm	-25~+3dBm
EC -SF-3G1-40	SFP	1.25 G	1310nm	40km	DFB	LC	PIN	-4~+3dBm	-25~+3dBm
EC -SF-5G1-40	SFP	1.25 G	1550nm	40km	DFB	LC	PIN	-7~0dBm	-25~+3dBm
EC -SF-5G1-60	SFP	1.25 G	1550nm	60km	DFB	LC	PIN	0~+5dBm	-26~+3dBm
EC -SF-5G1-80	SFP	1.25 G	1550nm	80km	DFB	LC	PIN	-3~+3dBm	-26~+3dBm
EC -SF-5G1-100	SFP	1.25 G	1550nm	100km	DFB	LC	PIN	0~+5dBm	-31~+9dBm
EC -SF-5G1-120	SFP	1.25 G	1550nm	120km	DFB	LC	APD	0~+5dBm	-34~+9dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 1.25G SFP CWDM Transceiver

#### FEATURE

- Up to 1.25Gbps Data Links Metal enclosure, for lower EMI
- Single +3.3V power supply
- Hot-pluggable
- Duplex LC/UPC type pluggable optical interface
- Operating temperature range: Commercial: -5°C~+70°C Industrial: -40°C~+85°C
- RoHS Compliant
- 2-wire interface with integrated Digital Diagnostic monitoring
- Up to 120km transmission distance over Single Mode Fiber(SMF)
- Low power dissipation
- Switch to Switch Interface, Gigabit Ethernet, AN



#### Ordering Information:

Part Number	Package	Data Rate	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC-SF-Q1G1-20	SFP	1.25Gbps	1270~1610nm	20km	FP	LC	PIN	-9~+3dBm	-25~+3dBm
EC-SF-Q1G1-40	SFP	1.25Gbps	1270~1610nm	40km	DFB	LC	PIN	-4~+3dBm	-25~+3dBm
EC-SF-Q1G1-60	SFP	1.25Gbps	1270~1610nm	60km	DFB	LC	PIN	0~+5dBm	-26~+3dBm
EC-SF-Q1G1-80	SFP	1.25Gbps	1270~1610nm	80km	DFB	LC	PIN	-3~+3dBm	-26~+3dBm
EC-SF-Q1G1-100	SFP	1.25Gbps	1270~1610nm	100km	DFB	LC	PIN	0~+5dBm	-31~+9dBm
EC-SF-Q1G1-120	SFP	1.25Gbps	1270~1610nm	120km	DFB	LC	APD	0~+5dBm	-34~+9dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 1.25G SFP BIDI Transceiver

#### FEATURE

- Up to 1.25Gbps bi-directional data links Up to 120km transmission distance over Single Mode Fiber(SMF)
- BIDI LC/UPC type pluggable optical interface
- Hot-pluggable SFP footprint
- Metal enclosure, for lower EMI
- Compatible with RoHS
- +3.3V single power supply
- Operating case temperature: Standard : -5 to +70°C ,Industrial : -40 to +85°C
- Gigabit Ethernet, Gigabit Fiber Channel, Access Network



#### Ordering Information:

Part Number	Package	Data Rate	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -SFBL-35(53)G1-03	SFP	1.25Gbps	1310/1550nm	3km	FP	LC	PIN	-10~+3dBm	-25~+3dBm
EC -SFBL-34(43)G1-10	SFP	1.25Gbps	1310/1490nm	10km	FP	LC	PIN	-10~+3dBm	-25~+3dBm
EC -SFBL-35(53)G1-10	SFP	1.25Gbps	1310/1550nm	10km	FP	LC	PIN	-10~+3dBm	-25~+3dBm
EC -SFBL-34(43)G1-20	SFP	1.25Gbps	1310/1490nm	20km	FP/DFB	LC	PIN	-9~+3dBm	-25~+3dBm
EC -SFBL-35(53)G1-20	SFP	1.25Gbps	1310/1550nm	20km	FP/DFB	LC	PIN	-9~+3dBm	-25~+3dBm
EC -SFBL-34(43)G1-40	SFP	1.25Gbps	1310/1490nm	40km	DFB	LC	PIN	-4~+3dBm	-25~+3dBm
EC -SFBL-35(53)G1-40	SFP	1.25Gbps	1310/1550nm	40km	DFB	LC	PIN	-4~+3dBm	-25~+3dBm
EC -SFBL-35(53)G1-60	SFP	1.25Gbps	1310/1550nm	60km	DFB	LC	PIN	0~+5dBm	-25~+3dBm
EC -SFBL-45(54)G1-80	SFP	1.25Gbps	1490/1550nm	80km	DFB	LC	PIN	-3~+3dBm	-26~+3dBm
EC -SFBL-45(54)G1-120	SFP	1.25Gbps	1490/1550nm	120km	DFB	LC	APD	0~+5dBm	-31~+9dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 1.25G SFP BIDI CWDM Transceiver

#### FEATURE

- Up to 1.25Gbps Data Links Metal enclosure, for lower EMI
- Single +3.3V power supply
- Hot-pluggable
- Duplex LC/UPC type pluggable optical interface
- Operating temperature range: Commercial: -5°C~+70°C, Industrial: -40°C~+85°C
- ROHS Compliant
- 2-wire interface with integrated Digital Diagnostic monitoring
- Up to 120km transmission distance over Single Mode Fiber(SMF)
- Low power dissipation
- Switch to Switch Interface, Gigabit Ethernet, AN



#### Ordering Information:

Part Number	Package	Data Rate	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC-SF-Q1G-20	SFP	1.25Gbps	1270~1610nm	20km	FP	LC	PIN	-9~+3dBm	-25~+3dBm
EC-SF-Q1G-40	SFP	1.25Gbps	1270~1610nm	40km	DFB	LC	PIN	-4~+3dBm	-25~+3dBm
EC-SF-Q1G-60	SFP	1.25Gbps	1270~1610nm	60km	DFB	LC	PIN	0~+5dBm	-26~+3dBm
EC-SF-Q1G-80	SFP	1.25Gbps	1270~1610nm	80km	DFB	LC	PIN	0~+5dBm	-26~+3dBm
EC-SF-Q1G-120	SFP	1.25Gbps	1270~1610nm	80km	DFB	LC	APD	-3~+3dBm	-26~+3dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G SFP+ Transceiver

#### FEATURE

- Up to 9.95Gbps to 10.5Gbps 1310nm FP Laser and PIN photo detector
- Duplex LC receptacle optical interface compliant
- Single +3.3V power supply
- Hot-pluggable
- AC coupling of LVPECL signals
- International Class1 laser safety certified
- Operating temperature range: Commercial: -5℃~+70℃ ,Industry: -40℃~+85℃
- ROHS Compliant
- DDMI function available with internally calibrated mode
- 10GBASE-LR/LW,10G Fiber Channel



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XP-8G10-01	SFP+	850nm	300m	VCSEL	LC	PIN	-6~-1dBm	-10~+0.5dBm
EC -XP-3G10-02	SFP+	1310nm	2km	FP	LC	PIN	-6~-0.5dBm	-14.4~+0.5dBm
EC -XP-3G10-10	SFP+	1310nm	10km	DFB	LC	PIN	-6~-0.5dBm	-14.4~+0.5dBm
EC -XP-3G10-20	SFP+	1310nm	20km	DFB	LC	PIN	-3~+3dBm	-14.4~+0.5dBm
EC -XP-5G10-40	SFP+	1550nm	40km	EML	LC	PIN	-1~+3dBm	-15.8~+0.5dBm
EC -XP-5G10-80	SFP+	1550nm	80km	EML	LC	APD	0~+4dBm	-23~-6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G SFP+ BIDI Transceiver

#### FEATURE

- Supports up to 10.7Gbps bit rates Hot-pluggable SFP+ footprint
- Up to 80km for SMF transmission
- Compliant with SFP+ MSA and SFF-8472 with duplex LC receptacle
- Hot-pluggable
- Single +3.3V power supply
- International Class1 laser safety certified
- Operating temperature range: Commercial: -5℃~+70℃ ,Industry: -40℃~+85℃
- ROHS Compliant
- 10Gbps Optical systems, 10GBASE-LR at 10.3125Gbps,10GBASE-LW at 9.953Gbps, LTE systems, Other Optical links



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XPBL-23G10-10	SFP+	1270/1330nm	10km	DFB	LC	PIN	-6~-0.5dBm	-15~+0.5dBm
EC -XPBL-32G10-10	SFP+	1330/1270nm	10km	DFB	LC	PIN	-6~-0.5dBm	-15~+0.5dBm
EC -XPBL-23G10-20	SFP+	1270/1330nm	20km	DFB	LC	PIN	-3~+3dBm	-15~+0.5dBm
EC -XPBL-32G10-20	SFP+	1330/1270nm	20km	DFB	LC	PIN	-3~+3dBm	-15~+0.5dBm
EC -XPBL-23G10-40	SFP+	1270/1330nm	40km	DFB	LC	PIN	0~+5dBm	-15~+0.5dBm
EC -XPBL-32G10-40	SFP+	1330/1270nm	40km	DFB	LC	PIN	0~+5dBm	-15~+0.5dBm
EC -XPBL-23G10-60	SFP+	1270/1330nm	60km	DFB	LC	APD	0~+5dBm	-20~-6dBm
EC -XPBL-32G10-60	SFP+	1330/1270nm	60km	DFB	LC	APD	0~+5dBm	-20~-6dBm
EC -XPBL-45G10-80	SFP+	1490/1550nm	80km	EML	LC	APD	0~+4dBm	-24~-7dBm
EC -XPBL-54G10-80	SFP+	1550/1490nm	80km	EML	LC	APD	-1~+3dBm	-24~-7dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G SFP+ CWDM Transceiver

#### FEATURE

- Supports up to 10.7Gbps bit rates Hot-pluggable SFP+ footprint
- Up to 80km for SMF transmission
- Compliant with SFP+ MSA and SFF-8472 with duplex LC receptacle
- Hot-pluggable
- Single +3.3V power supply
- International Class1 laser safety certified
- Operating temperature range: Commercial: -5℃~+70℃ ,Industry: -40℃~+85℃
- ROHS Compliant
- 10Gbps Optical systems, 10GBASE-LR at 10.3125Gbps,10GBASE-LW at 9.953Gbps, LTE systems, Other Optical links



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XP-QXXG10-10	SFP+	1270~1450nm	10km	DFB	LC	PIN	-6~-0.5dBm	-14.4~-+0.5dBm
EC -XP-QXXG10-20	SFP+	1270~1450nm	20km	DFB	LC	PIN	-6~-0.5dBm	-15.8~-+0.5dBm
EC -XP-QXXG10-40	SFP+	1270~1370nm	40km	DFB	LC	PIN	-1~-+3dBm	-15.8~-+0.5dBm
EC -XP-QXXG10-40	SFP+	1470~1610nm	40km	EML	LC	PIN	-1~-+3dBm	-15.8~-+0.5dBm
EC -XP-QXXG10-80	SFP+	1470~1610nm	80km	EML	LC	APD	0~-+4dBm	-23~-+6dBm



## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G SFP+ DWDM Transceiver

#### FEATURE

- Compliant with MSA SFP+ specification(SFF-8431) Compliant with SFF-8472
- Compliant with SFP+ MSA
- Compliant to IEEE 802.3ae
- Up to 11.3Gbps Data Links
- DWDM EML transmitter and PIN receiver
- Metal enclosure, for lower EMI
- Single +3.3V power supply
- Hot-pluggable
- Compliant with SFP+ MSA with LC connector
- Operating temperature range: Standard: 0 to +70°C, Industrial: -40 to +85°C
- RoHS Compliant
- 2-wire interface with integrated Digital Diagnostic monitoring
- Up to 80km transmission distance over Single Mode Fiber(SMF)
- 10GBASE-ER/EW, 10G Ethernet, SDH STM64



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XP-Q2G10-20(C)	SFP+	DWDM ITU	20km	DFB	LC	PIN	-6~-0.5dBm	-14.4~-+0.5dBm
EC -XP-Q2G10-40(C)	SFP+	DWDM ITU	40km	EML	LC	PIN	-1~-3dBm	-15.8~-+0.5dBm
EC -XP-Q2G10-80(C)	SFP+	DWDM ITU	80km	EML	LC	APD	0~-+4dBm	-23~-+6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G XFP Transceiver

#### FEATURE

- Up to 11.1Gbps Data Links Compliant with MSA SFP+ specification(SFF-8431)
- Compliant with SFF-8472
- Compliant with SFP+ MSA
- Compliant to IEEE 802.3ae
- Compliant with XFP MSA; Hot-pluggable
- Support 300m~80km transmission distance
- Compliant with EMI,ESD
- Single +3.3V power supply
- Hot-pluggable
- Power dissipation < 1.5W
- Operating temperature range: Standard: 0 to +70°C, Industrial: -40 to +85°C
- ROHS Compliant
- 10GBASE-ZR/ZW, 10G Ethernet, SONET OC-192 &SDH STM 64



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XF-8G10-01	XFP	850nm	300m	VCSEL	LC	PIN	-6~+1dBm	-10~+0.5dBm
EC -XF-3G10-10	XFP	1310nm	10km	DFB	LC	PIN	-6~+1dBm	-15~+0.5dBm
EC -XF-5G10-40	XFP	1550nm	40km	EML	LC	PIN	-1~+4dBm	-16.5~+0.5dBm
EC -XF-5G10-80	XFP	1550nm	80km	EML	LC	APD	0~+5dBm	-24~-6dBm
EC -XF-5G10-100	XFP	1550nm	100km	EML	LC	APD	1~+5dBm	-24~-6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G XFP BIDI Transceiver

#### FEATURE

- Up to 11.1Gbps Data Links Compliant with MSA SFP+ specification(SFF-8431)
- Compliant with SFF-8472
- Compliant with SFP+ MSA
- Compliant to IEEE 802.3ae
- Compliant with XFP MSA; Hot-pluggable
- Up to 80km transmission distance over Single Mode Fiber(SMF)
- Compliant with EMI,ESD
- Single +3.3V power supply
- Operating temperature range: Standard: 0 to +70°C, Industrial: -40 to +85°C
- ROHS Compliant
- 10GBASE-ZR/ZW, 10G Ethernet, SONET OC-192 &SDH STM 64



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XFBL-23G10-10	XFP	1270/1330nm	10km	DFB	LC	PIN	-5~0dBm	-15~+0.5dBm
EC -XFBL-32G10-10	XFP	1330/1270nm	10km	DFB	LC	PIN	-5~0dBm	-15~+0.5dBm
EC -XFBL-23G10-20	XFP	1270/1330nm	20km	DFB	LC	PIN	-3~+2dBm	-15~+0.5dBm
EC -XFBL-32G10-20	XFP	1330/1270nm	20km	DFB	LC	PIN	-3~+2dBm	-15~+0.5dBm
EC -XFBL-23G10-40	XFP	1270/1330nm	40km	DFB	LC	PIN	0~+5dBm	-15~+0.5dBm
EC -XFBL-32G10-40	XFP	1330/1270nm	40km	DFB	LC	PIN	0~+5dBm	-15~+0.5dBm
EC -XFBL-23G10-60	XFP	1270/1330nm	60km	DFB	LC	APD	0~+5dBm	-20~+6dBm
EC -XFBL-32G10-60	XFP	1330/1270nm	60km	DFB	LC	APD	0~+5dBm	-20~+6dBm
EC -XFBL-45G10-80	XFP	1490/1550nm	80km	EML	LC	APD	0~+4dBm	-24~+6dBm
EC -XFBL-54G10-80	XFP	1550/1490nm	80km	EML	LC	APD	-1~+3dBm	-24~+6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G XFP CWDM Transceiver

#### FEATURE

- Supports 9.95Gb/s to 11.3Gb/s bit rates Cooled CWDM EML and PIN receiver
- Supports Lineside and XFI loopback
- Full Duplex LC connector
- Metal enclosure, for lower EMI
- Single +3.3V power supply
- Hot-pluggable
- Power dissipation < 2.5W
- Operating temperature range: Standard: 0 to +70°C, Industrial: -40 to +85°C
- RoHS Compliant
- No Reference Clock required
- Built-in digital diagnostic functions
- Standard bail release mechanism
- Up to 80km transmission distance
- 10GBASE-ZR/ZW, 10G Ethernet, SONET OC-192 &SDH STM 64



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XF-Q24G10-40	XFP	1270~1410nm	40km	EML	LC	PIN	-1~+4dBm	-16.5~+0.5dBm
EC -XF-Q46G10-40	XFP	1470~1610nm	40km	EML	LC	PIN	-1~+4dBm	-16.5~+0.5dBm
EC -XF-Q46G10-80	XFP	1470~1610nm	80km	EML	LC	APD	0~+5dBm	-24~+6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 10G XFP DWDM Transceiver

#### FEATURE

- Supports 9.95Gb/s to 11.3Gb/s bit rates Full Duplex LC connector
- Metal enclosure, for lower EMI
- Single +3.3V power supply
- Operating temperature range: Standard: 0 to +70°C, Industrial: -40 to +85°C
- RoHS Compliant
- Compliant with XFP MSA; Hot-pluggable
- Standard bail release mechanism
- Compliant with MSA SFP+ specification(SFF-8431)
- Compliant with SFF-8472
- Compliant with SFP+ MSA
- Compliant to IEEE 802.3ae
- Up to 80km transmission distance
- 10GBASE-ZR/ZW, 10G Ethernet, SONET OC-192 &SDH STM 64



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -XF-QXXG10-40	XFP	DWDM ITU	40km	EML	LC	PIN	-1~+4dBm	-16.5~+0.5dBm
EC -XF-QXXG10-80	XFP	DWDM ITU	80km	EML	LC	APD	0~+5dBm	-24~+6dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 100G CFP

#### FEATURE

- Compliant to CFP MSA Hardware Specification
- Compliant to CFP MSA Management Interface Specification
- Compliant with 100G Ethernet IEEE 802.3bm
- Support line rates from 103.125 Gbps to 111.81 Gbps
- Integrated LAN WDM TOSA / ROSA for up to 10 km reach over SMF
- CAUI(10x10G) Electrical Interface and 4-lane 25.78Gbps optical interface
- Duplex LC optical receptacle
- MDIO Interface for module management
- RoHS Compliant
- Temperature range: -5°C~70°C
- Local Area Network (LAN),Data Center, Ethernet switches and router applications



#### Ordering Information:

Part Number	Package	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -CP-3G100-10	CFP	10km	EML	LC	PIN	-4.3~+4.5dBm	-16.5~+4.5dBm
EC -CP-3G100-40	CFP	40km	EML	LC	PIN	-2.9~+2.9dBm	-20.9~+4.5dBm

## ■ SFP Transceiver (Digital Optical Transceiver)

### 100G QSFP28

#### FEATURE

- Compliant to IEEE 802.3ba, IEEE 802.3bm and 100G LR4 Compliant with SFP MSA
- Compliant to SFF-8436
- Support line rates from 103.125 Gbps to 111.81 Gbps
- Digital Diagnostics Monitoring Interface
- Duplex LC optical receptacle
- Integrated LAN WDM TOSA / ROSA for up to 10 km reach over SMF
- Hot Pluggable
- No external reference clock
- Compliant with QSFP28 MSA with LC connector
- Commercial operating case temperature range: -5°C to 70°C
- RoHS-6 Compliant
- Power dissipation < 3.5 W
- 100G Ethernet & 100GBASE-LR4



#### Ordering Information:

Part Number	Package	Wavelength	Reach	LD	Connector	PD	Tx Power	Rx Sensitivity
EC -QF-3G100-01	QSFP28	850nm	100m	VCSEL	MPO	PIN	-7.6~+2.4dBm	-9.5~+2.4dBm
EC -QF-3G100-02	QSFP28	CWDM	2km	DFB	LC	PIN	-6.5~+2.5dBm	-10~+2.4dBm
EC -CP4-3G100-10	QSFP28	LWDM	10km	EML	LC	PIN	-4.3~+4.5dBm	-10.6~+4.5dBm