



Product Name	GAOTek QSFP+ 40G 1310nm 40km ER4 Fiber Optical Connector Transceiver SFP Module
Product SKU	GAOTek-QSFP-110
Product URL	https://gaotek.com/product/gaotek-qsfp-40g-1310nm-40km-er4-fiber-optical-connector-transceiver-sfp-module/

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Product Features

- Hot-pluggable QSFP+ form factor
- Supports 41.3 Gb/s aggregate bit rate
- Power dissipation <3.5W
- 18.5dB link insertion loss budget
- RoHS-6 compliant
- Single 3.3V power supply
- Maximum link length of 40km om Single Mode Fiber(SMF)
- Uncooled 4x10 Db/s CWDM transmitter
- XLPP electrical interface
- Duplex LC receptacles
- Built-in digital diagnostic functions, including Tx/Rx power
- Case operating temperature
- Commercial:0°C to +70°C

Applications

- 40GBASE-ER4 40G Ethernet

Compliance

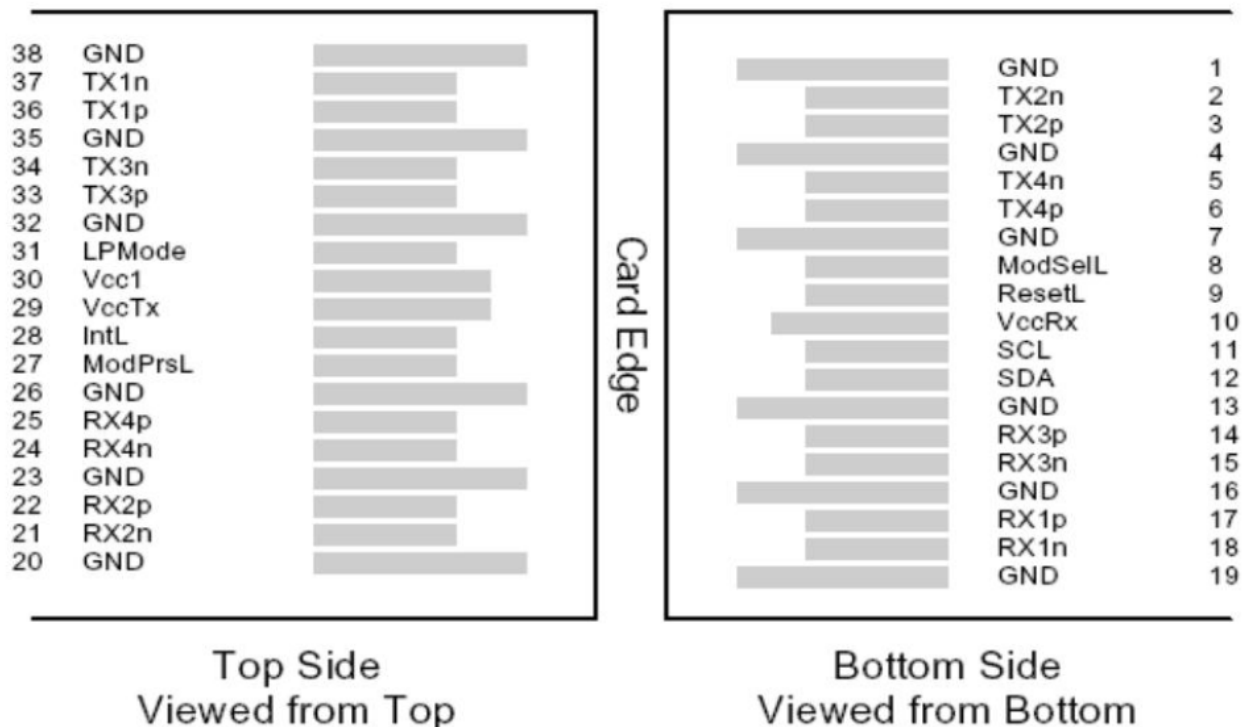
- QSFP+MSA
- IEEE802.3bm
- SFF-8436
- ROHS



Ordering information

Part No.	Bit Rate (Gbps)	Laser (nm)	Distance (km)	Media	DDMI	Connector	Temp
ESANLC23-K40C	41.3	1271nm	40	Single-mode fiber	YES	LC	0°C
		1291nm					~70°C
		1311nm					
		1331nm					

Pin Diagram





Pin Descriptions

Pin	Symbol	Name/Description	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSe1L	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power supply receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1n	Receiver Non-Inverted Data Output	
18	Rx1p	Receiver Inverted Data Output	1
19	GND	Ground	1
20	GNS	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrSL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V power supply transmitter	
30	Vcc1	+3.3V power supply	
31	LPMODE	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Output	
34	Tx3n	Transmitter Inverted Data Output	
35	GND	Ground	1



36	Tx1p	Transmitter Non-Inverted Data Output	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Ground	1

Notes:

1. Circuit ground is internally isolated from chassis ground

Absolute Maximum Ratings

Parameter	Symbo	Min	Type	Max	Unit	Ref.
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	0		85	%	
Maximum Supply Voltage	Vcc1 VccTx VccRx	-0.5		3.6	V	
Signal Input Voltage		-0.3		4.0	V	
Receiver Damage Threshold		3.8			dBm	
Lead Soldering Temperature/Time	TSOLD			260/10	°C/sec	1
Lead Soldering Temperature/Time	TSOLD			360/10	°C/sec	2

Notes:

1. Suitable for wave soldering.
2. Only for soldering by iron.

General Product Characteristics

Column1	Column2	Column3	Column4
Parameter	Value	Unit	Ref
Module Form Factor	QSFP+		
Number of Lanes	4 Tx and 4 Rx		
Maximun Aggregate Data Rate	41.2500	Gb/s	
Maximum Data Rate per Lanne	10.3125	Gb/s	Higher bit rates may be supported Please contract

Data Rate Specifications Symbol	Symbol	Min.	Typ.	Max.	Unit
Bit Rate per Lane	BR		10.3125	Gb/s	1
Bit Error Ratiio	BER		10 ^{-12}		2

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Link distance on SMF-	d	0.002	40	km	3
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Notes:

1. ±100 ppm, Compliant with 40GBASE-ER4 and XLPPi per IEEE 802.3bm
2. Tested with a PRBS 231-1 test pattern.
3. Per 40DBASE-ER, IEEE802.3bm. Links longer than 30km are considered to be engineered links, with losses than the worst case specified for the fiber type.

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Signaling Speed per Lane			10.3125	11.2	Gbps
Total Average Launch Power	P_{OUT}			10.5	dBm
Average Output Power	P_{OUT}	-2.7		4.5	dBm
Transmit OMA per Lane	TxOMA	0.3		5.0	dBm
Extinction Ratio	ER	5.5			dB
Center Wavelength	λ_C	1264.5	1271	1277.5	
		1284.5	1291	1297.5	nm
		1304.5	1311	1317.5	
		1324.5	1331	1337.5	
Sidemode Suppression ratio	SMSR	30			dB
Transmitter OFF Output Power	POff			-30	dBm
Transmitter and Dispersion Penalty	TDP			2.6	dB
Relative Intensity Noise	RIN			128	dB/Hz
Transmitter eye mask definition(X1,X2,X3,Y1,Y2,Y3)				0.25,0.4,0.45,0.25,0.28,0.4	
Receiver					
Signaling Speed per Lane			10.3125	11.2	Gbps
Input Optical Wavelength	λ_{IN}	1264.5	1271	1277.5	
		1284.5	1291	1297.5	nm
		1304.5	1311	1317.5	
		1324.5	1331	1337.5	
Rx Sensitivity per Lane	R_{SENS1}			-19	dBm
Input Saturation Power (Overload)	PSAT			3.8	dBm
Receiver Saturation Power	Psat			-26	dBm
Loss of Signal Assert	PA	-35			dBm
Loss of Signal De-assert	PD			-19	dBm
LOS Hysteresis	PD- PA	0.5		6	dB



Notes:

1. Minimum value is informative.

2. Memory Map and Control Registers
 Compatible with SFF-8636(QSFP+ MSA)

Electrical Characteristics

Parameter	Symbol	Min	Type	Max	Unit	Ref.
Supply Voltage	VccI	3.1		3.47	V	
	VccTx VccRx			1130	mA	
Transmitter						
Input differential impedance	Rin	90	100	110		2
Differential data input swing	Vin, pp	120		820	mV	
Transmit Disable Voltage	VD	2		VCC	V	3
Transmit Enable Voltage	VEN	0		0.8	V	
Receiver						
Output different impedance	Rout	90	100	110	Ω	2
LOS Asserted	VLOSA	2		VCCHOST	V	5
LOS Normal	VLOSD	0		0.8	V	5
Single ended data	Vout,pp	340		850	mV	4

output swing						
Power Supply Rejection	PSR	50			mVpp	

1. Maximum total power value is specified across the temperature and voltage range.
2. Connected directly to TX data input pins. AC coupled thereafter.
3. Or open circuit.
4. Into 100Ω different termination.
5. Loss of signal is LVTTTL. Logic “0” indicates normal operation, “1” indicates no signal detected.

Mechanical Specifications

