Product Name	GAOTek 100G Optical Transceiver
Product SKU	GAOTek-CST-185
Product URL	https://gaotek.com/product/gaotek-100g-optical-transceiver/

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Contents

GAOTek 100G Optical Transceiver

Product Description

YXF-Q28-S31L-20D Transceiver is a high performance, cost effective module for serial optical data communication applications to 100 Gigabit Ethernet links on up to 20km of single mode fiber. QSFP-100G-LR4 is compliant with theQSFP28 MSA, IEEE 802.3ba 100GBASE-LR4 and IEEE 802.3bm CAUI-4. Digital diagnostic functions are available via the I2C managementinterface, as specified by the QSFP28 MSA. The transceiver is RoHS-6 compliant per Directive 2011/65/EU.

Product Features

- Up to 20km transmission distance
- Supports 103.1Gb/s aggregate bit rate
- 4×26Gb/s cooled LAN-WDM DFB TOSA
- 4×26Gb/s PIN ROSA
- Single +3.3V power supply
- Power consumption ≤3.5W
- Operating case temperature: 0~70°C

Applications:

- 100GBASE-LR4 Ethernet Links

Compliance:

- Compliant with FCC 47 CFR Part 15, Class B
- Compliant to IEEE 802.3ba 100GBASE-LR4
- Compliant with QSFP+ MSA
- Compliant with SFF-8636
- Compliant with IEEE802.3bm CAUI-4

Pin Assignment:

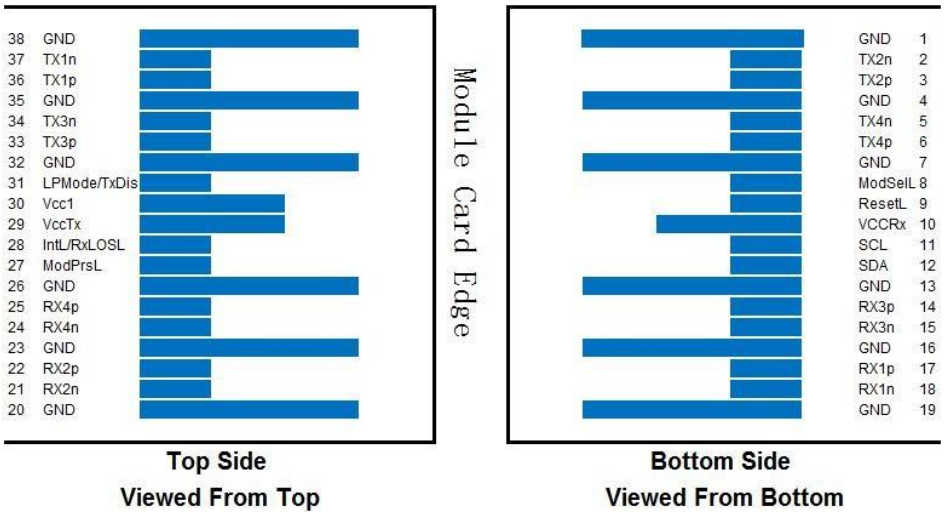


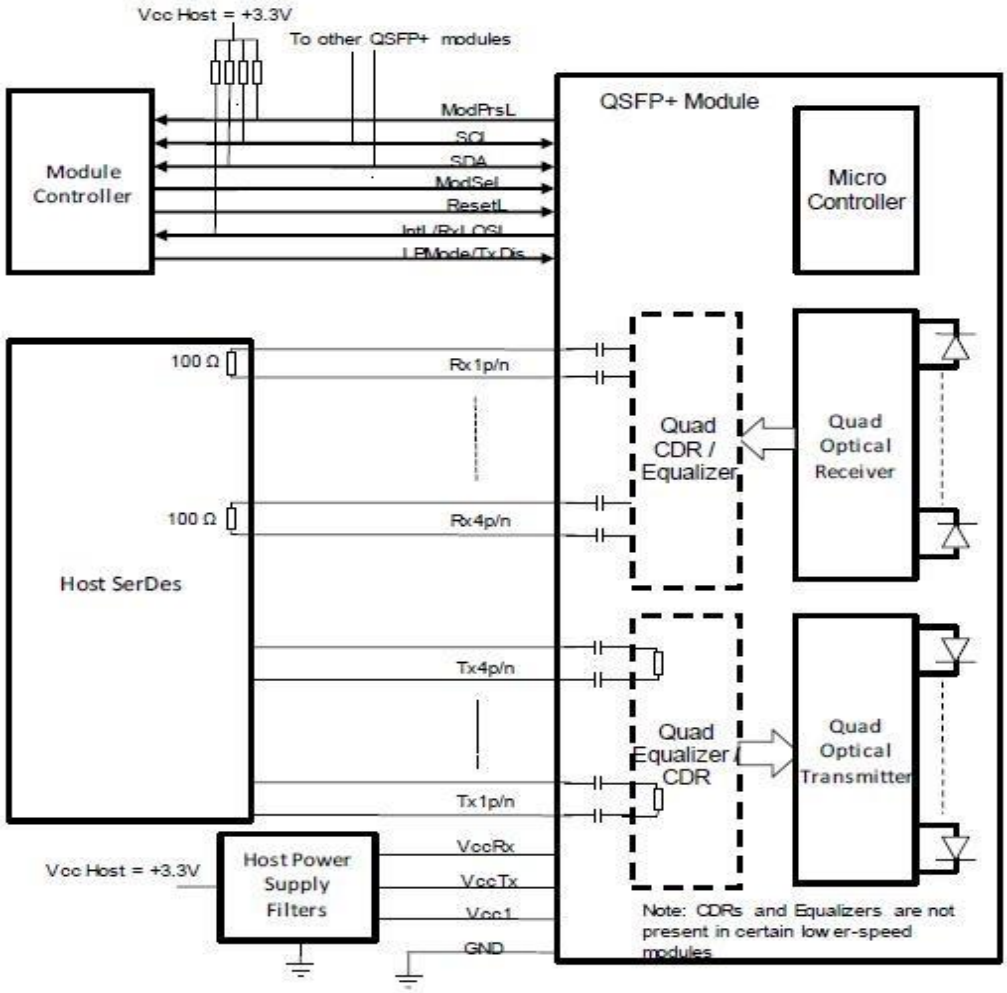
Figure 1 – QSFP+ MSA-compliant 38-pin connector

PIN Description:

Pin	Name	Description	Pin	Name	Description
1	GND	Ground	20	GND	Ground
2	Tx2n	Transmitter Inverted Data Input	21	Rx2n	Receiver Inverted Data Output
3	Tx2p	Transmitter Non-Inverted Data Input	22	Rx2p	Receiver Non-Inverted Data Output
4	GND	Ground	23	GND	Ground
5	Tx4n	Transmitter Inverted Data Input	24	Rx4n	Receiver Inverted Data Output
6	Tx4p	Transmitter Non-Inverted Data Input	25	Rx4p	Receiver Non-Inverted Data Output
7	GND	Ground	26	GND	Ground
8	ModSelL	Module Select	27	ModPrsL	Module Present
9	ResetL	Module Reset	28	IntL	Interrupt
10	Vcc Rx	+3.3V Power Supply Receiver	29	VccTx	+3.3V Power supply transmitter
11	SCL	2-wire serial interface clock	30	Vcc1	+3.3V Power supply
12	SDA	2-wire serial interface data	31	LPMode	Low Power Mode
13	GND	Ground	32	GND	Ground
14	Rx3p	Receiver Non-Inverted Data Output	33	Tx3p	Transmitter Non-Inverted Data Input
15	Rx3n	Receiver Inverted Data Output	34	Tx3n	Transmitter Inverted Data Input
16	GND	Ground	35	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output	36	Tx1p	Transmitter Non-Inverted Data Input
18	Rx1n	Receiver Inverted Data Output	37	Tx1n	Transmitter Inverted Data Input
19	GND	Ground	38	GND	Ground

Product Interface Circuit:

Figure 2 Interface Circuit



Digital Diagnostic Memory Map:

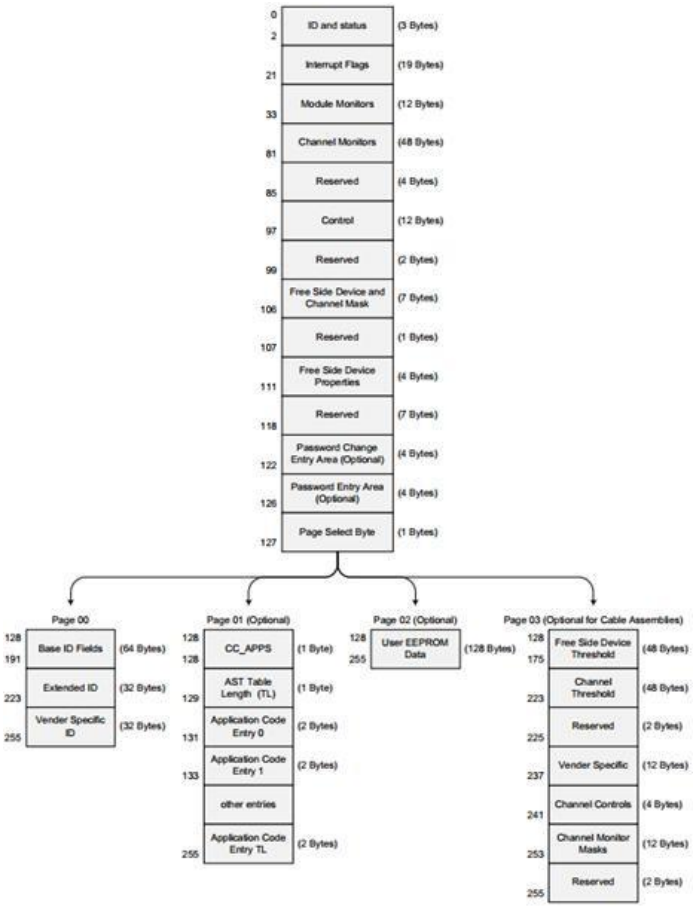


Figure 3 Memory Map

Absolute Maximum Ratings:

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	TSTG	-40		85	ºC	
Operating Relative Humidity	RH	5		85	%	
Supply Voltage	VCC	-0.5		3.6	V	
Optical Input Power	PIN	5.5			dBm	
Case Operating Temperature	**Top**	**-5**		**75**	**ºC**	

Recommended Operating Conditions:

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Case temperature	Tcase	0		70	ºC	
Supply Voltage	VCC	3.135	3.3	3.465	V	
Module Power Dissipation	P			3.5	W	
Total Data Rate				103.125	Gbps	
Data Rate, each lane				25.78125	Gbps	
Transmission Distance				**20**	**km**	

Digital Diagnostic Function:

Parameter	Symbols	Min	Type	Max	Unit	Notes
Temperature DDMaccuracy	DMI_Temp	-5		+5	℃	
Supply voltage DDMaccuracy	DMI_VCC	-5%		+5%	V	
Rx power DDMaccuracy	DMI_Rx	-3		+3	dB	
Bias current DDM accuracy	DMI_Ibias	-10%		+10%	mA	
Tx power DDM accuracy	**DMI_Tx**	**-3**		**+3**	**dB**	

Optical and Electrical Characteristic:

Parameter		Symbol	Min	Typical	Max	Units	Notes
Center Wavelength	CH 0	λc1	1294.53		1296.59	nm	
	CH 1	λc2	1299.02		1301.09	nm	
	CH 2	λc3	1303.54		1305.63	nm	
	CH 3	λc4	1308.09		1310.19	nm	
Total Average Launch Power		Ptotal			10.5	dBm	
Average Launch Power per Lane		Peach	-4		5	dBm	
Optical modulation amplitude per lane		POMA	-1.3		4.5	dBm	
Difference in Launch power between any two lances(OMA)					5	dB	
Transmitter and Dispersion Penalty per Lane		TDP			3	dB	
Side-Mode Suppression Ratio		SMSR	30			dB	
Extinction Ratio		ER	4			dB	
Transmitter reflectance					-12	dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}			**IEEE 802.3ba**			**UI**	

Parameter	Symbol	Min	Typical	Max	Units	Notes
Differential data input swing per lane	Vin-pp			900	mV	
Differential termination mismatch				10	%	
Eye width			0.46		UI	
Eye height			**95**		**mV**	

Parameter	Symbol	Min	Typical	Max	Units	Notes
Differential data output swing	Vout-pp	600		1200	mVpp	**Note 1**
		400		800	mVpp	
		300		600	mVpp	
		100		400	mVpp	
Eye width		0.57			UI	
Vertical eye closure	VEC			5.5	dB	
Differential termination mismatch				10	%	
Transition time, 20% to 80%	**Tr Tf**	**12**			**ps**	

Parameter	Symbol	Min	Typical	Max	Units	Notes
Temperature Monitor Absolute Error	DMI_Temp	-3		3	ºC	**Over Operating Temperature**
Supply Voltage Monitor Absolute Error	DMI_Vcc	-3%		3%	V	**Over Operating Voltage**
Bias Current MonitorAbsolute Error	DMI_Ibias	-10%		10%	mA	
Laser Power Monitor Absolute Error	DMI_Tx	-2		2	dB	
RX Power Monitor Absolute Error	**DMI_Rx**	**-3**		**3**	**dB**	

Parameter		Symbol	Min	Typical	Max	Units	Notes
Center Wavelength	CH 0	λc1	1294.53		1296.59	nm	
	CH 1	λc2	1299.02		1301.09	nm	
	CH 2	λc3	1303.54		1305.63	nm	
	CH 3	λc4	1308.09		1310.19	nm	
Average receiver power		Rpow	-10.6		4.5	dBm	
Receiver power(OMA) per lane		Rovl			4.5	dBm	
Difference in receive power between any two lanes(OMA)					5.5	dB	
Receiver sensitivity (OMA), each lane (max)		SENeach			-8.6	dBm	
Receiver reflectance					-26	dBm	
LOSS assert		LOSA	-25		-12	dB/Hz	
LOSS de-assert		LOSD			-11	dB	
LOS Hysteresis				**1.5**		**dB**	