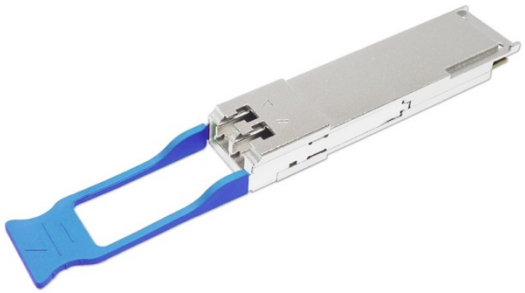
RoHS compliant
CL-QSFP+_LR4-20
40Gb/s 20km QSFP+ Transceiver
Hot Pluggable, Duplex LC Connector, Single mode

Features



- Compliant with 40G Ethernet IEEE 802.3ba 40GBASE LR4 standards
- Uncooled 4x10Gb/s CWDM transmitter
- Supports Infiniband SDR, DDR and QDR
- Wide Operating Temperature(0°C~70°C)

Applications

- Data Center Backbone
- Ethernet Switches
- High-speed Servers
- High-performance Computing Clusters
- SAN, Routers, Hubs, Load Balancer

Ordering Information

PART NUMBER	INPUT/OUTPUT	SIGNAL DETECT	VOLTAGE	TEMPERATURE
CL-QSFP+_LR4-20	AC/AC	TTL	3.3V	0°C to 70 °C

I. Absolute Maximum Ratings

Parameter	Symbol	Conditions	Min.	Max.	Unit
Storage Temperature	$T_{Storage}$		-40	+85	°C
Relative Humidity	RH		0	+85	%

II. Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Case Temperature	Tc	I-temp	0		70	°C
Power Supply Voltage	V_{CC}		3.135	3.3	3.465	V
Signaling Rate each Channel				10.3125		Gbps
Two Wire Serial (TWS) Interface Clock Rate			---	---	400	kHz
Power Supply Noise			---	---	50	mVpp
Supply Noise Rejection			---	---	100	mV
Receiver Differential Data Output			---	100		Ohm
Operating Distance	D		---	10	---	km

III. Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Consumption	P				3.5	W
Supply Current	Icc				1050	mA

IV. Optical Specification

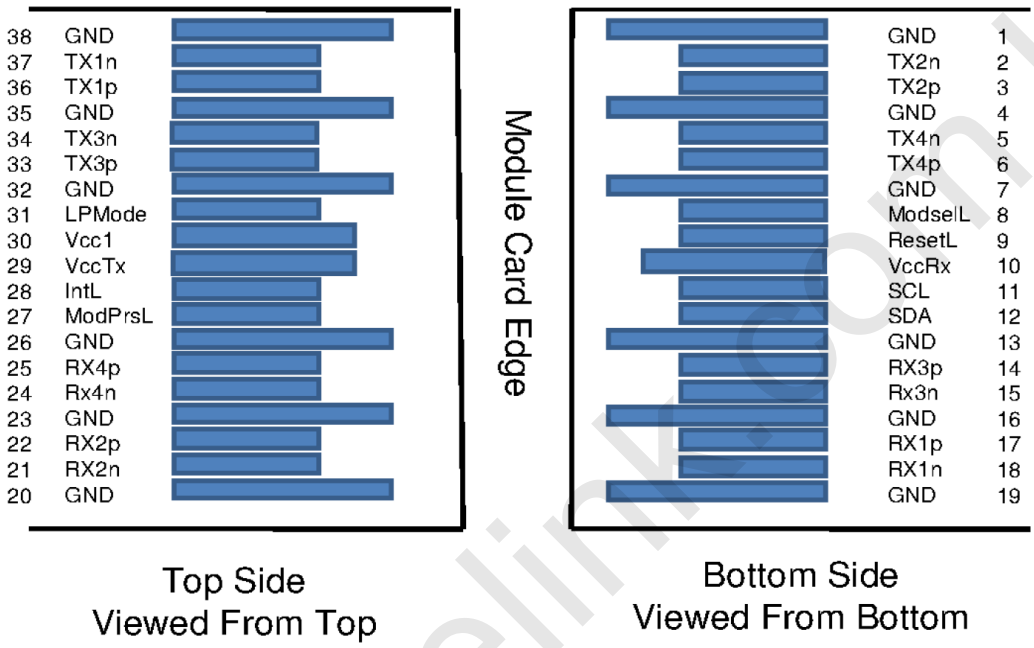
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Transmitter						
Signaling rate, each lane (range)	GBb			10.3125		GBb
Center Wavelength	λ0		1264.5		1277.5	nm
	λ1		1284.5		1297.5	nm
	λ2		1304.5		1317.5	nm
	λ3		1324.5		1337.5	nm
Side-mode suppression ratio	SMSR		30			dB
Total average launch power					8.3	dBm
Average launch power, each lane	Pf		-4		3.5	dBm
Optical Modulation Amplitude (OMA), each lane	TxOMA		-4		3.5	dBm
Difference in launch power between any two lanes (OMA)					6.5	dB
Transmitter and Dispersion Penalty	TDP				2.6	dB
Launch power in OMA minus TDP, each lane	Tx-TDP		-4.8			dBm
Average launch power of OFF transmitter, each lane					-30	dBm
Extinction ratio	ER		3.5			dB
Relative Intensity Noise					-128	dB/Hz
Optical return loss tolerance					20	dB
Transmitter reflectance					-12	dB
Receiver						
Signaling rate, each lane (range)	GBb			10.3125		GBb

Center Wavelength	λ0		1264.5		1277.5	nm
	λ1		1284.5		1297.5	nm
	λ2		1304.5		1317.5	nm
	λ3		1324.5		1337.5	nm
Damage threshold			3.3			dBm
Average power at receiver input, each lane			-12.6		2.3	dBm
Receive power, each lane (OMA)					3.5	dBm
Difference in receive power between any two lanes (OMA)					7.5	dBm
Receiver reflectance					-26	dB
Receiver sensitivity (OMA)	SOMA	BER@10e-12			-12	dBm
LOS Assert	LOSA		-28			dBm
LOS De-Assert	LOSD				-12	dBm
LOS Hysteresis			0.5		6	dB

V. Digital Diagnostic

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

VI. Pin Diagram



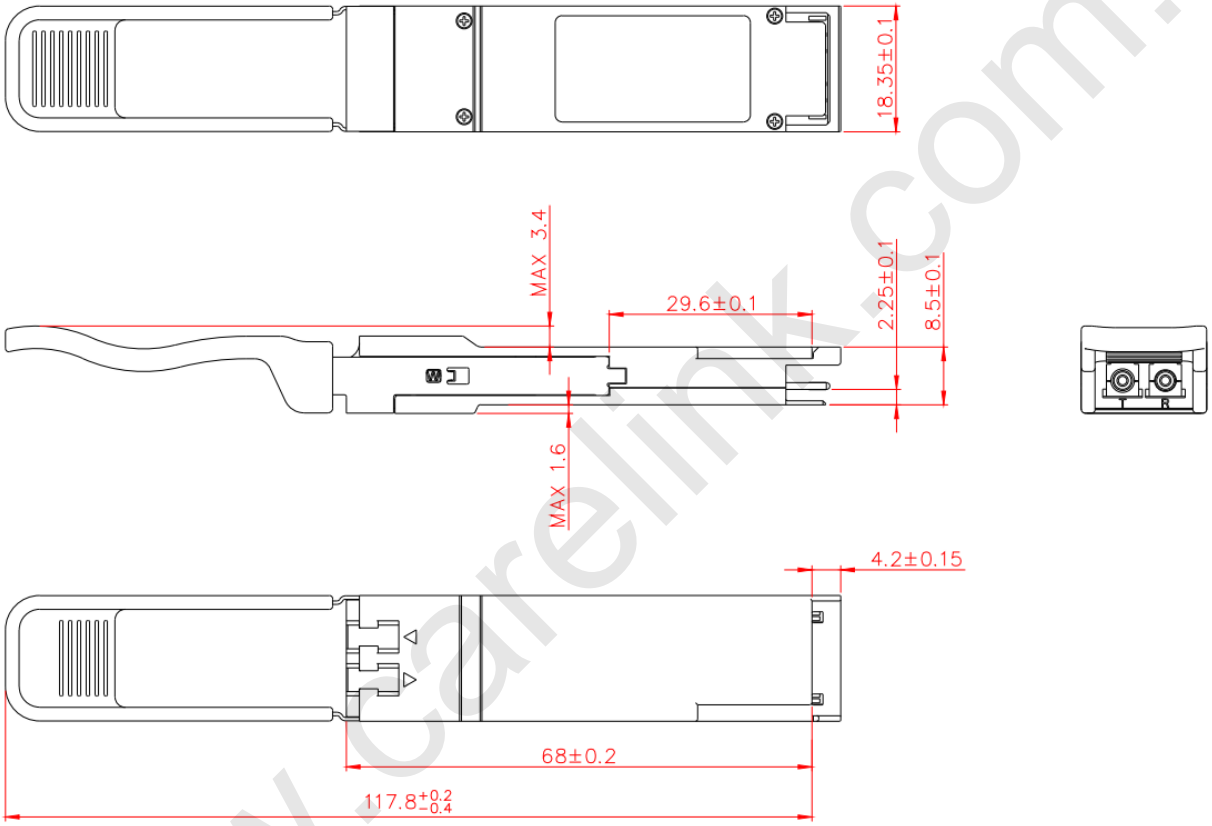
VII. Pin Descriptions

PIN	Logic	Symbol	Name/Description	Note
1		GND	Ground	
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	

10		VccRx	+ 3.3V Power Supply Receiver	
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	
20		GND	Ground	
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	
30		Vcc1	+3.3 V Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	

37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	

VIII. Mechanical Specifications(Unit: mm)



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