

LRHQ851X-X1ATM (LRHQ131X-02ATM)

— QSFP28 100Gbps 3.3V Multi mode (Single mode) Fiber Model

View



LR-LINK 100G transceiver adopts QSFP28 pluggable package, which is mainly used in serial optical data communication. The module is designed as MPO interface, featuring low cost and high performance. It adopts 850nm (1310nm) working wavelength, IEEE. 802.3bm 100Gb/s standard, support hot swap.

Application

- § 100G Ethernet
- § Infiniband QDR and DDR
- § Data Center Interconnect

Features

- § Single power supply +3.3V;
- § Compliant with IEEE 802.3bm 100Gb/s standard;
- § Compliance with industry standard SFF-8665 QSFP28 specification revision v1.8;
- § Maximum data rate:103.1Gb/s; Maximum data rate per channel:25.7812Gb/s;
- § Power consumption: \cong 2.5W(850nm), \cong 3.5W(1310nm)
- § Commercial operating temperature: 0°C~+70°C
- § Industrial working temperature: -40°C~+85°C
- § Transmission distances up to 100m(850nm), 2km(1310nm).
- § RoHS compliant

Operating parameter

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Typical	Max.	Unit
Supply Voltage	V _{CC}	3.14	3.3	3.46	V
Storage Temperature	T _S	-40	-	85	°C
Operating temperature	T _C	0	-	70	°C
Relative Humidity (non-condensing)	RH	5	-	+85	%
Recommended					
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	TOPR	0	-	70	°C
Storage Temperature	T _S	-40	-	85	°C
Power Supply Voltage	V _{CC}	3.14	3.3	3.46	V
Power Supply Current	I _{CC}	-	-	1200	mA
Data Rate per Lane	DR	25.78125±100ppm			Gb/s
Maximum Power Dissipation	P _D	-	-	2.5 (850nm) 3.5 (1310nm)	W
Control Input Voltage High	V _{IH}	2	-	V _{CC} +0.3	V
Control Input Voltage Low	V _{IL}	-0.3	-	0.8	V

Optical and Electrical Characteristics

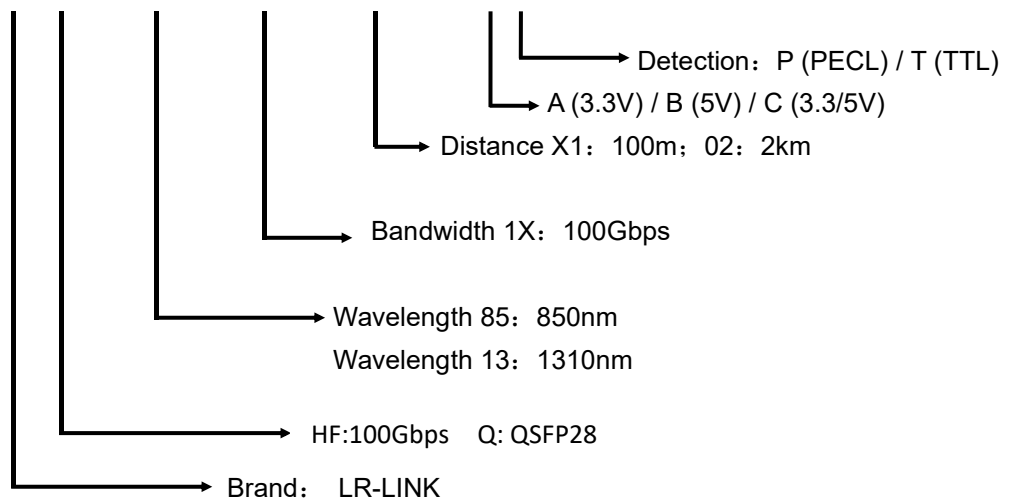
Transmitter Optical Specifications (TX)						
Transmitter Optical Specifications						
Parameter	Symbol	Min.		Typical	Max.	Unit
Signal rate(per lane)	B _R	850nm	-	25.78125	-	Gbps
		1310nm	-	25.78125	-	
Extinction Ratio	ER	850nm	2	-	-	dB
		1310nm	3.5	-	-	
Optical Center Wavelength	λ _C	850nm	840	850	860	nm
		1310nm	1295	1310	1325	
Optical Modulation Amplitude	OMA	850nm	-6.4	-	3	dB
		1310nm	-5.15	-	2.2	
Average Launch Power	P _{TX}	850nm	-8.4	-	2.4	dBm
		1310nm	-9.4	-	2	
Optical Return Loss Tolerance	TOL	850nm	-	-	20	dB
		1310nm	-	-	20	
Spectral Width(RMS)	Δλ	850nm	-	-	0.6	nm
		1310nm	-	-	-	
Average Launch Power Tx_Off (Each Lane)	P _{OUT_OF} _F	850nm	-	-	-30	dBm
		1310nm	-	-	-30	
Transmitter Eye Mask Definition		850nm	{0.3,0.38,0.45,0.35,0.41,0.5}			
		1310nm				

Receiver Optical Specifications						
Parameter	Symbol	Min.		Typical	Max.	Unit
Signal rate(per lane)	B _R	850nm	-	-25.78125	-	Gbps
		1310nm	-	-25.78125	-	
Optical Center Wavelength	λ _C	850nm	840	-	860	nm
		1310nm	1295	1310	1325	
Receiver Sensitivity (OMA) per Lane	R _{X_SEN}	850nm	-	-	-5.2	dBm
		1310nm	-	-	-11.35	
Damage Threshold per Lane	P _{IN}	850nm	3.4	-	-	dBm
		1310nm	3	-	-	
LOS Assert	LOS _A	850nm	-30	-	-	dBm
		1310nm	-	TBD	-	
LOS De-Assert	LOS _D	850nm	-	-	-13	dBm
		1310nm	-	TBD	-	
LOS Hysteresis	LOS _H	850nm	0.5	2	-	dB
		1310nm	-	TBD	-	

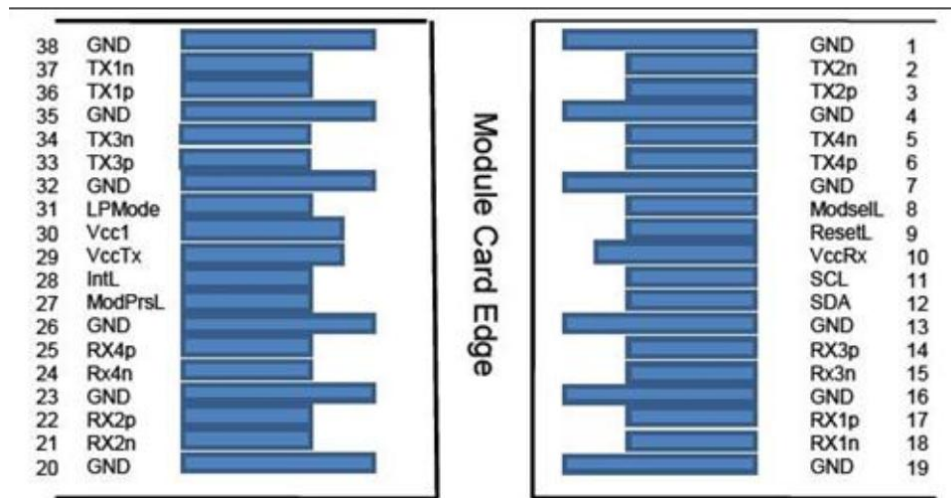
Parameter	Symbol	Range	Unit	PS	
Temperature		0~70	±3	°C	Internal
Voltage		0~V _{cc}	0.1	V	Internal
Tx Bias Current (Each Lane)		0~15	0.5	mA	Internal
Rx Power (Each Lane)		-9.5~+2.4	±3	dB	Internal

Order Information

LRHQ 85(13) 1X – X1(02) A TM



QSFP+ Module Pad Layout



Pin Definitions

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

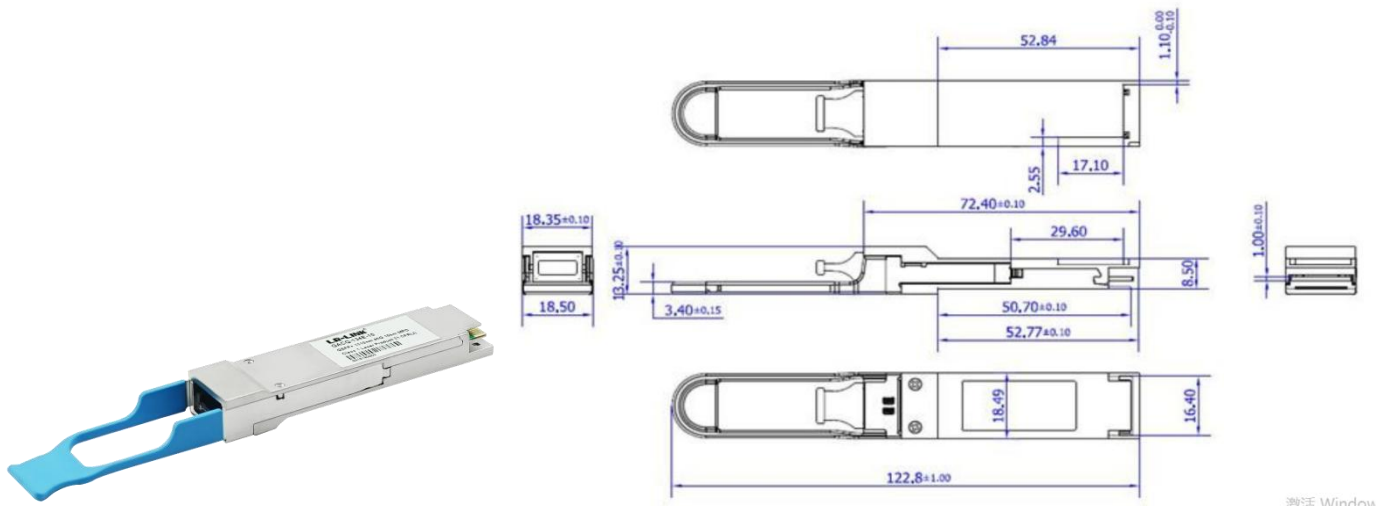
Note1: GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note2: Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently.

Mechanical Diagram

Dimensions in millimeters (unit: mm)

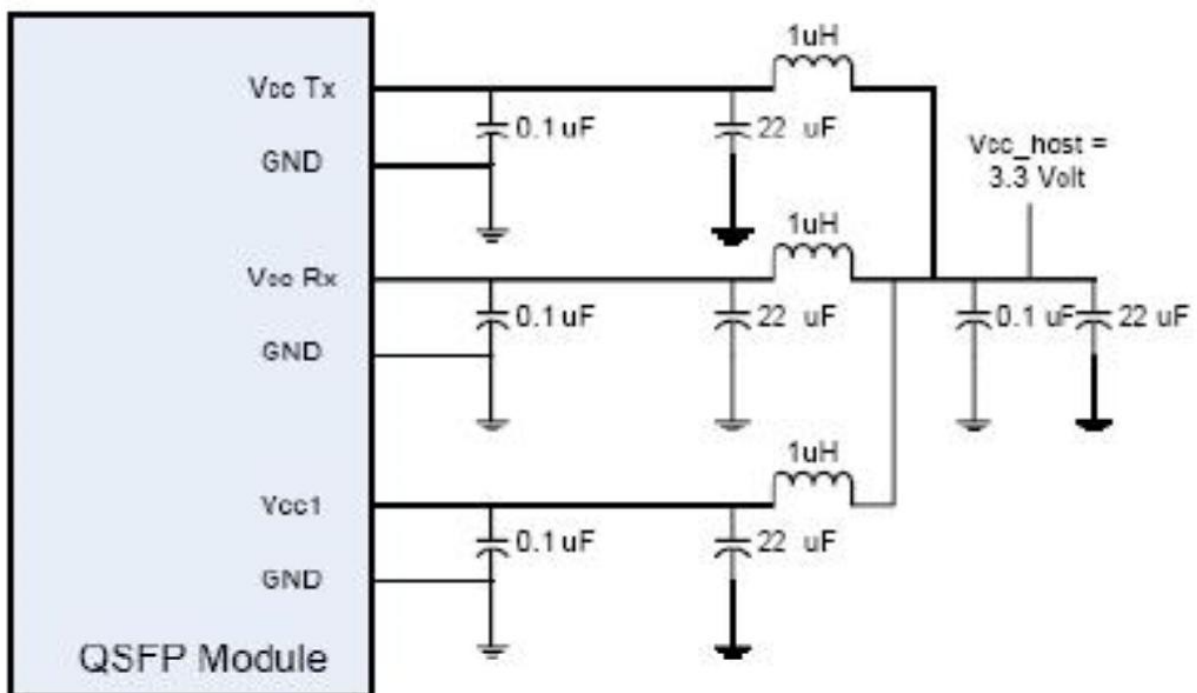
All dimensions have a 0.2mm error unless otherwise stated.



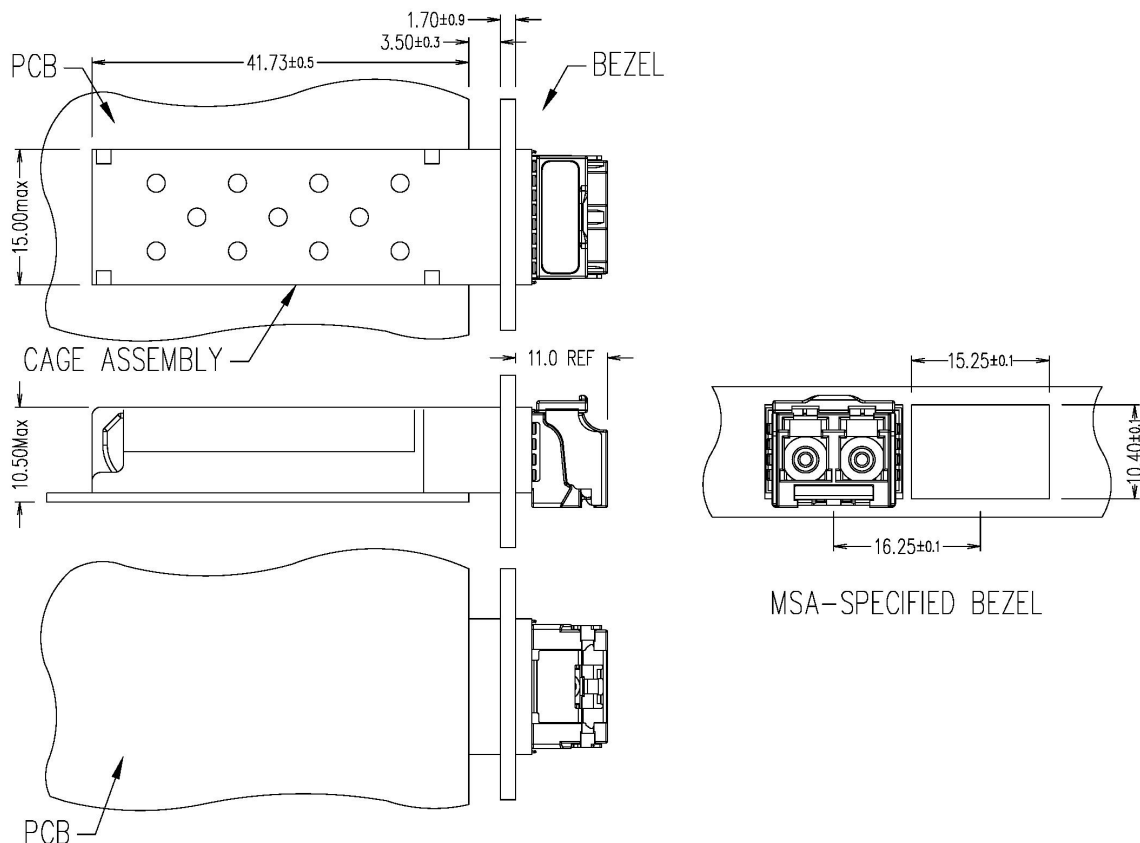
Note:

LR-LINK reserves the right to change or terminate any optical link products or services identified by this product without prior notice to improve design and/or performance. The application described for any optical link product is for illustrative purposes only. LR-LINK makes no representations or warranties, and such applications are intended for their intended use without further testing or modification.

Recommended Host Board Power Supply Filtering



Assembly reference



Eye safety

The transceiver is a Class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. To meet laser safety requirements, the transceiver should operate at an absolute maximum rating.

Warning

All adjustments are made at the factory prior to shipment of the equipment. Maintenance-free and user-serviceable parts are not required. Tampering and modifying the performance of the device will result in an invalid product warranty.



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