

Product Features

- 4 Parallel lanes design
- Compliant with QSFP+MSA
- Management interface specifications per SFF-8436
- 4 channels PIN photo detector
- Up to 11.2Gb/s per channel data links
- Single +3.3V power supply
- Class 1 laser safety certified
- Commercial operating temperature:0°C to +70°C
- Up to 2km on SMF
- RoHS Compliant



Applications

- 40GBASE-IR4 Ethernet
- Infiniband QDR,DDR and SDR
- Data center

Descriptions

LX8011CSR QSFP+ transceivers are designed for use in 40Gb/s links over single mode fiber. They integrates four independent transmit and receive channels, Each channel operate at 10.3125G/s, the module can operate at 40Gb/s up to 2km using 9/125um SMF. They are compliant with the QSFP+ MSA and IEEE 802.3ba 40GBASE-IR4,the optical fiber ribbon cable with the MPO(MTP) connector . LX8011CSR are compliant with RoHS.

Ordering Information

Table 1. Ordering Information

Part Number	Transmitter	Output Power	Receiver	Sensitivity	Reach	Temp	DDM	RoHS
LX8011CSR	1310nm FP	-5.2 ~ 0.5dBm	PIN	< -12.6dBm	2km	0~ 70 °C	Available	Compliant

Pin Description

Table 2. Pin Description

Pin	Name	Function/Description	Notes
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1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	
30	Vcc1	3.3V power supply	
31	LPMODE	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7K to 10K pull-up resistor to VccHost.

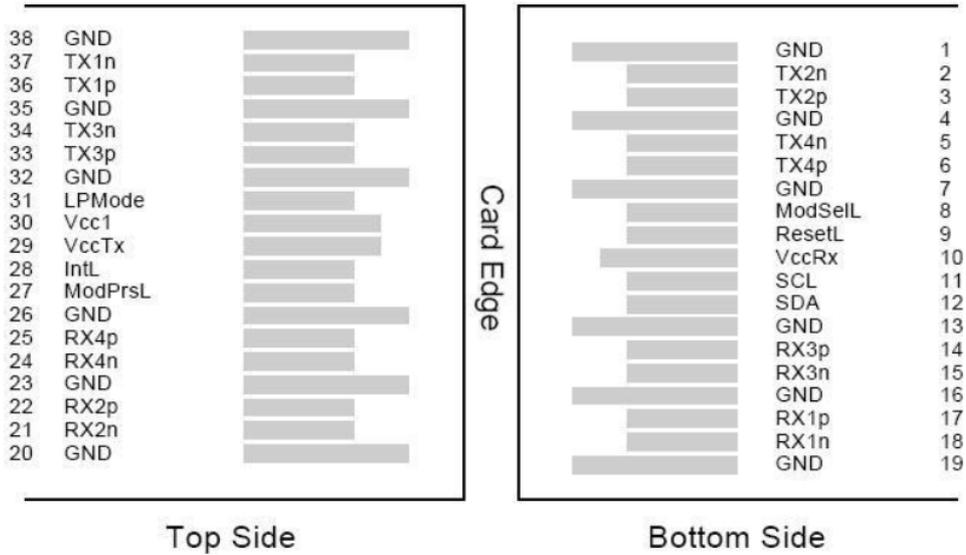
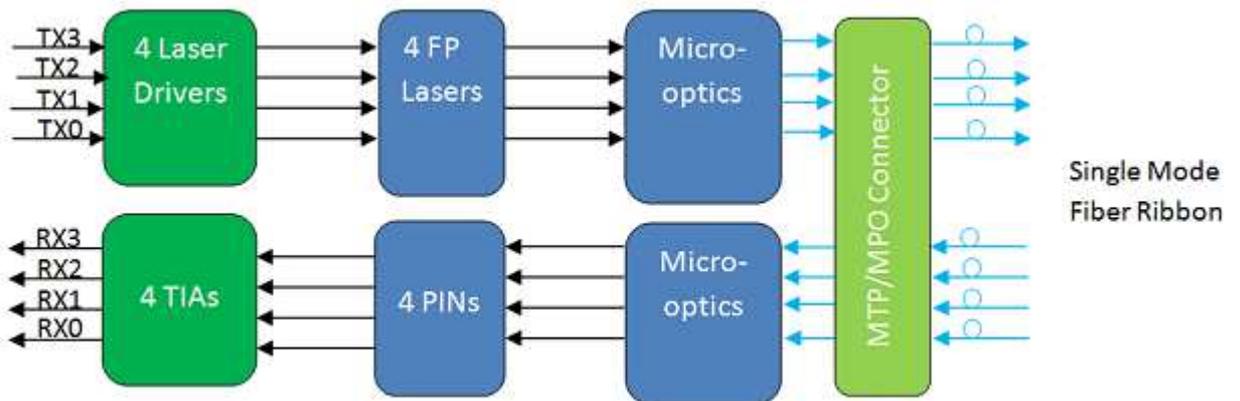


Figure 1. Host PCB QSFP+ pad assignment top view

Transceiver Diagram block



Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Table 3. Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Unit
Storage Temperature	T_S	-40	85	°C
Relative Humidity	RH	5	95	%
Supply Voltage	V_{CC}	-0.5	4.0	V

Recommended Operating Conditions

Table 4. Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	0	25	70	°C
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Data Rate PER Channel	-	-	10.3125	11.2	Gb/s

Transceiver Electrical Characteristics

Table 5. Transceiver Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes	
Module Supply Current	I_{CC}	-	-	1100	mA	-	
Power Dissipation	P_D	-	-	3500	mW	-	
Transmitter							
Input Differential Impedance	Z_{IN}	-	100	-		-	
Differential Data Input Swing	$V_{IN,P-P}$	180	-	900	mV _{P-P}	-	
TX_FAULT	Transmitter Fault	V_{OH}	2.0	-	V_{CCHOST}	V	-
	Normal Operation	V_{OL}	0	-	0.8	V	-
TX_DISABLE	Transmitter Disable	V_{IH}	2.0	-	V_{CCHOST}	V	-
	Transmitter Enable	V_{IL}	0	-	0.8	V	-
Receiver							
Output Differential Impedance	Z_O	-	100	-		-	
Differential Data Output Swing	$V_{OUT,P-P}$	300	-	850	mV _{P-P}	1	
Data Output Rise Time, Fall Time	t_r, t_f	28	-	-	ps	2	
RX_LOS	Loss of signal (LOS)	V_{OH}	2.0	-	V_{CCHOST}	V	3

Normal Operation	V_{OL}	0	-	0.8	V	3
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Notes:

1. Internally AC coupled, but requires a external 100 differential load termination.
2. 20 – 80 %.
3. LOS is an open collector output. Should be pulled up with 4.7k on the host board.

Transmitter Optical Characteristics

Table 6. Transmitter Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Launch Optical Power per lane	Po	-5.2	-	+0.5	dBm	1
Center Wavelength Range	λ_0	1260	1310	1360	nm	-
Extinction Ratio	EX	3.5	-	-	dB	2
Spectral width(RMS)	$\Delta\lambda$	-	-	3.5	nm	-
Optical Return Loss Tolerance	ORLT	-	-	12	dB	-
Pout @TX-Disable Asserted	P _{off}	-	-	-30	dBm	1
Eye Diagram	IEEE Std 802.3ba compatible					

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.

Receiver Optical Characteristics

Table 7. Receiver Optical Characteristics

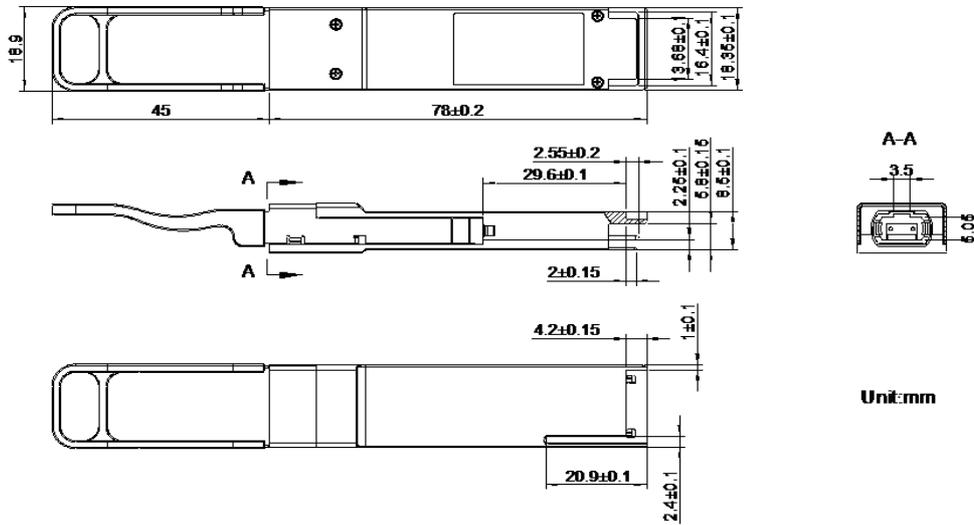
Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Center Wavelength	λ_c	1260	-	1360	nm	-
Receiver Sensitivity (OMA)	S	-	-	-12.6	dBm	1
Damage Threshold	P _{OL}	0.5	-	-	dBm	1
LOS De-Assert	LOS _D	-	-	-15	dBm	-
LOS Assert	LOS _A	-30	-	-	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-

Notes:

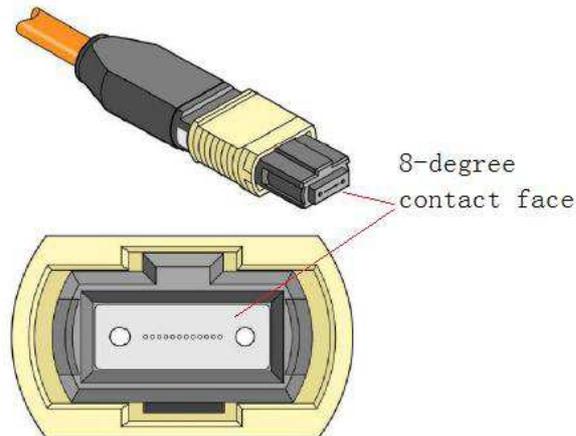
1. Measured with PRBS 2³¹-1 test pattern, 10.3125Gb/s, BER<10⁻¹².

Mechanical specifications

Unit:mm



Attention: To minimize MPO connection induced reflections, an MPO receptacle with 8-degree angled end-face is utilized for this product. A female MPO connector with 8-degree end-face should be used with this product as illustrated in below Figure.



For More Information

Linktel Technologies Co., Ltd

info@linkteltech.com

www.linkteltech.com

Linktel China

E12, No.52 Liufang Road, East-Lake Hi-tech Development Zone, Wuhan, China

Tel: +86 27 8792 9298

Linktel USA

1601 McCarthy Blvd #9, Milpitas, CA 95035, USA

linktelus@linkteltech.com

Tel: +1 408 807 0482