PRODUCT SPECIFICATION

Part No.:	**QSFP28-100G-IR4**	
Description:	100G QSFP28 Transceiver, CWDM4 2km	
Release Date	**Rev.**	**Revision Change Description**
2018/06/07	A0	New Release
2020/12/28	A1	Template Update
2021/03/30	A2	BER Spec changed from BER<10^{-12} BER<$5x10^{-5}$
2024/10/13	A3	Industrial Temperature Added
2025/11/6	A4	Update the Ordering Information

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Features

- Data rate: 25.78Gbps per channel
- 4 channels full-duplex transceiver modules
- 4 x 25Gb/s DFB-based CWDM uncooled transmitter
- 4 channels PIN ROSA
- Internal CDR circuits on both receiver and transmitter channels
- Duplex LC optical receptacle
- Built- in digital diagnostic functions
- Hot Pluggable QSFP28 form factor
- Up to reach 2km over SMF
- Operating case temperature range:
  Commercial: 0~70ºC
  Industrial: -40-85 ºC
- RoHS-6 Compliant
- Power dissipation < 3.5 W

Application

- Data Center Interconnect
- 100G CWDM4 applications
- Enterprise networking

Standard

- IEEE 802.3bm
- QSFP28 MSA
- SFF-8636

Specification:

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Storage Ambient Temperature	T_{STG}	-40	85	℃
Operating Humidity	H_O	5	95	%
Power Supply Voltage	Vcc	-0.3	4	V
Signal Input Voltage		Vcc-0.3	Vcc +0.3	V
Damage Threshold, each Lane	TH		5.5	dBm

Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Operating Case Temperature	Tc	-5		70	℃
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Power Supply Current	Icc			1060	mA
Data Rate,each Lane			25.78125		Gbps
Link Distance with G.652	D	-	2	-	km

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Optical transmitter Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Launched Power (avg.)	Pavg	-6.5		2.5	dBm	
Total Output. Power	Pout			8.5	dBm	
OMA, each Lane	P_{OMA}	-4		2.5	dBm	
TDP, each Lane	TDP			3	dB	
Wavelength Assignment	λ0	1264.5	1271	1277.5	nm	
	λ1	1284.5	1291	1297.5		
	λ2	1304.5	1311	1317.5		
	λ3	1324.5	1331	1337.5		
Spectral Width(-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3			dB	
Transmitter OFF Output Power	POff			-30	dBm	
Differential Line Input Impedance	RIN			-130	Ohm	
Output Eye Mask definition {X1，X2，X3，Y1，Y2，Y3}	{0.31，0.4，0.45，0.34，0.38，0.4}					
Output Eye Diagram	Compliant with IEEE802.3ae eye mask					

Optical receiver Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Sensitivity Per Lane		S			-10.0	dBm	1
Stressed Receiver Sensitivity (OMA), each Lane					-7.3	dBm	
Average Receive Power, each lane			-11.5		2.5	dBm	
Receive Power (OMA), each lane					2.5	dBm	
Receiver Electrical 3 dB upper Cutoff Frequency, each Fc Lane		FC			31	GHz	
Optical Power Input Overload		P_{in-max}	4.5			dBm	
LOS	Optical De-assert	Pd			-11	dBm	
	Optical Assert	Pa	-25				
LOS Hysteresis		LOSH	0.5		2	dB	
Vertical Eye Closure Penalty		VECP	1.9			dB	
Stressed Eye J2 Jitter		J2	0.33			UI	
Stressed Eye J4 Jitter		J4	0.48			UI	

Notes:

1. Measured with a PRBS 2^{31}-1 test pattern, @25.78Gb/s, BER<5x10-5.

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Pin Definition

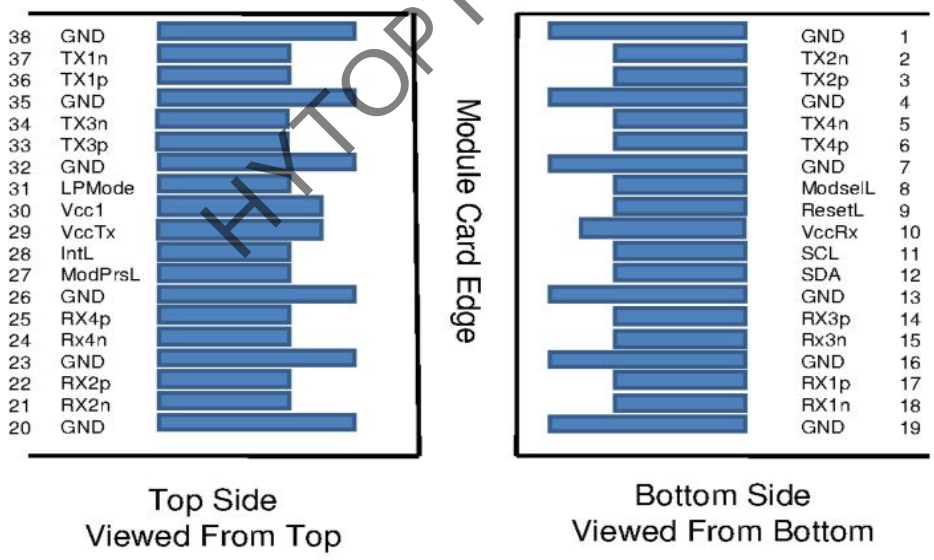


Figure1 QSFP MSA-compliant 38-pin connector

Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver 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	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3 V Power supply receiver	2
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	
14	RX3P	Receiver Non-Inverted Data Output	
15	RX3N	Receiver Inverted Data Output	
16	GND	Ground	1
17	RX1P	Receiver Non-Inverted Data Output	
18	RX1N	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	RX2N	Receiver Inverted Data Output	
22	RX2P	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	RX4N	Receiver Inverted Data Output	1
25	RX4P	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3 V Power supply transmitter	2
30	Vcc1	+3.3 V Power Supply	2
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	TX3P	Transmitter Non-Inverted Data Input	
34	TX3N	Transmitter Inverted Data input	
35	GND	Ground	1
36	TX1P	Transmitter Non-Inverted Data Input	
37	TX1N	Transmitter Inverted Data input	
38	GND	Ground	1

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Table 1: QSFP Module PIN Definition

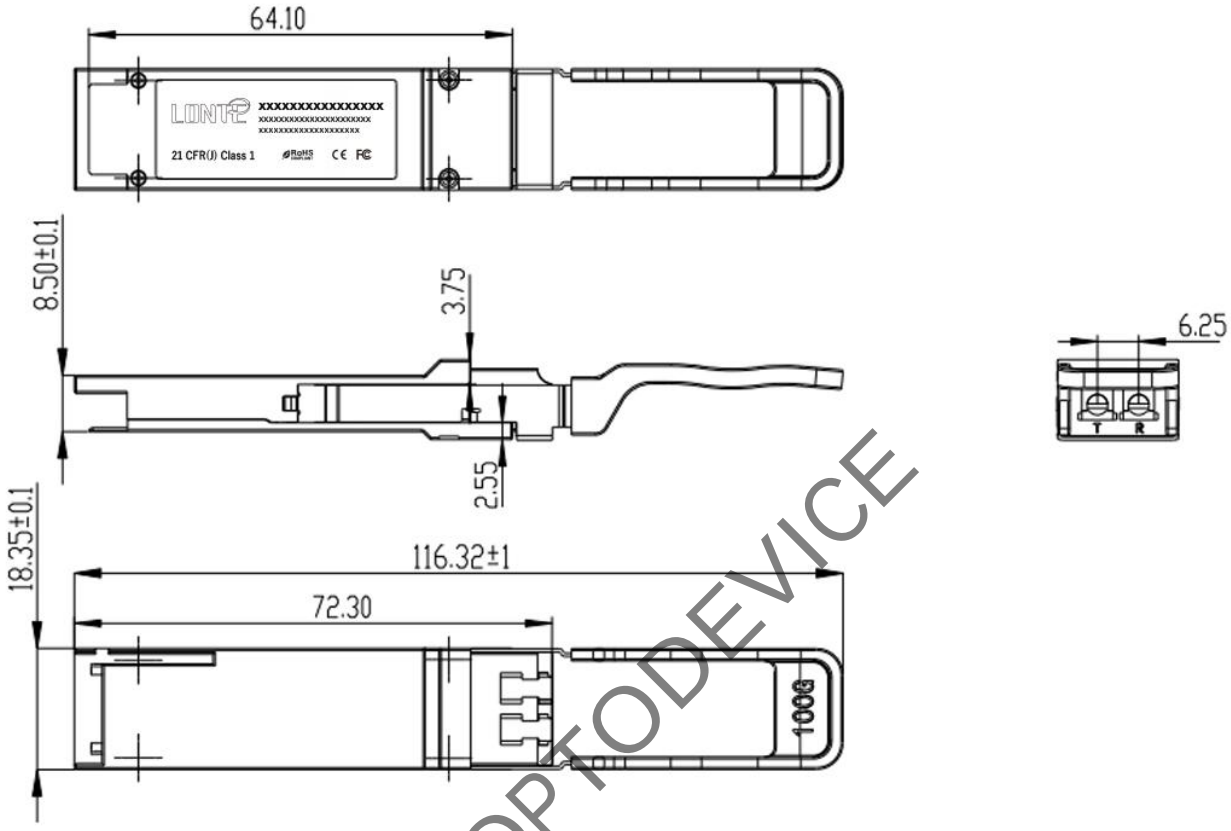
Notes：

1. Module circuit ground is isolated from module chassis ground within the module.

2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

Package Outline

Dimensions are in millimeters. All dimensions are ±0.2mm unless otherwise specified. (Unit: mm)



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Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000Vfor other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Ordering Information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (℃)	Reach (KM)	DDM
QSFP28-100G-IR4	QSFP28	100G	DFB CWDM	-6.5~2.5	PIN	<-10.0	0~70	2	Y
QSFP28-100G-IR4	QSFP28	100G	DFB CWDM	-6.5~2.5	PIN	<-10.0	-40~85	2	Y

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