PH 888-568-1230 | EM Sales@LANshack.com

Description

General

This QuickTreX® QSFP28 is designed for 80km optical communication applications. It is with the QSFP28 38-pin connector to allow hot plug capability. This module contains 4-lane optical transmitter, 4-lane optical receiver and module management block including 2 wire serial interface. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector.

Transmitter Section

The transmitter consists of four directly modulated uncooled LWDM 4 wavelength 1295, 1300, 1304,and 1309 nm DFB-base DML lasers and four drivers.In addition, this component is also class 1 laser that compliant with International Safety Standard IEC-60825-1:2014. It complies with EN60825-1:2014/ A11:2021 and FDA 21 CFR 1040.10 and 1040.11

Receiver Section

The receiver incorporates four InGaAs APD photodiodes integrated with four trans-impedance preamplifiers (TIA) and four limiting post-amplifier ICs by BOX packaging.

Cisco QSFP-100G-ZR4-S Compatible 100GBASE-ZR4 QSFP28 1310nm 80km	
LC Type with DDM	**QSP-MH0015**

Features

- Single +3.3V Power Supply
- Compliant IEEE802.3bm and QSFP28 MSA
- Compliant to SFF-8679
- Up to 80kmwith KR4-FEC
- LAN WDM EML and PIN receiver with SOA
- Up to 25.78Gb/s data rate each wavelength
- High speed I/O electrical interface (CAUI-4)
- Support Multi-Pin function with IntL/RxLOSL and LPMode/TxDIS
- Class 1 Laser International Safety Standard IEC-60825-1:2014 Compliant. Complies with EN60825-1:2014/A11:2021 and FDA 21 CFR 1040.10 and 1040.11
- Commercial Operation Temp.: 0 °C to +70 °C
- Duplex LC Connector
- RoHS Compliant

Applications

- 100GBASE-ZR4 Ethernet Links
- Data Center Switches and Router
- 100G Telecom & Datacom connections

Performance Specifications

Absolute Maximum Ratings					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Supply Voltage	V_{CC}	-0.5	-	3.6	V
Storage Temperature	T_S	-40	-	85	°C
Relative Humidity(non-condensing)	RH	-	-	85	%

Recommended Operating Conditions and Power Supply Requirements					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**
Operating Case Temperature	T_{OP}	0	-	70	°C
Supply Voltage	V_{CC}	3.13	3.3	3.47	V
Data Rate, each Channel	B	-	25.78125	-	Gbps
Aggregate Bit Rate	B	-	103.125	-	Gbps
Transmission Distance	L	-	80	-	km
Power Supply Current	I_{CC}	-	-	1.36	A
Power Dissipation	PD	-	-	4.5	W

Optical Characteristics

Transmitter Optical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Signaling Rate, each lane(range)	-	-	25.78125	-	Gbps
Lane Wavelength	L0	1294.53	1295.56	1296.59	nm
	L1	1299.02	1300.05	1301.09	nm
	L2	1303.54	1304.58	1305.63	nm
	L3	1308.09	1309.14	1310.19	nm
Total Launch Power, 100GE	P_r	7	-	12.5	dBm
Average Launch Power, each Lane	$P_{O,AVG}$	1	-	6.5	dBm
Optical Modulation Amplitude(OMA), each lane	$P_{O,OMA}$	2	-	6.5	dBm
Difference in launch power between any two Lanes(Average and OMA)	Ptx,diff	-	-	3	dB
POut@TX Disable Asserted	P_{OFF}	-	-	-30	dBm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Extinction Ratio, 100GE	ER	8.2	-	-	dB
Relative Intensity Noise	RIN	-	-	130	dB/HZ
Optical return loss tolerance	P_R	-	-	20	dB
Transmitter Reflectance	R_T	-	-	-12	dB
⁎Optical Eye Mask	Ef	{0.25,0.4, 0.45, 0.25, 0.28, 0.4}			%
Receiver Optical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Signaling Rate, each lane(range)	-	-	25.78125	-	Gbps
Damage Threshold, each lane	THd	5.5	-	-	dBm
Center Wavelength Lane0	λ0	1294.53	1295.56	1296.59	nm
Center Wavelength Lane1	λ1	1299.02	1300.05	1301.09	nm
Center Wavelength Lane2	λ2	1303.54	1304.58	1305.63	nm
Center Wavelength Lane3	λ3	1308.09	1309.14	1310.19	nm
Receiver sensitivity Average, each lane	P_S	-	-	-27	dBm
Signal Detect-Asserted	P_A	-40	-	-	dBm
Signal Detect-Deasserted	P_D	-	-	-28	dBm

⁎Measured with a PRBS 231-1 test pattern @25.78125, Hit ratio≤5E-5.

⁎Measured with a PRBS 231-1 test pattern @25.78125 Gb/s, BER≤5E-5.

Electrical Characteristics

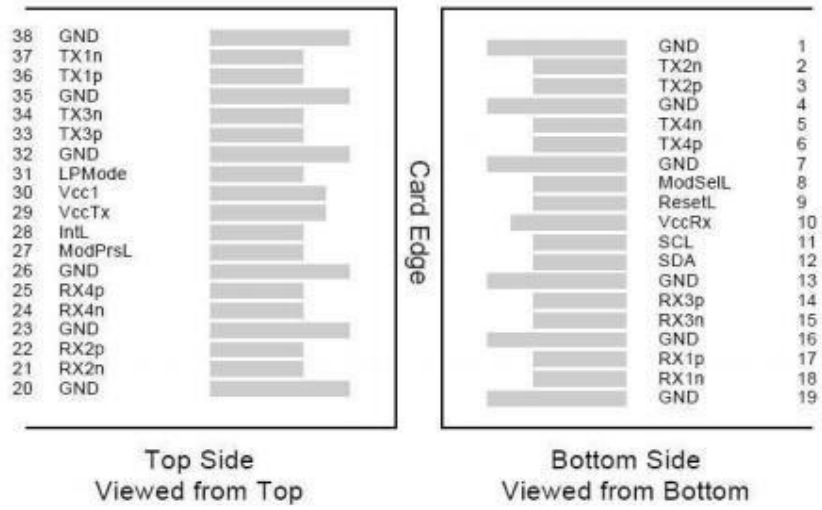
High-Speed Signal：Compliant to CAUI-4(IEEE 802.3bm)
Low-Speed Signal：Compliant to SFF-8679

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Data Rate, each lane	B	-	25.78125	-	Gbps
Differential Voltage pk-pk(@1MHz)	Vpp	-	-	900	mV
Common Mode Voltage	Vcm	-350	-	2850	mV
Optical Rise/Fall Time (20%-80%)	t_r / t_f	10	-	-	ps
Receiver					
Data Rate, each lane	B	-	25.78125	-	Gbps
Common Mode Noise, RMS	Vcm	-350	-	2850	mV
Differential out put voltage swing	Vout, pp	-	-	900	mV
Eye Width	EW15	0.57	-	-	UI
Eye Height	EH15	228	-	-	mV
Differential Termination Resistance Mismatch	-	-	-	10	%
Data Output Rise/Fall Time (20%-80%)	t_r / t_f	12	-	-	ps

Digital Diagnostic Accuracy

Parameter	Typical Value	Note
Transceiver Temperature	± 3ºC	T_{OP-min} ~T_{OP-max}
Power Supply Voltage	± 3%	V_{CC}
TX Bias Current	± 10%	
TX Optical Power	± 3dB	$P_{O, AVG-min}$ ~ $P_{O, AVG-max}$
RX Optical Power	± 3dB	P_{in-min} ~ P_{in-max}

QSFP+ Transceiver Electrical Pad Layout



Pinout Table

Pin	Symbol	Name/Description	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V 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	

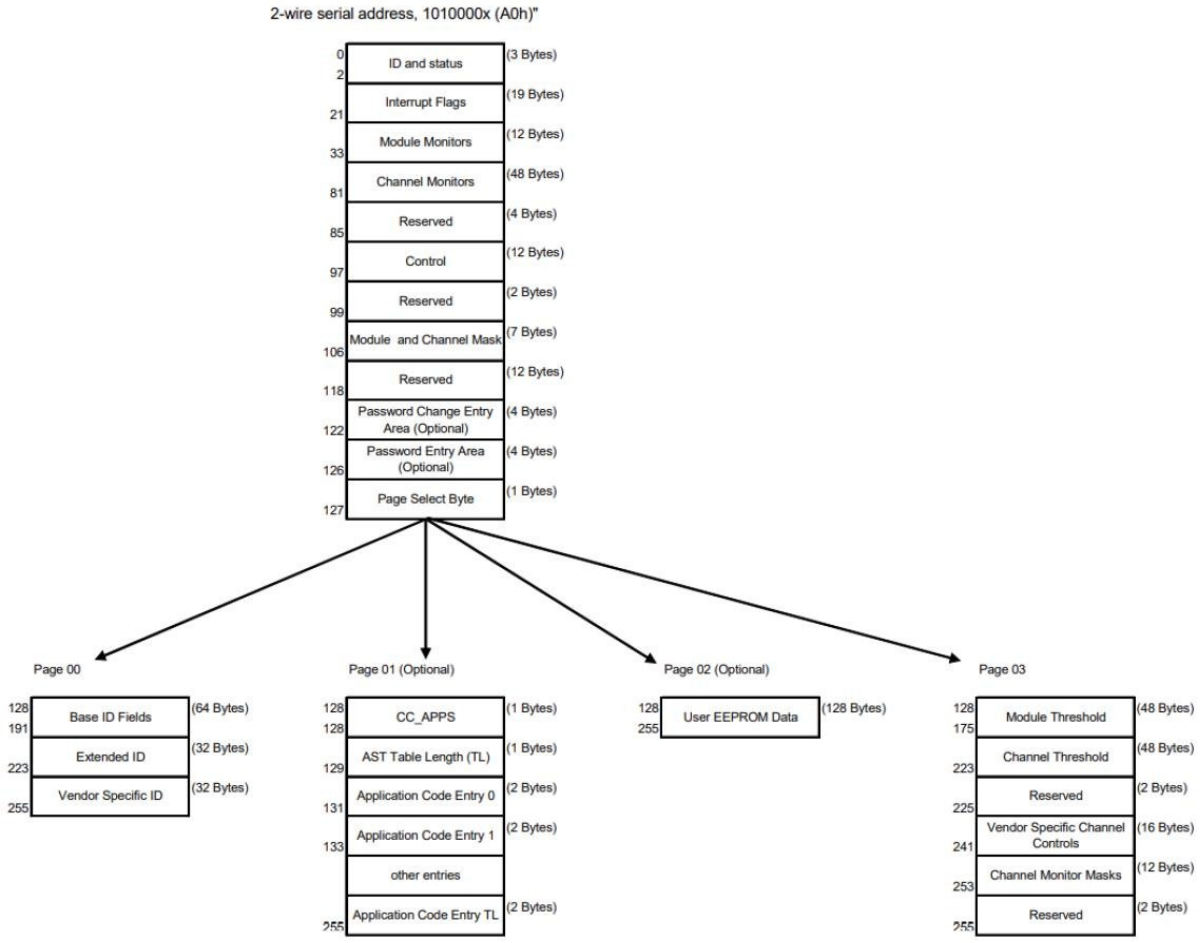
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	1
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+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 Output	
35	GND	Ground	1
36	Tx 1p	Transmitter Non-Inverted Data Input	
37	Tx 1n	Transmitter Inverted Data Output	
38	GND	Ground	1

Notes:

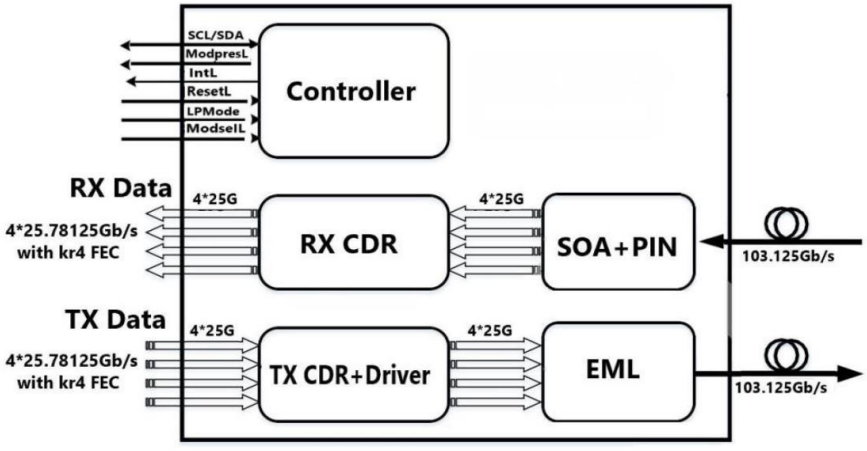
1. Module ground pins GND are isolated from the module case and chassis ground within the module.
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP+ module in any combination.

EEPROM information

EEPROM memory map specific data field description is as below

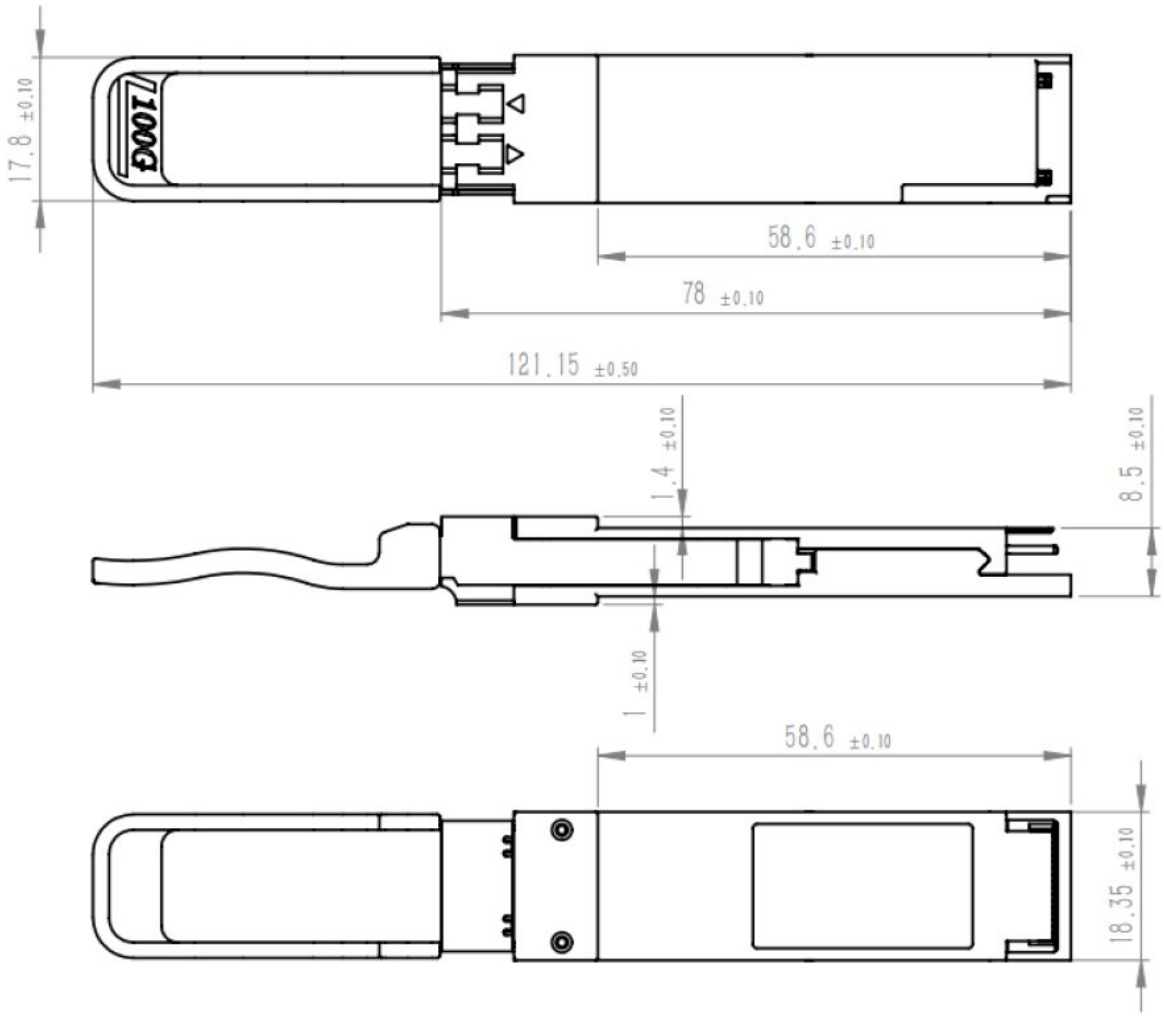


Transceiver Block Diagram



Package Outline Drawing

DIMENSIONS ARE IN MILLIMETERS (unit:mm)



Eye Safety

The transceiver is a class 1 laser product. It complies with EN60825-1:2014/A11:2021 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.

Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.