XenOpt

XCE-Q2Q2Nxx

100GBASE-SR4 QSFP28
Active Optical Cable

Features

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 25 Gbps per channel
- Support 40 GE and 56 G FDR data rate
- 4 channels 850 nm VCSEL array
- 4 channels PIN photo detector array
- Internal CDR circuits on both receiver and transmitter channels
- Support CDR bypass
- Low power consumption <2.5 W
- Hot Pluggable QSFP form factor
- Maximum link length of 70 m on OM3 Multimode Fiber (MMF) and 100 m on OM4 MMF
- Single MPO connector receptacle
- Built-in digital diagnostic function
- Operating case temperature 0°C to +70°C
- 3.3 V power supply voltage
- RoHS 6 compliant (lead free)

Applications

- IEEE 802.3bm 100GBASE SR4 and 40GBASE SR4
- InfiniBand FDR/EDR

Description

The XenOpt XCE-Q2Q2Nxx is a Four-Channel, Pluggable, Parallel, Fiber-Optic QSFP+ SR4 for 100 or 40 Gigabit Ethernet , Infiniband FDR/EDR Applications. This transceiver is a high performance module for short-range multi-lane data communication and interconnect applications. It integrates four data lanes in each direction with 100 Gbps bandwidth. Each lane can operate at 25 Gbps up to 70 m using OM3 fiber or 100 m using OM4 fiber. These modules are designed to operate over multimode fiber systems using a nominal wavelength of 850 nm. The electrical interface uses a 38 contact edge type connector. The optical interface uses an 12 fiber MTP (MPO) connector. This module incorporates XenOpt proven circuit and VCSEL technology to provide reliable long life, high performance, and consistent service.
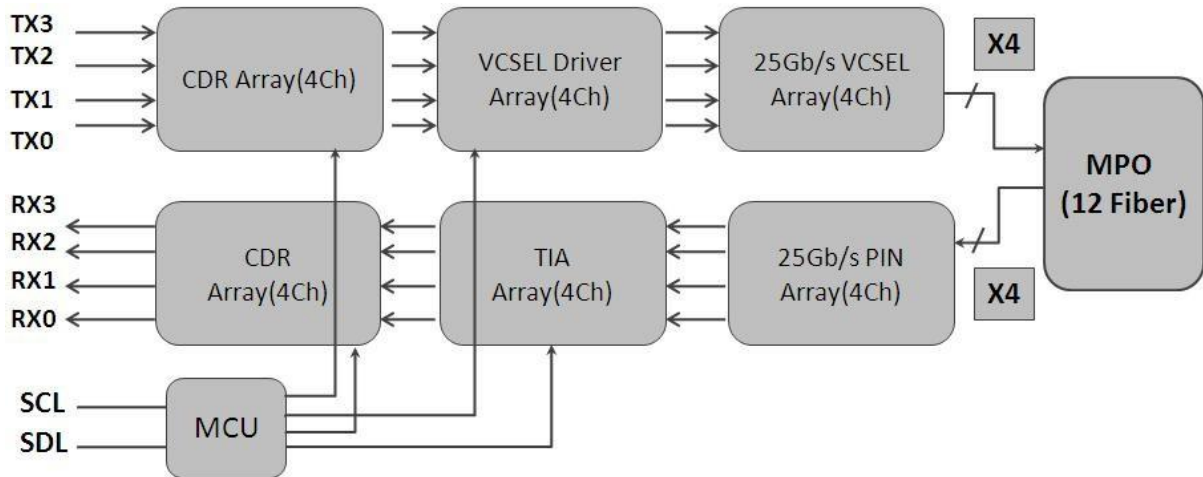
Module Block Diagram

Figure 1. Module Block Diagram

100GBASE-SR4 QSFP28 is one kind of parallel transceiver. VCSEL and PIN array package is key technique, through I2C system can contact with module.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.3	3.6	V
Input Voltage	Vin	-0.3	Vcc+0.3	V
Storage Temperature	Tst	-20	85	°C
Case Operating Temperature	Top	0	70	°C
Humidity (non-condensing)	Rh	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case temperature	Tca	0		70	°C
Data Rate Per Lane	fd		25.78125		Gbps
Humidity	Rh	5		85	%
Power Dissipation	Pm		2	2.5	W
Fiber Bend Radius	Rb	3			cm

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential input impedance	Zin	90	100	110	ohm
Differential Output impedance	Zout	90	100	110	ohm
Differential input voltage amplitude	ΔVin	300		1100	mVp-p
Differential output voltage amplitude	ΔVout	500		800	mVp-p
Skew	Sw			300	ps
Bit Error Rate	BER			E-12	
Input Logic Level High	VIH	2.0		VCC	V
Input Logic Level Low	VIL	0		0.8	V
Output Logic Level High	VOH	VCC-0.5		VCC	V
Output Logic Level Low	VOL	0		0.4	V

Notes
1. BER=10^-12; PRBS 2^31-1@25.78125 Gbps.
2. Differential input voltage amplitude is measured between TxnP and TxnN.
3. Differential output voltage amplitude is measured between RxnP and RxnN.

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength	λc	840	850	860	nm	-
RMS spectral width	Δλ	-	-	0.6	nm	-
Average launch power, each lane	Pout	-8.4	-	2.4	dBm	-
Optical Modulation Amplitude (OMA), each lane	OMA	-6.4		3	dBm	-
Transmitter and dispersion eye closure (TDEC), each lane	TDEC			4.3	dB	
Extinction Ratio	ER	3	-	-	dB	-
Average launch power of OFF transmitter, each lane				-30	dB	-
Eye Mask coordinates: X1, X2, X3, Y1, Y2, Y3	Specification values {0.3, 0.38, 0.45, 0.35, 0.41, 0.5}					Hit Ratio =5x10-5
Receiver						
Centre Wavelength	λc	840	850	860	nm	-
Stressed receiver sensitivity in OMA				-5.2	dBm	1
Maximum Average power at receiver, each lane				2.4	dBm	-
Minimum Average power at receiver, each lane				-10.3	dBm	
Receiver Reflectance				-12	dB	-
LOS Assert		-30			dBm	-
LOS De-Assert – OMA				-7.5	dBm	-
LOS Hysteresis		0.5			dB	-

Notes
1. Measured with conformance test signal at TP3 for per-FEC BER = 10e-12

Ordering information[1]

Part Number	Description
XCE-Q2Q2Nxx	QSFP28, 100GBASE-SR4 Active Optical Cable；0°C～+70°C 70 m on OM3 Multimode Fiber (MMF) and 100 m on OM4 Low power version xx = {07, 10, 20, 50, C0}, cable length in meters (7, 10, 20, 50, 100)

Notes

[1] Specification may change without notice. For accurate specification please contact XenOpt reseller before placing an order. The content of this document is subject to change without notice. Please specify any compatibility requirements at time of ordering. Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.

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