

XQS319-20LY

Multi-rate 100 G QSFP28 20 km Optical Transceiver Module



Applications

- IEEE 802.3ba 100GBASE-LR4
- OTN OTU4 and 100GE

Features

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 28 Gbps per channel
- 4 x 28Gb/s DFB-based LAN-WDM Cooling transmitter
- 4 channels PIN ROSA
- Internal CDR circuits on both receiver and transmitter channels
- Low power consumption < 3.5W
- Hot Pluggable QSFP form factor
- Up to reach 20 km for G.652 SMF without FEC
- Duplex LC receptacles
- Operating case temperature: 0°C to 70°C
- Single 3.3 V power supply voltage
- RoHS compliant and lead free

Description

The module converts 4 input channels of 28Gb/s electrical data to 4 channels of LAN WDM optical signals and then multiplexes them into a single channel for 100Gb/s optical transmission. Reversely on the receiver side, the module de-multiplexes a 100Gb/s optical input into 4 channels of LAN WDM optical signals and then converts them to 4 output channels of electrical data.

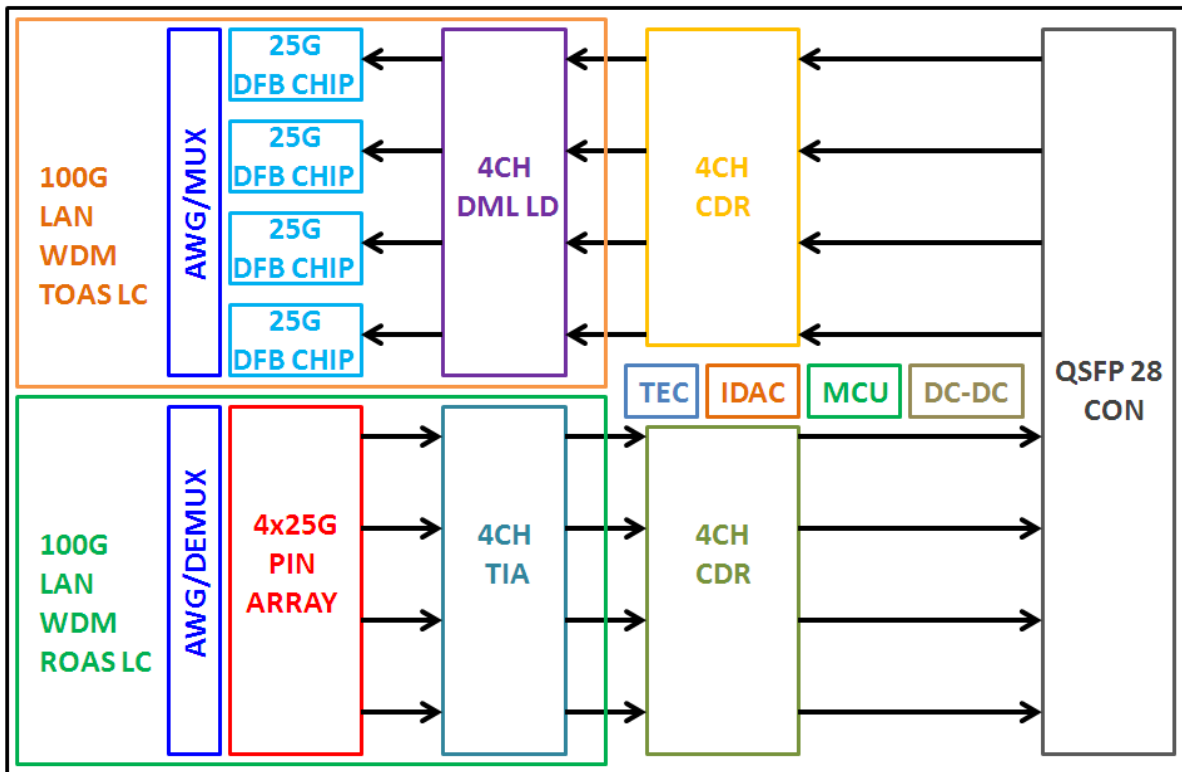


Figure 1. Module Block Diagram

Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	-0.3	3.6	V
Input Voltage	V_{in}	-0.3	$V_{CC} + 0.3$	V
Storage Temperature	T_{st}	-20	85	°C
Operating Case Temperature	T_{op}	0	70	°C
Humidity (non-condensing)	R_h	5	85	%
Damage Threshold, each Lane	T_H	5.5		dBm

Recommended operating conditions

Parameter	Symbol	Min.	Typical	Max	Unit
Supply Voltage	V_{CC}	3.13	3.3	3.47	V
Operating Case Temperature	T_{Ca}	0		70	°C
Data Rate Per Lane	f_d			28	Gbps
Humidity	R_h	5		85	%
Power Dissipation	P			3.5	W
Link Distance with G.652	D	0.002		20	km

Electrical specifications

Parameter	Symbol	Min	Typical	Max	Unit
Power Consumption	P			3.5	W
Supply Current	I _{cc}			1.06	A
Transceiver Power-on Initialization Time				2000	ms
Transmitter (each Lane)					
Single-ended Input Voltage Tolerance		-0.3		4.0	V
AC Common Mode Input Voltage Tolerance		15			mV
Differential Input Voltage		50			mVpp
Differential Input Voltage Swing	V _{in}			900	mVpp
Differential Input Impedance	Z _{in}	90	100	110	Ohm
Receiver (each Lane)					
Single-ended Output Voltage		-0.3		4.0	V
AC Common Mode Output Voltage				7.5	mV
Differential Output Voltage Swing	V _{out}	300		850	mVpp
Differential Output Impedance	Z _{out}	90	100	110	Ohm

Note

Power-on Initialization Time is the time from when the power supply voltages reach and remain above the minimum recommended operating supply voltages to the time when the module is fully functional.

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
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
Transmitter					
SMSR	SMSR	30			dB
Total Average Launch Power	P_T			10.5	dBm
Average Launch Power, each Lane	P_{AVG}	-4.3		4.5	dBm
OMA, each Lane	P_{OMA}	-1.3		4.5	dBm
Difference in Launch Power between any Two Lanes (OMA)	$P_{tx, diff}$			5	dB
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane		-2.3			dBm
TDP, each Lane	TDP			2.2	dB
Extinction Ratio	ER	4			dB
RIN_{20OMA}	RIN			-130	dB/Hz
Optical Return Loss Tolerance	TOL			20	dB
Transmitter Reflectance	R_T			-12	dB
Eye Mask coordinates: X1, X2, X3, Y1, Y2, Y3				{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}	
Average Launch Power OFF Transmitter, each Lane	P_{off}			-30	dBm
Receiver					
Damage Threshold, each Lane	TH_d	5.5			dBm
Total Average Receive Power				10.5	dBm
Average Receive Power, each Lane		-10.6		4.5	dBm
Receive Power (OMA), each Lane				4.5	dBm
Receiver Sensitivity (OMA), each Lane	SEN			-9.6	dBm
Stressed Receiver Sensitivity (OMA), each Lane				-6.8	dBm
Difference in Receive Power between any two Lanes (OMA)	$P_{rx, diff}$			5.5	dB
LOS Assert	LOSA		-18		dBm
LOS Deassert	LOSD		-15		dBm
LOS Hysteresis	LOSH	0.5			dB
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	F_c			31	GHz

Ordering information¹

PN	Description
XQS319-20LY	QSFP28+, 100GBASE-LR4 and OUT4, LAN_WDM 20 km, 0°C ~ +70°C, DDM

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.

References

1. SFF-8436 QSFP+
2. Ethernet 100GBASE-LR4
3. OTN OUT4

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