

QSFP28 100G 1310nm LR4C Transceiver 10km LC Duplex DDM Arista Compatible

Q28100G1310LCDA

This product is a 100Gb/s transceiver module designed for optical communication applications compliant to 100GBASE-LR4 of the IEEE P802.3ba standard.

The module converts 4 input channels of 25Gb/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. The central wavelengths of the 4 LAN-WDM channels are 1295.56, 1300.05, 1304.58 and 1309.14 nm as members of the LAN-WDM wavelength grid defined in IEEE 802.3ba. The high-performance cooled LAN-WDM.

DFB transmitters and high-sensitivity PIN receivers provide superior performance for 100-Gigabit Ethernet applications up to 10km links and compliant to optical interface with IEEE 802.3ba Clause 88 100GBASE-LR4 requirements.

The product has been designed to meet the harshest external operating conditions including temperature, humidity, and EMI interference.

KEY FEATURES

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 25.78Gbps per channel
- 4 channels 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 QSFP28 form-factor
- Up to reach 10km for G.652 SMF
- Duplex LC receptacles
- 3.3V power supply voltage
- RoHS-6 compliant (lead free)

APPLICATIONS

- IEEE 802.3ba
100GBASE-LR4

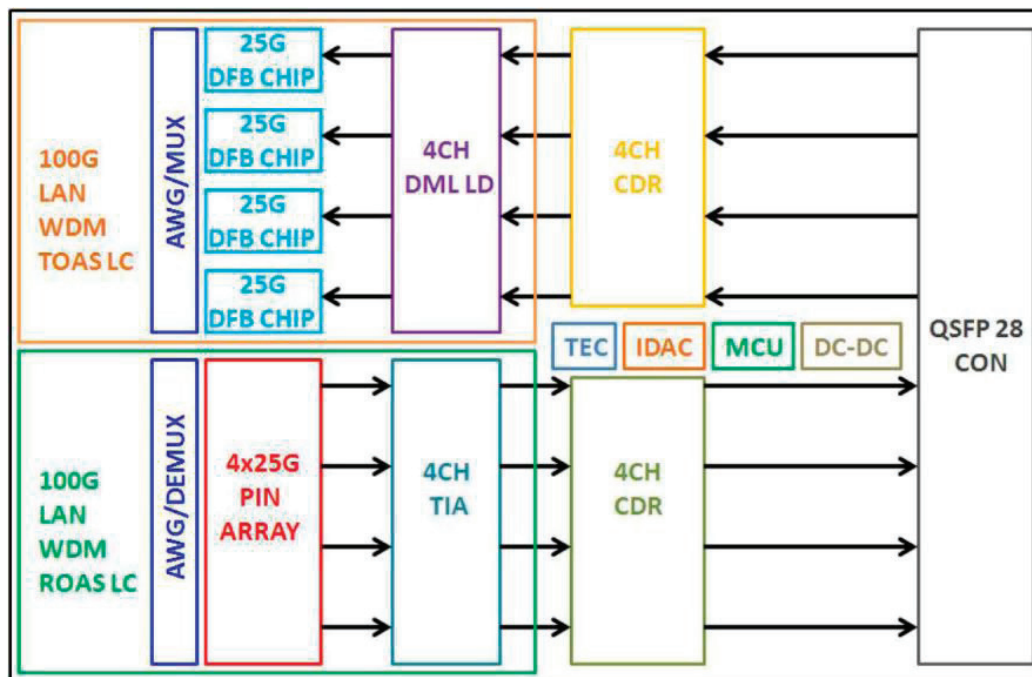


Figure 1. Module Block Diagram

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	85	%
DAMAGE THRESHOLD, EACH LANE	TH	5.5		dBm

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	P		3.5	W	

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	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.

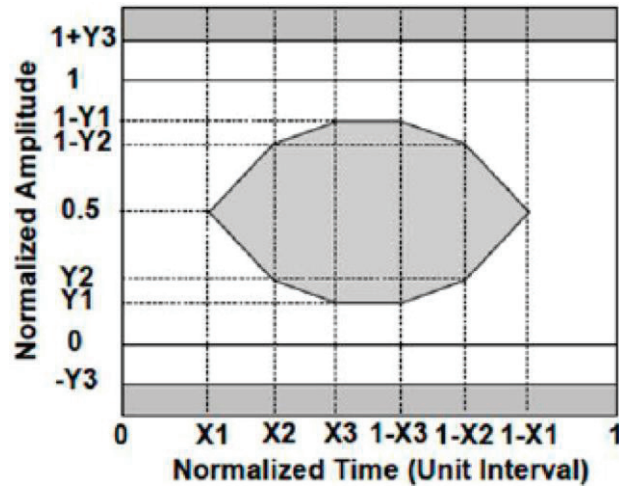
Optical Characteristics

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
QSFP28 100GBASE-LR4						
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	P _{AVG}	-4.3		4.5	dBm	
OMA, Each Lane	P _{OMA}	-1.3		4.5	dBm	1
Difference in Launch Power	P _{tx,diff}			5	dB	

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Launch Power in OMA		-2.3			dBm	
TDP, Each Lane	TDP			2.2	dB	
Extinction Ratio	ER	4			dB	
RIN ₂₀ OMA	RIN			-130	dB/H	
Optical Return Loss	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}				2
Average Launch Power OFF	P _{off}		-30	dBm		
RECEIVER						
Damage Threshold, Each Lane	TH _d	5.5			dBm	3
Total Average Receive				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			-8.6	dBm	
Stressed Receiver Sensitivity (OMA), Each Lane				-6.8	dBm	4
Difference in Receive Power Between any Two Lanes (OMA)	Prx,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 Cut-off Frequency, Each Lane	F _c			31	GHz	
CONDITIONS OF STRESS RECEIVER SENSITIVITY TEST (NOTE 5)						
Vertical Eye Closure Penalty, Each Lane			1.8		dB	5
Stressed Eye J2 Jitter, Each Lane			0.3		UI	
Stressed Eye J9 Jitter, Each Lane			0.47		UI	

Note:

1. Even if the TDP < 1 dB, the OMA min must exceed the minimum value specified here.
2. See Figure 4 below.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.
4. Measured with conformance test signal at receiver input for BER = 1x10⁻¹².
5. Vertical eye closure penalty and stressed eye jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.



Mechanical Dimensions

