PRODUCT SPECIFICATION

GQXP-29B4-10D(I)

10km 100G DML/PIN QSFP28 Optical Transceiver

■ Features:

★ Hot-pluggable QSFP28 form factor

★ Supports 103.1Gb/s aggregate bit rate

★ Power dissipation < 3.5W

★ RoHS-6 compliant

★ Commercial case temperature range of 0℃to70℃

★ Adaptive CTLE

★ Single 3.3V power supply

★ Maximum link length of 10km on SMF

★ 4x25Gb/sDML -based LAN-WDM transmitter

★ 4x25G retimed electrical interface

★ Duplex LC receptacle

★ I2C management interface

■ Applications:

★ 100GBASE-LR4 100G Ethernet

■ Description:

GLight GQXP-29B4-10D(I) transceiver modules are designed for use in 100 Gigabit Ethernet links on up to 10km of single mode fiber. They are compliant with the QSFP28 MSA and IEEE 802.3ba 100GBASE-LR4 and IEEE 802.3bm CAUI-4. Digital diagnostics functions are available via the I2C interface, as specified by the QSFP28 MSA. The transceiver is RoHS-6 compliant per Directive 2011/65/EU.

■ Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_S	-40		+85	°C
Case Operating Temperature	T_A	0		70	°C
Supply Voltage	V_{CC}	-0.5		3.6	V
Relative Humidity	RH	15		85	%
Receiver Damage Threshold, per Lane	P_{Rdmg}	5.5			dBm
Industrial	TC	-40		85	°C
Commercial	TC	0		70	°C

■ Electrical Characteristics (EOL, TOP = 0 to 70C, V_{CC} = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	Vcc	3.14		3.47	V	
Supply Current	Icc			1060	mA	
Module total power	P			3.5	W	
Transmitter Section:						
Signaling rate per lane		25.78125 ± 100ppm			Gb/s	
Differential data input swing per lane	Vin,pp,diff			900	mV	
Differential input return loss (min)	RLd(f)	9.5 – 0.37f, 0.01≤f<8 4.7-7.4log10(f/14),8≤f<19			V	
Differential to common mode input return loss (min)	RLdc(f)	22-20(f/25.78), 0.01≤f<12.89 15-6(f/25.78),12.89≤f<19			V	
Differential termination mismatch				10	%	
Stressed input parameters		Per IEEE 802.3bm Table 88-13				
Eye width			0.46		UI	
Applied pk-pk sinusoidal jitter						
Eye height			95		mV	
DC common mode voltage		-350		2850	mV	
Receiver Section:						
Signaling rate per lane		25.78125 ± 100ppm			V	
Differential data output swing	$V_{out,pp}$	100		400	mV_{pp}	
		300		600		
		400		800		
		600		1200		
Eye width		0.57			UI	
Eye height, differential					mV	
Vertical eye closure	VEC			5.5	dB	
Transition time (20% to 80%)	t_r, t_f	12			ps	

■ Optical Characteristics (EOL, TOP = 0 to 70C, V_{CC} = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Signaling Speed per Lane		25.78125 ± 100ppm			Gb/s	1
Center Wavelength	λt	1294.53 – 1296.59 1299.02 – 1301.09 1303.54 – 1305.63 1308.09 – 1310.19			nm	
Total Average Launch Power	POUT			10.5	dBm	
Average Optical Power per Lane	TXPx	-4.3		4.5	dBm	2,7
Optical Power OMA per Lane	TxOMA	-1.3		4.5	dBm	
Optical Extinction Ratio	ER	4			dB	
Sidemode Suppression ratio	SMSR	30			dB	
Optical Return Loss Tolerance	ORL			20	dB	
Average Launch Power of OFF Transmitter, per Lane				-30	dBm	
Relative Intensity Noise	RIN			-130	dB/Hz	
Transmitter Eye mask definition {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				3
Receiver Section:						
Signaling Speed per Lane		25.78125 ± 100ppm			Gb/s	4
Lane center wavelengths (range)	λr	1294.53 – 1296.59 1299.02 – 1301.09 1303.54 – 1305.63 1308.09 – 1310.19			nm	
Damage Threshold	DT	3.4			dBm	
Average Receive Power per Lane	RXPx	-10.6		4.5	dBm	5,7
Receive Power (OMA) per Lane	RxOMA			4.5	dBm	
Receiver Sensitivity (OMA) per Lane	Rxsens			-8.6	dBm	
Return Loss	RL	-26			dB	
Stressed Sensitivity (OMA)	SRS			-10.6	dBm	6
Receive electrical 3 dB upper cutoff frequency, per lane				31	GHz	
Los De-Assert	LOS_D			-12	dBm	
Los Assert	LOS_A	-24			dBm	
Los Hysteresis	LOS_H		1.2		dB	

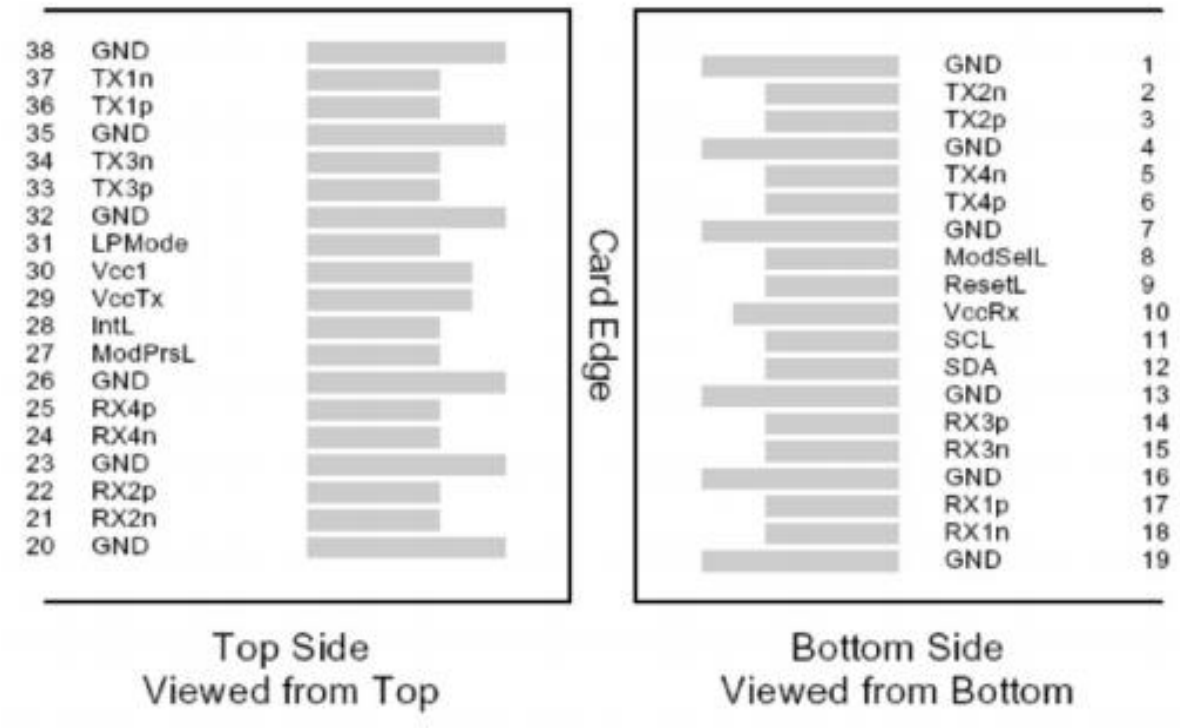
Note:

1. Transmitter consists of 4 lasers operating at 25.78Gb/s each.
2. Minimum value is informative.
3. Hit ratio $5x10^{-5}$.
4. Receiver consists of 4 photodetectors operating at 25.78Gb/s each.
5. Minimum value is informative, equals min TxOMA with infinite ER and max channel insertion loss.
6. SRS is measured with vertical eye closure penalty of 1.8 dB max, J2 of 0.30 UI, and J9 of 0.47 UI.
7. Power value and power accuracy are with all channels on.

■ General Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit
Bit Rate (all wavelengths combined)	BR			103.1	Gb/s
Bit Error Ratio (pre-FEC)	BER			10^{-12}	
Maximum Supported Distances					
Fiber Type					
SMF per G.652	Lmax			10	km

■ Pin Assignment:



Digital Diagnostics Functions

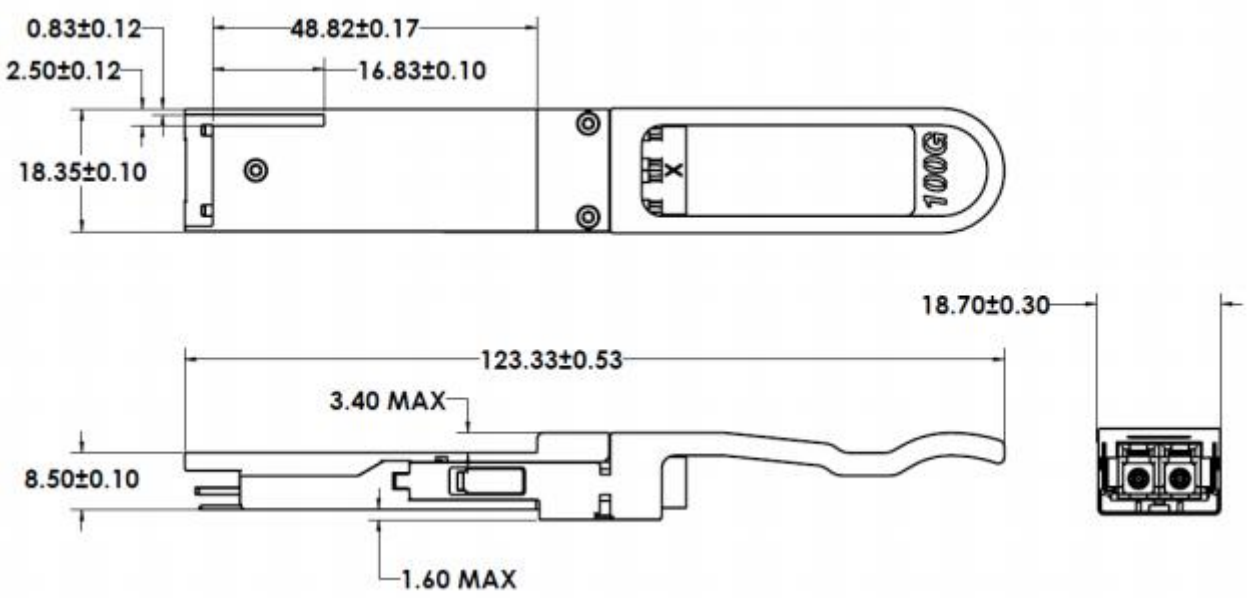
The QSFP28 transceivers support the I2C-based diagnostics interface specified by the QSFP28 MSA.

Memory Contents

Per the QSFP28 MSA.

Mechanical Specifications

Per the QSFP28 MSA.



Mechanical Dimensions

Shenzhen GLight Communication Technology Co., Ltd.
Building 3, ChaoHuiLou Technology Industrial Park, No.119 Huating Road,
Dalang Sub-district, Longhua District, Shenzhen, China