

PRODUCT SPECIFICATION

Part No.:	AC-QPBL2332-G100-10	
Description:	100G QSFP28 Transceiver, BIDI TX1271nm/RX1331nm 10km 100G QSFP28 Transceiver, BIDI TX1331nm/RX1271nm 10km	
Release Date	Rev.	Revision Change Description
2015/06/07	A0	New Release
2020/12/28	A1	Template Update

Features

- ✧ Up to 106.25Gbps data rate single channel
- ✧ 1x106.25Gbps PAM4 Line side, 4x25.78Gbps NRZ Host side or 4x26.56Gbps NRZ Host side (close Media-side KP1 FEC inside Module)
- ✧ 100Gbps hermetic BOSA with 1271/1331nm EML and PIN Detector
- ✧ Single LC optical interface compliant
- ✧ DDM function implemented
- ✧ Maximum link length of 10km on SMF fiber
- ✧ Low power dissipation: <4W
- ✧ International class 1 laser safety certified
- ✧ Operating temperature range: -20℃ ~ +85℃
- ✧ Compliant with RoHS6

Application

- ✧ 100GBASE-LR-Bidi

Standard

- ✧ CEI-28G-VSR
- ✧ QSFP28 MSA
- ✧ SFF-8636

Specification

Absolute Maximum Ratings				
Parameter	Symbol	Min	Max	Unit
Storage Temperature Range	Ts	-40	+85	°C
Relative Humidity	RH	5	85	%
Power Supply Voltage	Vcc	-0.5	+3.6	V
Operating Case Temperature Range	Tc	-20	85	°C
Receiver Damage Threshold Per Lane	T _{dag}	5.8	dBm	dBm

Recommended Operating Conditions					
Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature		-20		+85	°C
Power Supply Voltage		3.135	3.3	3.465	V
Data Rate(Electrical)		25.781 25*4	26.5625*4		Gb/s
Data Rate(Optical)		-20			Gb/s
Link Distance with G.652				10	Km

Optical transmitter Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter Rate			53.125+/- 100ppm		GBd	PAM4
Lane center WL		1264.5		1277.5	nm	RTXM290-951
		1324.5		1337.5		RTXM290-952
Side-mode suppression Ratio		30			dB	
Optical output power		-1.9		4.8	dBm	
Optical modulation amplitude		1.1		5	dBm	For TDECQ < 1.4 dB
		TDECQ-0.3		5	dBm	For 1.4dB<TDECQ<T EDCQ(max)
Transmitter and dispersion penalty eye closure for PAM4 (TDECQ)				3.4	dB	
TECQ				3.4	dB	
TDECQ-TECQ				2.5	dB	
Extinction ratio		3.5			dB	

Average launch power of OFF transmitters				-15	dB	
Transmitter over/under-shoot				22	%	
Optical return loss tolerance				15.6	dB	
Transmitter reflectance				-26	dB	
Transmitter transition time				17	ps	
RINx OMA (max) where x is				-136	dB/Hz	

Optical receiver Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Receive Rate			53.125+/-100ppm		GBd	PAM4
Lane center WL		1324.5	1331	1337.5	nm	RTXM290-951
		1264.5	1271	1277.5		RTXM290-952
Damage threshold		5.8			dBm	
Average receive power		-8.2		4.8	dBm	
Receiver power(OMA)				5	dBm	
Receive Sensitivity(OMA)				-6.1	dBm	For TDECQ < 1.4 dB@BER 2.4e-4
				-7.5+T ECQ		For 1.4dB<TDECQ<TDECQ(max)@BER 2.4e-4
Stressed Sensitivity (OMA)				-4.1	dBm	
Receiver reflectance				-26	dB	
Conditions of stressed receiver sensitivity test:						
Stressed eye closure for PAM4(test conditions)			3.4		dB	SECQ
SECQ-10*IgCeq				3.4	dB	

Pin Definition

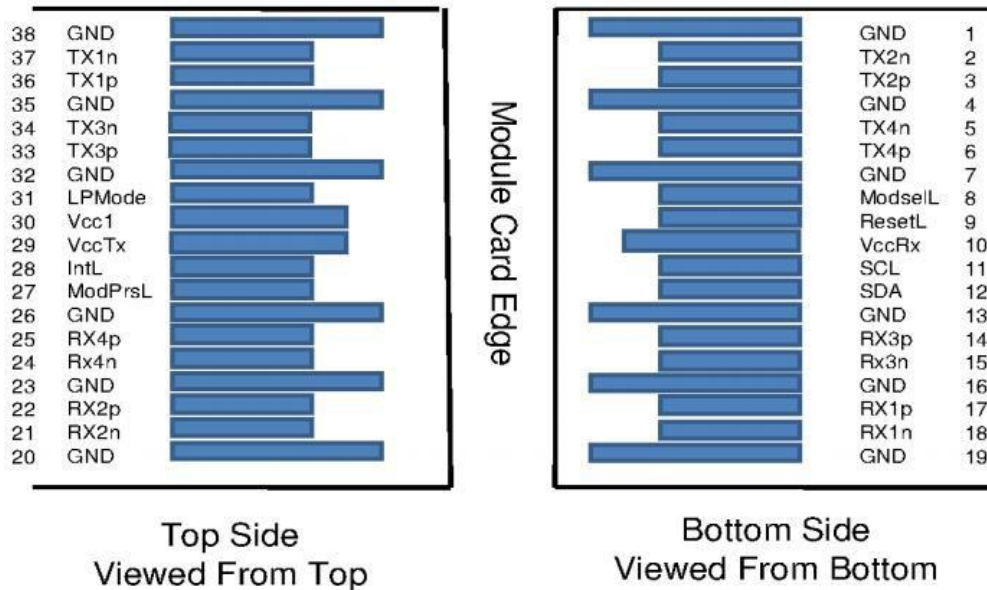


Figure1 QSFP MSA-compliant 38-pin connector

Pin	Symbol	Name/Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
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	1
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	
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 Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

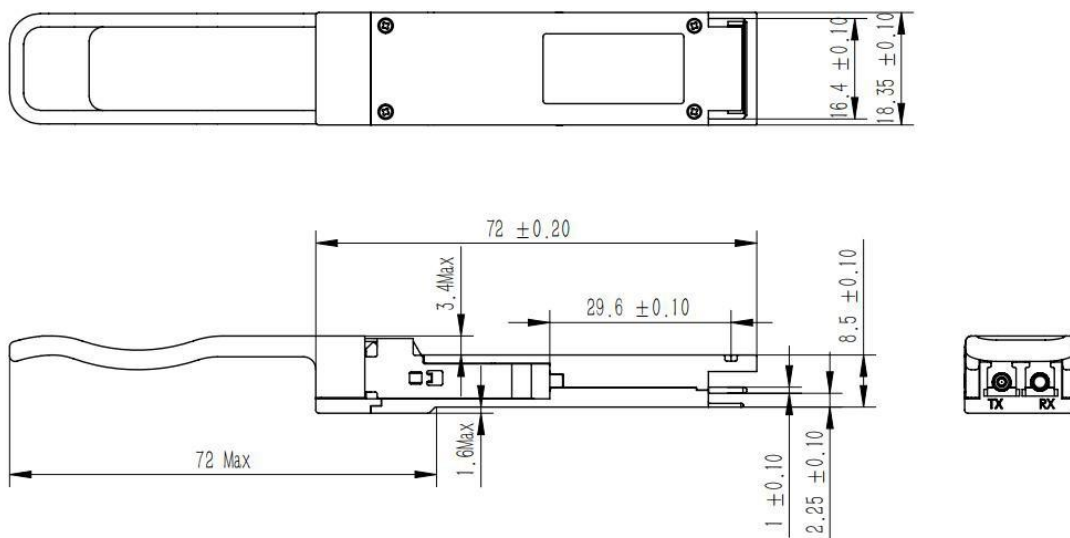
Table 1: QSFP Module PIN Definition

Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.

Package Outline

Dimensions are in millimeters. All dimensions are $\pm 0.2\text{mm}$ unless otherwise specified. (Unit: mm)



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000V for other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (°C)	Reach (KM)	DDM
AC-QPBL23-G100-10	QSFP28	106.25Gb/s	1271nm Cooled EML	-1.9~4.8	PIN	<-6.1	-20~85°	10	Y
AC-QPBL32-G100-10	QSFP28	106.25Gb/s	1331nm Cooled EML	-1.9~4.8	PIN	<-6.1	-20~85°	10	Y