

PRODUCT SPECIFICATION

Part No.:	AC-QS-8G200-01	
Description:	200G QSFP56 SR4 Transceiver, MMF 850nm 100m	
Release Date	Rev.	Revision Change Description
2021/06/07	A0	New Release
2021/12/28	A1	Template Update
2022/03/30	A2	BER Spec changed from BER<10 ⁻¹² to BER<5x10 ⁻⁵
2022/08/15	A3	Change CDR to DSP
2025/11/15	A4	PN changed from QP to QS

Features

- ✧ Supports 212.5Gb/s PAM4
- ✧ Digital Diagnostics Monitoring Interface
- ✧ Built-in 200G PAM4 DSP
- ✧ Up to 100m reach over OM4 & OM5 MMF
- ✧ Hot Pluggable QSFP56 form factor
- ✧ Uncooled 4 channels 850nm VCSEL array
- ✧ 4 channels PIN photo detector array
- ✧ Commercial operating case temperature range: 0~ 70°C
- ✧ RoHS-6 Compliant
- ✧ Power dissipation < 4.5W
- ✧ TDECQ<4.5dB
- ✧ Option: Single MPO-12 Connector, APC / UPC

Application

- ✧ 200G Ethernet
- ✧ Data center

Standard

- ✧ IEEE 802.3cd 200GE SR4
- ✧ QSFP MSA compliant
- ✧ Option: SFF 8636 / CMIS 5.0

Specification:

Absolute Maximum Ratings				
Parameter	Symbol	Min	Max	Unit
Storage Ambient Temperature	T _{STG}	-20	85	°C
Operating Humidity	H _O	5	85	%
Power Supply Voltage	V _{cc}	-0.3	3.6	V
Signal Input Voltage		V _{cc} -0.3	V _{cc} +0.3	V

Recommended Operating Conditions					
Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T _c	0		70	°C
Power Supply Voltage	V _{cc}	3.13	3.3	3.47	V
Data Rate,each Lane (PAM4)			53.125		Gbps
Fiber Length 50/125μm core MMF		-	-	100	m

Transmitter characteristics

Parameter	Min	Typical	Max	Unit
Signaling Rate, each lane (range)	26.5625±100ppm			GBd
Center Wavelength Range	840		860	nm
Modulation Format	PAM4			
RMS spectral width			0.6	nm
Average launch power, each lane	-6.5		4	dBm
Outer Optical Modulation Amplitude (OMA _{outer}), each lane	-4.5		3	dBm
Launch power in OMA _{outer} minus TDECQ	-5.9			dBm
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane			4.5	dB
Extinction ratio, each lane	3			dB
Optical return loss tolerance			12	dB

Receiver characteristics

Parameter	Min	Typical	Max	Unit
Signaling Rate, each lane (range)	26.5625±100ppm			GBd
Center Wavelength Range	840		860	nm
Modulation Format	PAM4			
Average receive power, each lane	-8.4		4	dBm
Receive power, each lane (OMAouter)			3	dBm
Receiver reflectance			-12	dB
Stressed receiver sensitivity (OMAouter), each lane			-3.4	dBm
Receiver sensitivity (OMAouter), each lane	Max(-6.5, SECQ-7.9)			dBm
Stressed eye closure for PAM4 (SECQ), lane under test		4.5		dB
SECQ – 10log10(Ceq) (max), lane under test			4.5	dB

Pin Definition

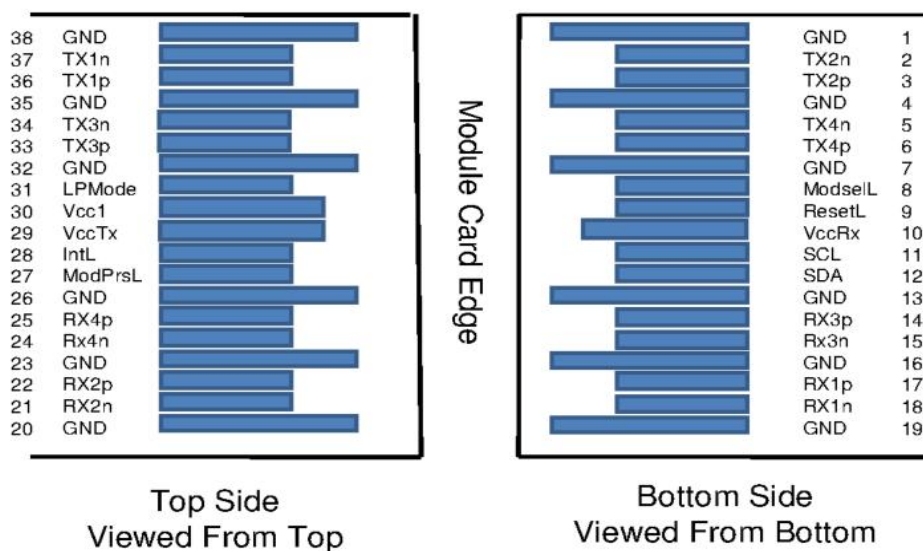


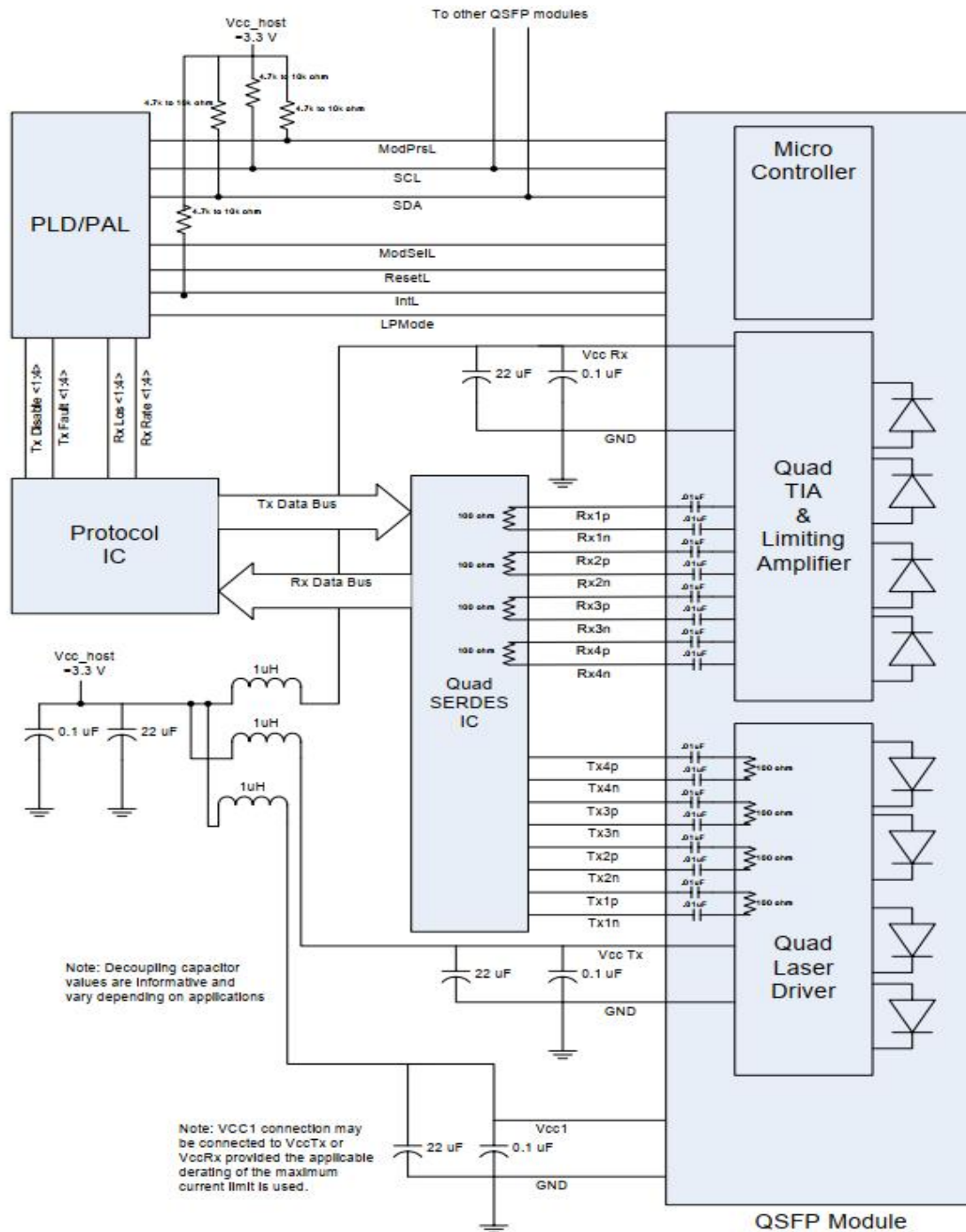
Figure1 QSFP MSA-compliant 38-pin connector

PIN	Logic	Symbol	Name/Description	Note
1		GND	Ground	
2	CML-I	Tx2n	Transmitter Inverted Data Input	

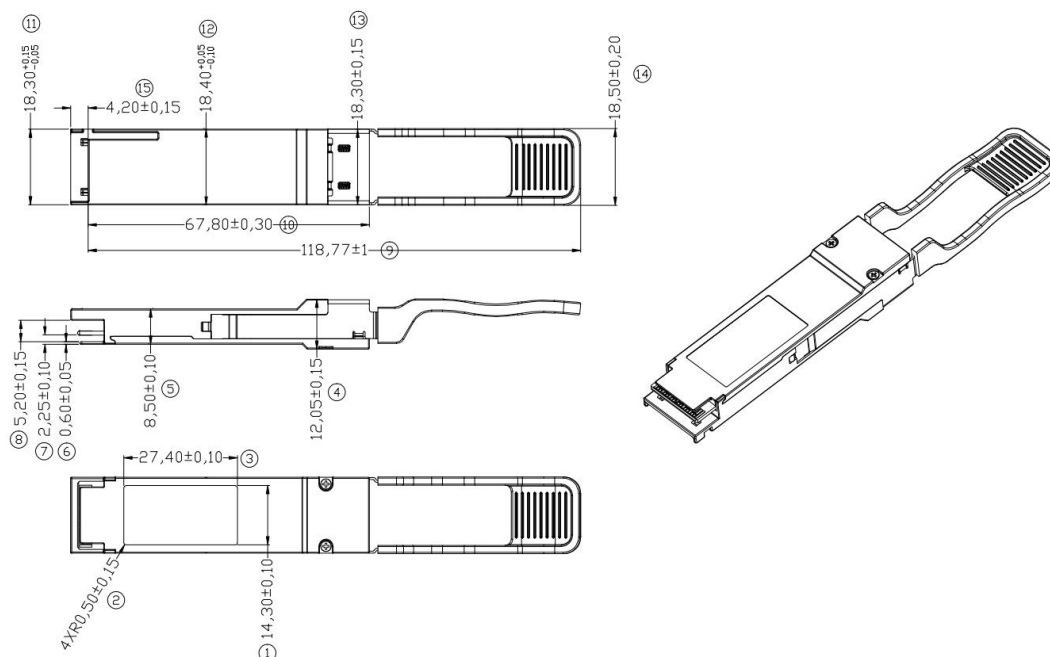
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		VccRx	+ 3.3V Power Supply Receiver	
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	
20		GND	Ground	
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	
30		Vcc1	+3.3 V Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	

Table 1: QSFP56 Module PIN Definition

Electrical Interface

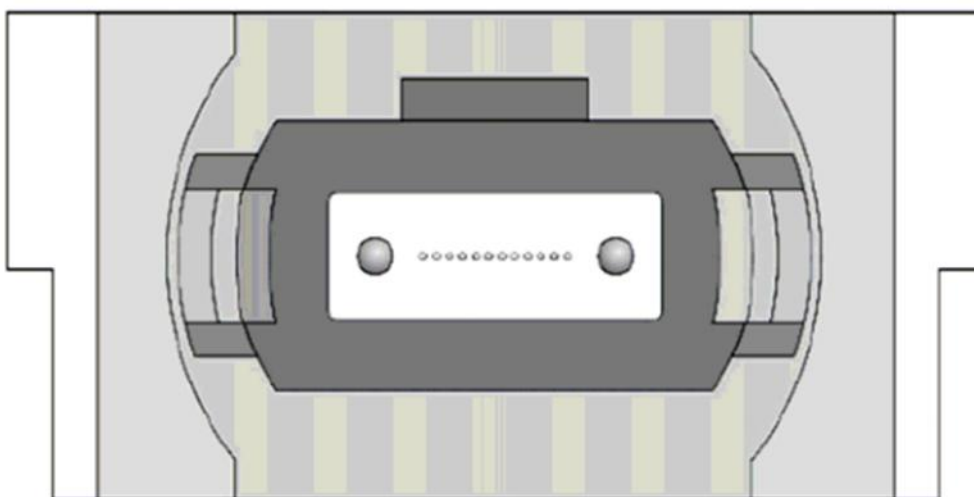


Package Outline (Unit: mm)



*Optical Interface Lanes and Assignment

The optical interface port is a male MPO connector. The four fiber positions on the left as shown in Figure 4, with the key up, are used for the optical transmit signals (Channel 1 through 4). The fiber positions on the right are used for the optical receive signals (Channel 4 through 1). The central four fibers are physically present.



Transmit Channels: 1 2 3 4

Unused positions: x x x x

Receive Channels: 4 3 2 1

Digital Diagnostic Monitor Accuracy

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000Vfor 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 (M)	DDM
AC-QS-8G200-01	QSFP56	200G	VCSEL 850	-6.5~4	PIN	<-6.5	0~70	100	Y