

# 200G QSFP56 to 2xQSFP56 Breakout Active Optical Cable

## Features

- 4x 50Gb/s PAM4 modulation
- Hot pluggable
- SFF-8665 compliant QSFP56 port
- SFF-8636 compliant I<sup>2</sup>C management
- Single 3.3V power supply
- Max 4.5W power dissipation each end, with re-timing
- 0 to 70°C case temperature operating range
- RoHS compliant
- Metal enclosure for low EMI

## Applications

- Datacom/Telecom Switch & Router connections
- High speed multi-channel parallel data connections
- High performance computing, server and data storage

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## Compliance

- 200GBASE-SR4 Ethernet (PAM4)
- Compliant with IEEE 802.3cd

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	V <sub>CC3</sub>	-0.5	-	+3.6	V	
Storage Temperature	T <sub>S</sub>	-5	-	+70	°C	
Operating Humidity	RH	+5	-	+85	%	1

Note:

[1] No condensation

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Operating Case Temperature	TC	0	-	+70	°C	
Power Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.47	V	
Power dissipation (200G re-timing on all lanes)	Pd200G	-	-	4.5	W	1
Power dissipation (100G re-timing on all lanes)	Pd100G			2.5	W	1

Note:

[1] Per terminal

## Characteristics

Parameter	Symbol	Unit	Min.	Typical	Max.	Note
<b>Transmitter</b>						
Signaling rate (each lane)	SR	GBd	26.5625 ± 100 ppm			
Differential data input voltage per lane	V <sub>in,pp,dif</sub> f	mV	900	-	-	
Differential termination mismatched	-	%	-	-	10	
Single-ended voltage tolerance range	-	V	-0.4	-	3.3	
DC common mode voltage	-	mV	-350	10	2850	
<b>Receiver</b>						
Signaling rate (each lane)	SR	GBd	26.5625 ± 100 ppm			
Differential output voltage	-	mV	-	-	900	
Differential termination mismatch	-	%	-	-	10	
Transition time (min, 20% to 80%)	-	ps	9.5	-	-	

DC common mode voltage	-	mV	-350	-	2850	
Bit Error Ratio	BER	-	-	-	2.4E-4	Note1

Note:

[1] PRBS31Q@26.5625Gbd PAM4

## Recommended Interface

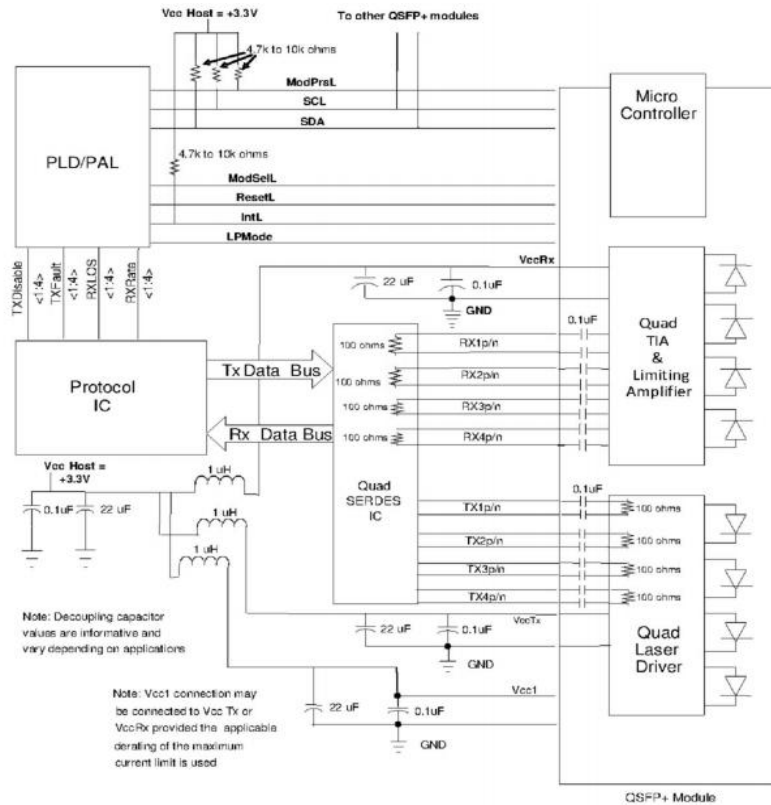


Figure 1 Recommended Interface Circuit

## Pin arrangement

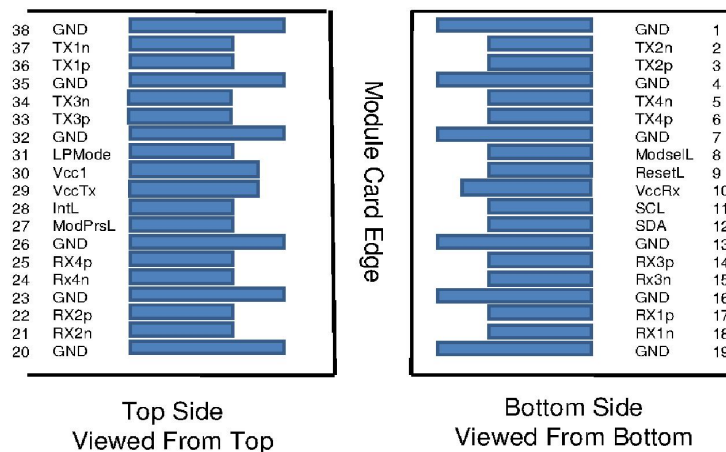


Figure 2 QSFP56 MSA-compliant 38-pin connector

## Pin Descriptions

Pin	Symbol	Description	Note
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	Vcc Rx	+3.3V Power Supply Receiver	
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	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
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

## Mechanical

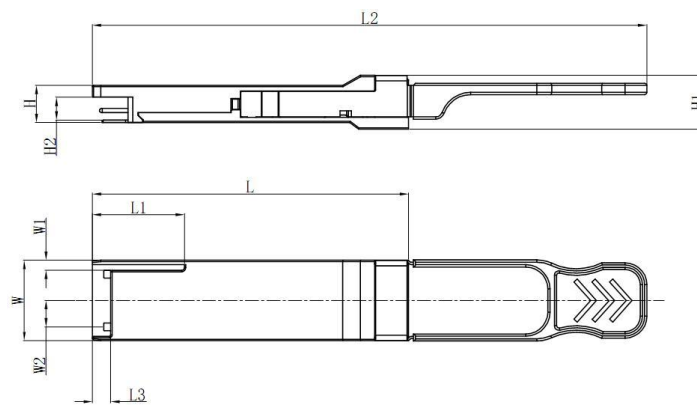


Figure 3 Mechanical Diagram

Unit mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
Max	72.2	-	128	4.35	18.45	-	6.2	8.6	12.0	5.35
Type	72.0	-	-	4.20	18.35	-	-	8.5	11.8	5.2
Min	68.8	16.5	124	4.05	18.25	2.2	5.8	8.4	11.6	5.05

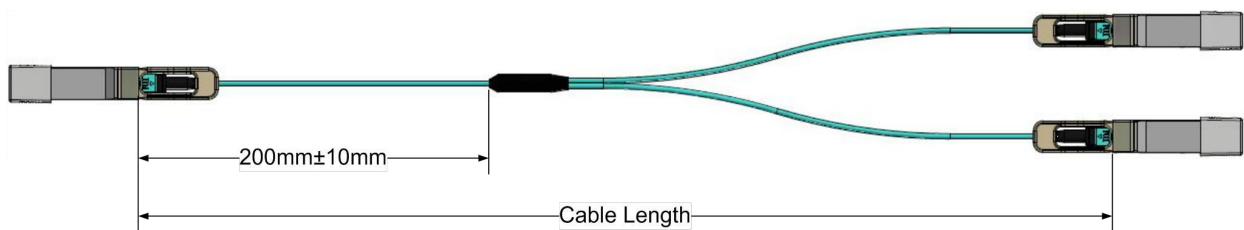


Figure 4 Mechanical Diagram of Cable

## Regulatory Compliance

Parameter	Value	Units
Diameter	3±0.2	mm
Minimum bend radius	30	mm
Length tolerance	1 m ≤ length ≤ 4.5 m:	+15 / -0
	5 m ≤ length ≤ 14.5 m:	+30 / -0
	Length ≤ 15.0 m	+2% / -0
Cable color	Aqua	

## Warnings

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

**Laser Safety:** Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.



## Further Information:

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