

EAQP200-xxx

200G QSFP56-QSFP56 Active optical cable (AOC)

PRODUCT FEATURES

- Supports IBTA InfiniBand HDR
- Up to 200Gb/s data rate
- 4x 50Gb/s PAM4 modulation
- SFF-8665 compliant QSFP56 port
- SFF-8636 compliant I2C management
- Single 3.3V power supply
- 4.5W power dissipation each end, with retiming
- Operating case temp Commercial: 0°C to +70 °C
- Hot pluggable
- RoHS compliant

APPLICATIONS

- 200Gb/s InfiniBand HDR systems
- Other optical links

Information

Part No.	Description
EAQP200-xxx	200G QSFP56-QSFP56 Active optical cable (AOC) 0.5~100M

- where "x" denotes cable length in meters. Examples are as follows:
- x = 0.5 for 0.5m, x = 1 for 1m, x = 10 for 10m

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	V _{cc3}	-0.5	-	+3.6	V	
Storage Temperature	T _s	-5	-	+75	°C	
Operating Humidity	RH	+5	-	+85	%	1

Note: 1 No condensation

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T _c	0	-	+70	°C	
Power Supply Voltage	V _{cc}	3.14	3.3	3.47	V	
Power Dissipation	P _d	-	-	4.5	W	1

Note: 1 Per terminal

Electrical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Transmitter						
Signaling rate (each lane)	SR	GBd	26.5625 ± 100 ppm			
Differential data input voltage per lane	V _{in,pp,diff}	mV	900	-	-	
Differential termination mismatch	-	%	-	-	10	
Single-ended voltage tolerance range	-	V	-0.4	-	3.3	
DC common mode voltage	-	mV	-350	-	2850	
Receiver						
Signaling rate (each lane)	SR	GBd	26.5625 ± 100 ppm			
Differential output voltage	-	mV	-	-	900	
Differential termination mismatch	-	%	-	-	10	
Transition time (min, 20%)	-	ps	9.5	-	-	

to 80%)						
DC common mode voltage	-	mV	-350	-	2850	
Error Bit Rate	BER	-	-	-	2.4E-4	Note1

Note: 1 PRBS31Q@26.5625Gbd PAM4

Pin arrangement

38	GND
37	TX1n
36	TX1p
35	GND
34	TX3n
33	TX3p
32	GND
31	LPMODE
30	Vcc1
29	VccTx
28	IntL
27	ModPrsL
26	GND
25	RX4p
24	Rx4n
23	GND
22	RX2p
21	RX2n
20	GND

Module Card Edge

GND	1
TX2n	2
TX2p	3
GND	4
TX4n	5
TX4p	6
GND	7
ModSelL	8
ResetL	9
VccRx	10
SCL	11
SDA	12
GND	13
RX3p	14
Rx3n	15
GND	16
RX1p	17
RX1n	18
GND	19

Top Side
Viewed From Top

Bottom Side
Viewed From Bottom

Pin Function Definitions

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	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	1
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

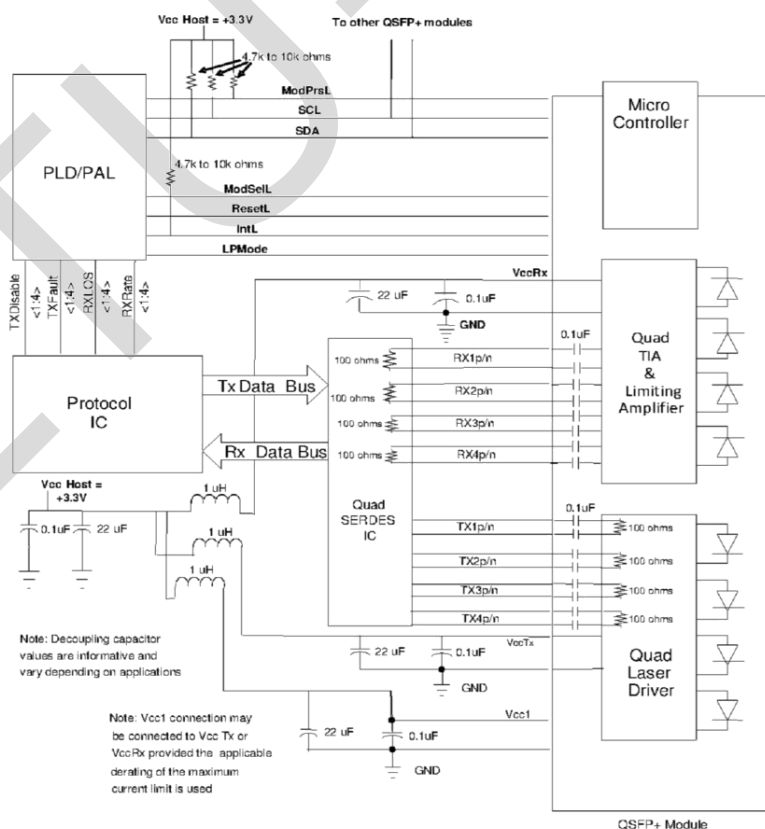
Note: 1. Circuit ground is internally isolated from chassis ground.

Monitoring Specification

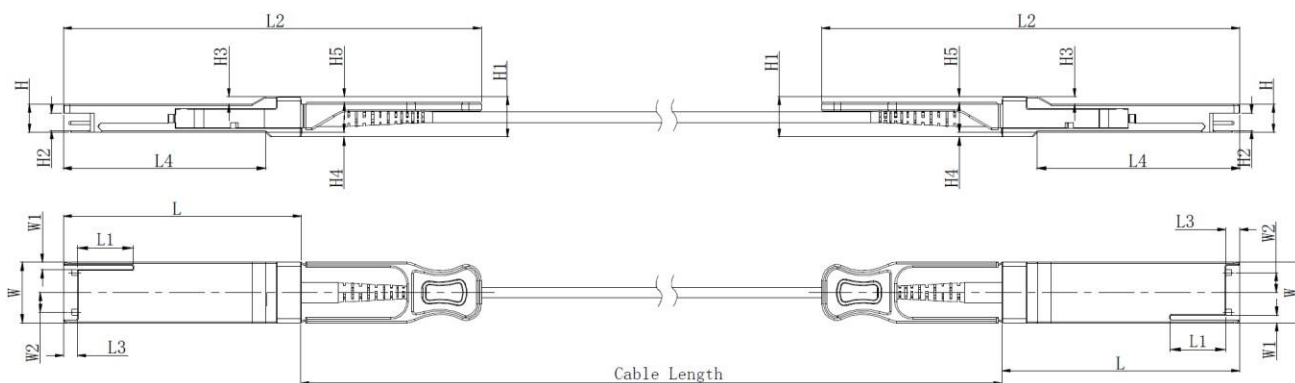
2-Wire Serial Address 1010000x			
Lower Page 00h			
0 Identifier			
1- 2 Status			
3- 21 Interrupt Flags			
22- 33 Free Side Device Monitors			
34- 81 Channel Monitors			
82- 85 Reserved			
86- 98 Control			
99 Reserved			
100-104 Hardware Interrupt Pin Masks			
105-106 Vendor Specific			
107 Reserved			
108-110 Free Side Device Properties			
111-112 Assigned for use by PCI Express			
113 Free Side Device Properties			
114-118 Reserved			
119-122 Password Change Entry Area (Optional)			
123-126 Password Entry Area (Optional)			
127 Page Select Byte			

Upper Page 00h	Optional Page 01h	Optional Page 02h	Optional Page 03h
128 Identifier	128 CC_APPS	128-255 User EEPROM Data	128-175 Free Side Device Thresholds
129-191 Base ID Fields	129 AST Table Length (TL)		
	130-131 Application Code Entry 0		
	132-133 Application Code Entry 1		
	134-253 other entries		
192-223 Extended ID			176-223 Channel Thresholds
224-255 Vendor Specific ID			224 Tx EQ & Rx Emphasis Magnitude ID
			225 RX output amplitude indicators
			226-241 Channel Controls
			242-251 Channel Monitor Masks
	254-255 Application Code Entry TL		252-255 Reserved

Recommended Interface Circuit



Mechanical Design Diagram



Unit: mm

	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5
Max	72.2	-	128	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6	2.0
Type	72.0	-	-	4.20	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5	1.8
Min	68.8	16.5	124	4.05	61.0	18.25	2.2	5.8	8.4	12.0	5.05	2.1	1.3	1.6

Cable Length

Cable Length L (Unit: m)	Tolerant (Unit: cm)
< 1.0	+10/-0
$1.0 \leq L \leq 4.5$	+15/-0
$4.5 < L \leq 14.5$	+30/-0
> 14.5	+2%L/-0
Cable Diameter	3.0 ± 0.2 mm
Min. Bend Radius (Static)	30mm

Revision History

Version No.	Date	Description
1.0	February 8, 2022	Preliminary datasheet
2.0	Aug 12, 2024	Product upgrades

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