

LPXSAA3(4)2-MxxC

400G OSFP to 2x200G QSFP56 Active Optical Cable

Product Features

- 400Gb/s to 2x200Gb/s data rate
- 400GAUI-8 Electrical interface aligned with IEEE 802.3bs
- Single 3.3V power supply
- Max 4.5W power dissipation each QSFP56 end
- Max 8W power dissipation OSFP end
- Operating case temp Commercial: 0°C to +70 °C
- Hot pluggable
- RoHS compliant

Applications

- 400Gb/s systems
- Other optical links

Ordering Information

Part No. ^{Note1}	Bit Rate (Gbps)	Packag form of two opposite sides	Max. Cable lengths	Fiber Type	Temp ^{Note2}
LPXSAA32-M ₁ XX ₂ C	400G to 2*200G	OSFP to 2xQSFP56	60 m	OM3 MMF	0℃~+70℃
LPXSAA42-M ₁ XX ₂ C			100m	OM4 MMF	
note1 : The "M ₁ XX ₂ " means : ①"XX"= 01~99 ② MXX = XX*1meter; SXX = XX*10meter ; LXX = XX*0.1meter					
note2: Case temperature					

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Supply Voltage	V _{CC3}	-0.5	-	+3.6	V	
Storage Temperature	T _s	-10	-	+75	°C	
Operating Humidity	RH	+5	-	+85	%	No condensation

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Operating Case Temperature	T _C	0	-	+70	°C	
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V	
Baud Rate (per channel)	BR		26.5625		GBd	PAM4
Power dissipation	Pd _{400G}	-	-	8	W	400G OSFP end
Power dissipation	Pd _{200G}	-	-	4.5	W	each 200G end

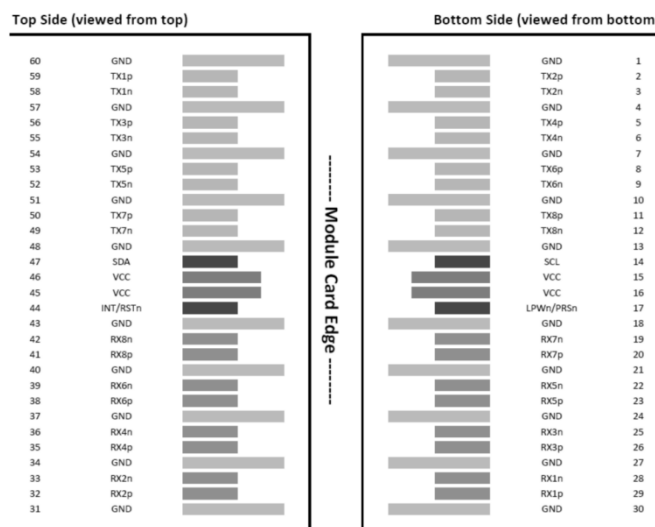
III. Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Signaling rate (each lane)	R _S	26.5625 ± 100 ppm			GBd	
Differential data input voltage per lane	V _{in,pp,diff}	-	-	900	mV	
Differential termination mismatch	-	-	-	10	%	
Single-ended voltage tolerance range	-	-0.4	-	3.3	V	
DC common mode voltage	-	-350	-	2850	mV	
Receiver						
Signaling rate (each lane)	R _S	26.5625 ± 100 ppm			GBd	
Differential output voltage	-	-	-	900	mV	
Differential termination mismatch	-	-	-	10	%	
Transition time (min, 20% to 80%)	-	9.5	-	-	ps	
DC common mode voltage	-	-350	-	2850	mV	
Error Bit Rate	BER	-	-	2.4E-4		1

Note: 1 PRBS31Q@26.5625Gb/s PAM4

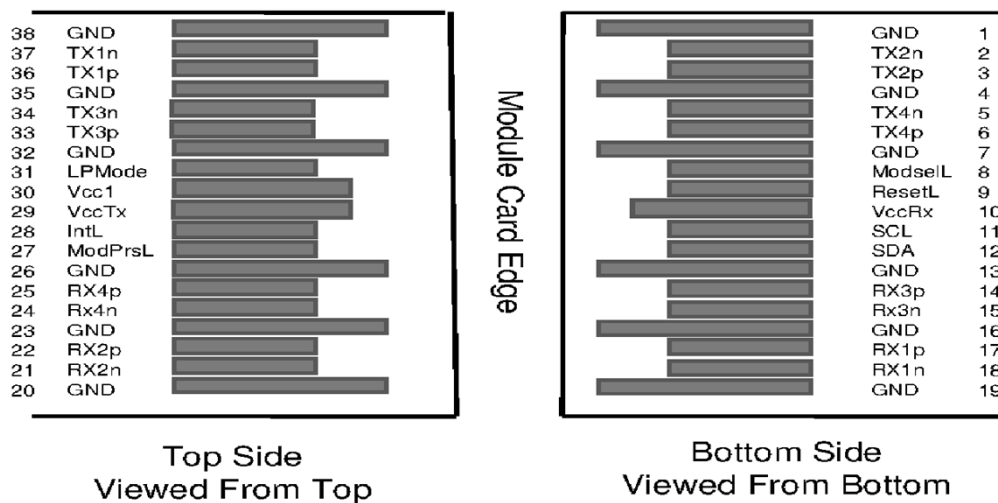
IV. Pin arrangement

Pin Descriptions for OSFP end



Pin NO.	Logic	Symbol	Definition	Pin NO.	Logic	Symbol	Definition
1	GND		Ground	31	GND		Ground
2	Tx2p	CML-I	Receiver Data Non-Inverted	32	RX2p	CML-O	Receiver Data Non-Inverted
3	Tx2n	CML-I	Receiver Data Inverted	33	RX2n	CML-O	Receiver Data Inverted
4	GND		Ground	34	GND		Ground
5	Tx4p	CML-I	Receiver Data Non-Inverted	35	RX4p	CML-O	Receiver Data Non-Inverted
6	Tx4n	CML-I	Receiver Data Inverted	36	RX4n	CML-O	Receiver Data Inverted
7	GND		Ground	37	GND		Ground
8	Tx6p	CML-I	Receiver Data Non-Inverted	38	RX6p	CML-O	Receiver Data Non-Inverted
9	Tx6n	CML-I	Receiver Data Inverted	39	RX6n	CML-O	Receiver Data Inverted
10	GND		Ground	40	GND		Ground
11	TX8p	CML-I	Receiver Data Non-Inverted	41	RX8p	CML-O	Receiver Data Non-Inverted
12	TX8n	CML-I	Receiver Data Inverted	42	RX8n	CML-O	Receiver Data Inverted
13	GND		Ground	43	GND		Ground
14	SCL	LVCNOS-I/O	2-wire Serial interface clock	44	INT/RSTn	Multi-Level	Module Interrupt / Reset
15	VCC		+3.3V Power	45	VCC		+3.3V Power
16	VCC		+3.3V Power	46	VCC		+3.3V Power
17	LPWn/PRSn	Multi-Level	Low-Power Mode Present	47	SDA	LVCNOS-I/O	2-wire Serial interface data
18	GND		Ground	48	GND		Ground
19	RX7n	CML-O	Receiver Data Inverted	49	TX7n	CML-I	Transmitter Data Inverted
20	RX7p	CML-O	Receiver Data Non-Inverted	50	TX7p	CML-I	Transmitter Data Non-Inverted
21	GND		Ground	51	GND		Ground
22	RX5n	CML-O	Receiver Data Inverted	52	TX5n	CML-I	Transmitter Data Inverted
23	RX5p	CML-O	Receiver Data Non-Inverted	53	TX5p	CML-I	Transmitter Data Non-Inverted
24	GND		Ground	54	GND		Ground
25	RX3n	CML-O	Receiver Data Inverted	55	TX3n	CML-I	Transmitter Data Inverted
26	RX3p	CML-O	Receiver Data Non-Inverted	56	TX3p	CML-I	Transmitter Data Non-Inverted
27	GND		Ground	57	GND		Ground
28	RX1n	CML-O	Receiver Data Inverted	58	TX1n	CML-I	Transmitter Data Inverted
29	RX1p	CML-O	Receiver Data Non-Inverted	59	TX1p	CML-I	Transmitter Data Non-Inverted
30	GND		Ground	60	GND		Ground

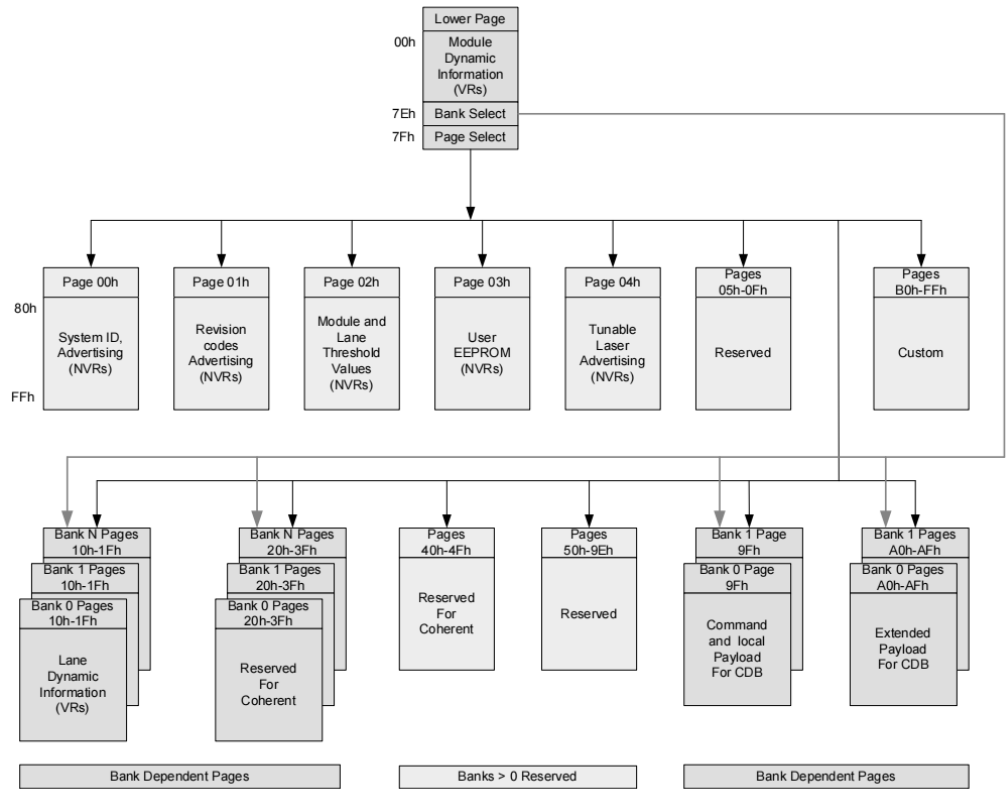
Pin Descriptions for QSFP56 end :



Pin NO.	Symbol	Definition	PinNO.	Symbol	Definition
1	GND	Ground	20	GND	Ground
2	Tx2n	Transmitter Inverted Data Input	21	Rx2n	Receiver Inverted Data Output
3	Tx2p	Transmitter Non-Inverted Data Input	22	Rx2p	Receiver Non-Inverted Data Output
4	GND	Ground	23	GND	Ground
5	Tx4n	Transmitter Inverted Data Input	24	Rx4n	Receiver Inverted Data Output
6	Tx4p	Transmitter Non-Inverted Data Input	25	Rx4p	Receiver Non-Inverted Data Output
7	GND	Ground	26	GND	Ground
8	ModSelL	Module Select	27	ModPrsL	Module Present
9	ResetL	Module Reset	28	IntL	Interrupt
10	Vcc Rx	+3.3V Power Supply Receiver	29	Vcc Tx	+3.3V Power supply transmitter
11	SCL	2-wire serial interface clock	30	Vcc1	+3.3V Power supply
12	SDA	2-wire serial interface data	31	LPMode	Low Power Mode
13	GND	Ground	32	GND	Ground
14	Rx3p	Receiver Non-Inverted Data Output	33	Tx3p	Transmitter Non-Inverted Data Input
15	Rx3n	Receiver Inverted Data Output	34	Tx3n	Transmitter Inverted Data Input
16	GND	Ground	35	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output	36	Tx1p	Transmitter Non-Inverted Data Input
18	Rx1n	Receiver Inverted Data Output	37	Tx1n	Transmitter Inverted Data Input
19	GND	Ground	38	GND	Ground

V. Digital Diagnostic Functions

400G QSFP-DD end and 200G QSFP56 end all Compatible with CMIS rev 4.0 and upper.



200G QSFP56 end could change to Compatible with SFF-8636 , by ording.

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)		176-223 Channel Thresholds
	130-131 Application Code Entry 0		
	132-133 Application Code Entry 1		
	134-253 other entries		
192-223 Extended ID	254-255 Application Code Entry TL		224 Tx EQ & Rx Emphasis Magnitude ID
224-255 Vendor Specific ID			225 RX output amplitude indicators
			226-241 Channel Controls
			242-251 Channel Monitor Masks
			252-255 Reserved

VI. Digital Diagnostic Specification

Parameter	Accuracy	Unit
Internally Measured Transceiver Temperature	+/-3	°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

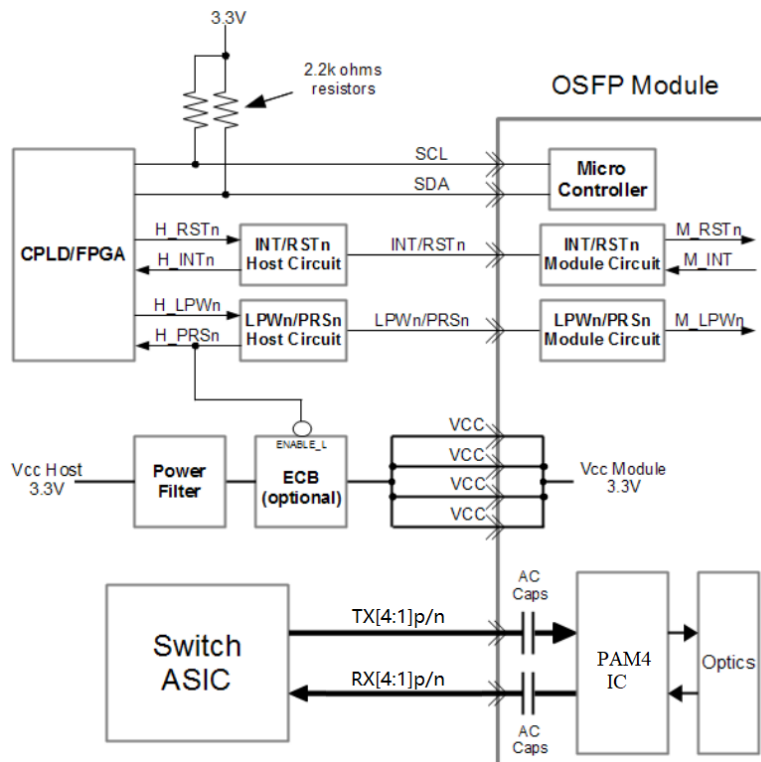
VII. Branch out Connectivity Schematic

OSFP to QSFP56 Branch out Connectivity Schematic:

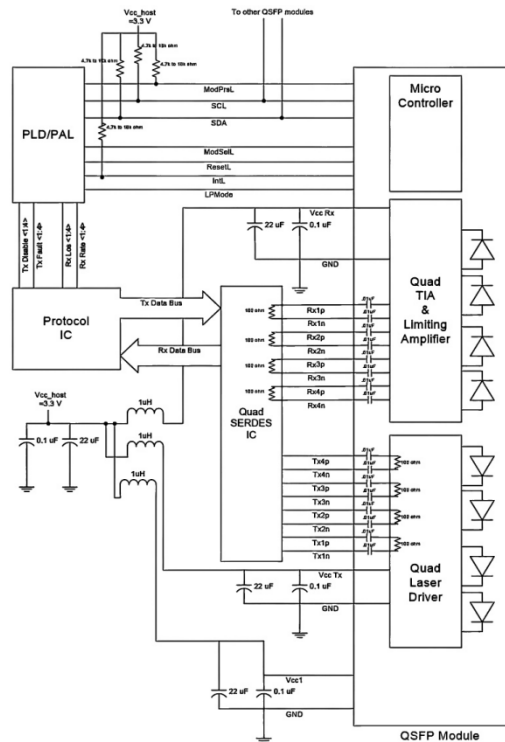
400G OSFP Side		200 QSFP56 Side	
400G OSFP End	TX1	200G branch Port 1	RX1
	RX1		TX1
	TX2		Rx2
	RX2		TX2
	TX3		RX3
	RX3		TX3
	TX4		RX4
	RX4		TX4
	TX5	200G branch Port 2	RX1
	RX5		TX1
	TX6		Rx2
	RX6		TX2
	TX7		RX3
	RX7		TX3
	TX8		RX4
	RX8		TX4

VIII. Recommended Interface Circuit

400G OSFP to Host side :

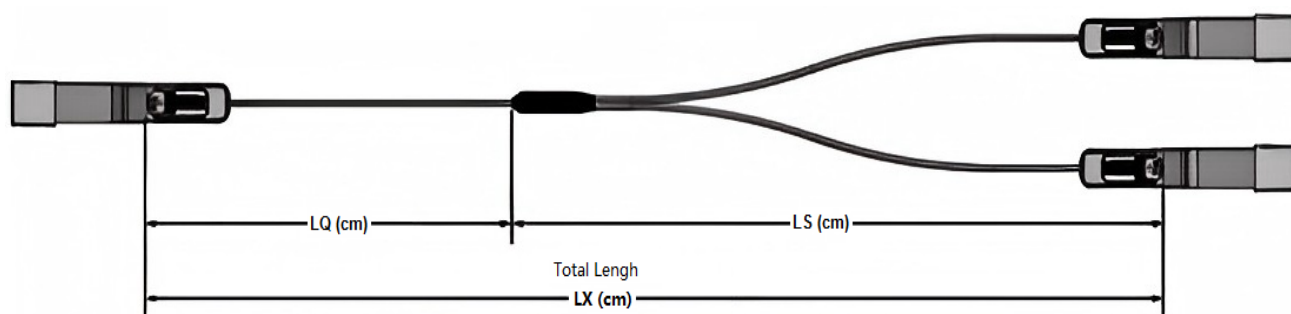


200G QSFP56 to Host side :



IX. Mechanical Specifications

Recommended Cable Length : (Branch length can be customized)

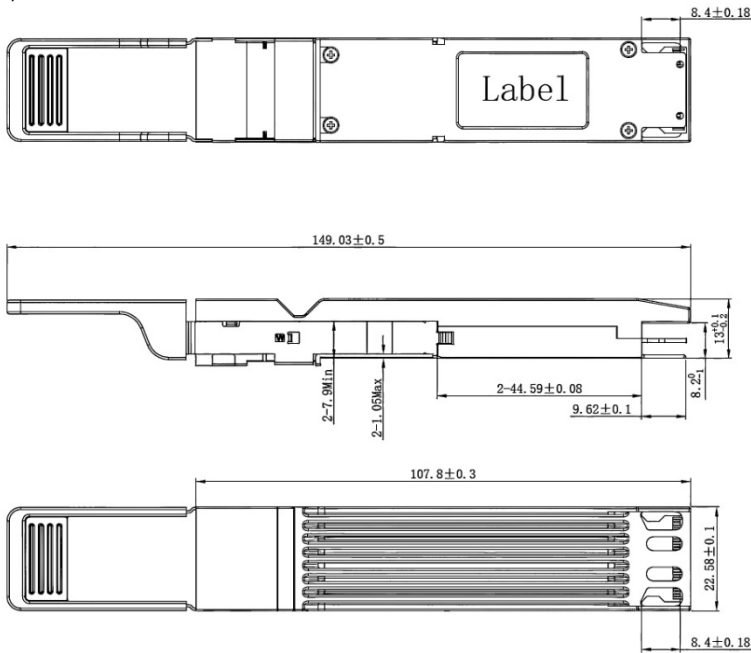


Total Length LX (Unit: m)	Breakout to QSFPDD LQ (Unit: m)	Breakout to QSFP56 LS (Unit: m)
1	0.3	0.7
2	0.6	1.4
3	1	2
5	2	3
7	4	3
10	7	3
50	47	3
100	97	3

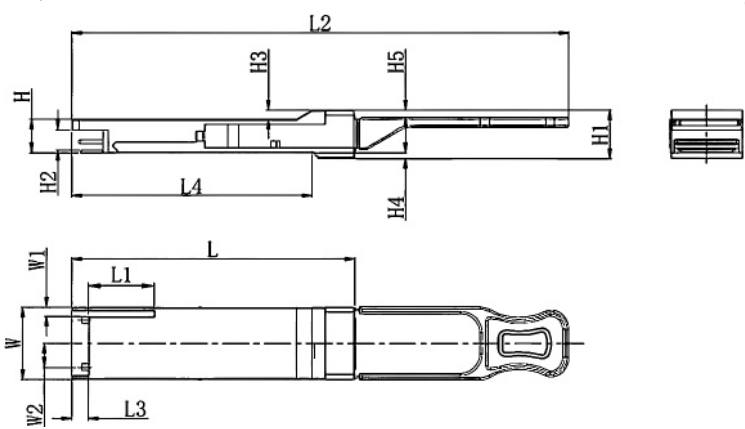
Cable Length tolerance :

Parmeter	Value	Units
Length tolerance	$1\text{m} \leq \text{length} \leq 5\text{m}$: +15 / -0	cm
	$5\text{m} < \text{length} \leq 15\text{m}$: +30 / -0	cm
	$\text{Length} > 15\text{m}$: +2% / -0	m
Cable color	Aqua	

OSFP module :(Unit: mm)



QSFP56 module: (Unit: mm)



	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5	H6
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	6.55
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	-