

LPCRAA31-M(L)xxC

QSFP56 200Gb/s Active Optical Cable DDM

PRODUCT FEATURES

- Supports 212.5Gb/s aggregate bit rate
- 4x26.5625GBd(PAM4)electrical interface
- Hot-pluggable QSFP56 footprint
- RoHS-6 compliant and lead-free
- +3.3V single power supply
- 6W power dissipation each end, with DSP
- Support Digital Diagnostic Monitor interface
- Case operating temperature Commercial: 0°C to +70°C



APPLICATIONS

- 200GBASE-SR4 Ethernet
- Other optical links

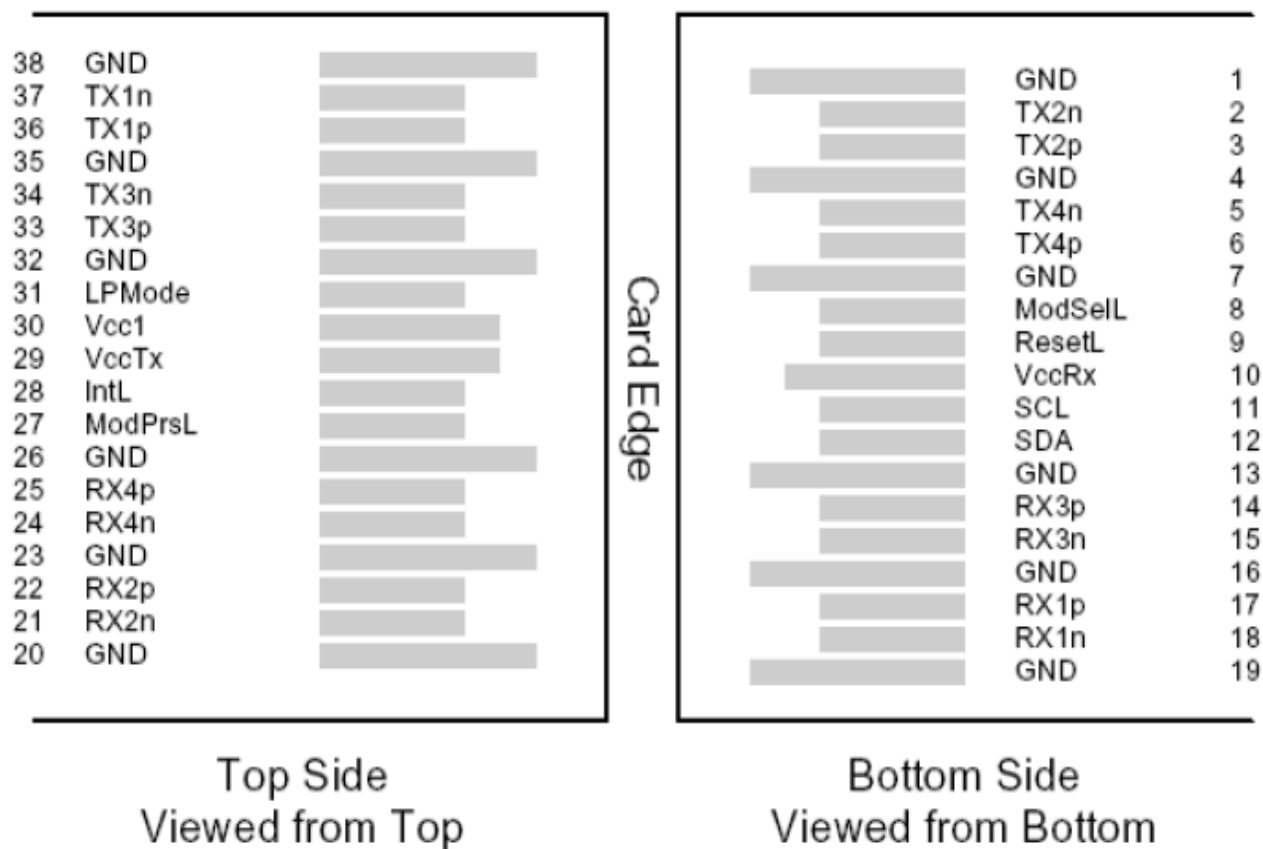
Compliance

- QSFP MSA.
- IEEE802.3cd
- CMIS 4.0
- RoHS

Ordering information

Package	Product part NO.	Distance	Temperature Range
QSFP56	LPCRAA31-M01C	1-metercable	Commercial: 0~70℃
QSFP56	LPCRAA31-M03C	3-metercable	Commercial: 0~70℃
QSFP56	LPCRAA31-M05C	5-metercable	Commercial: 0~70℃
QSFP56	LPCRAA31-M07C	7-metercable	Commercial: 0~70℃
QSFP56	LPCRAA31-M15C	15-metercable	Commercial: 0~70℃
QSFP56	LPCRAA31-M30C	30-metercable	Commercial: 0~70℃
*For availability of additional cable lengths, please contact Oubochao.			

I. Pin Diagram



II. Pin Descriptions

Pin	Logic	Symbol	Name/Description	Ref.
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSe1L	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power supply receiver	
11	LVC MOS-I	SCL	2-wire serial interface clock	
12	LVC MOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	

15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrSL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply transmitter	
30		Vcc1	+3.3V Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

Note:

1. Circuit ground is internally isolated from chassis ground.

III. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Storage Temperature	T_s	-40		85	°C	
Storage Ambient Humidity	H_A	0		85	%	
Maximum Supply Voltage	V_{CC}	-0.5		3.6	V	

IV. Recommended Operating Conditions

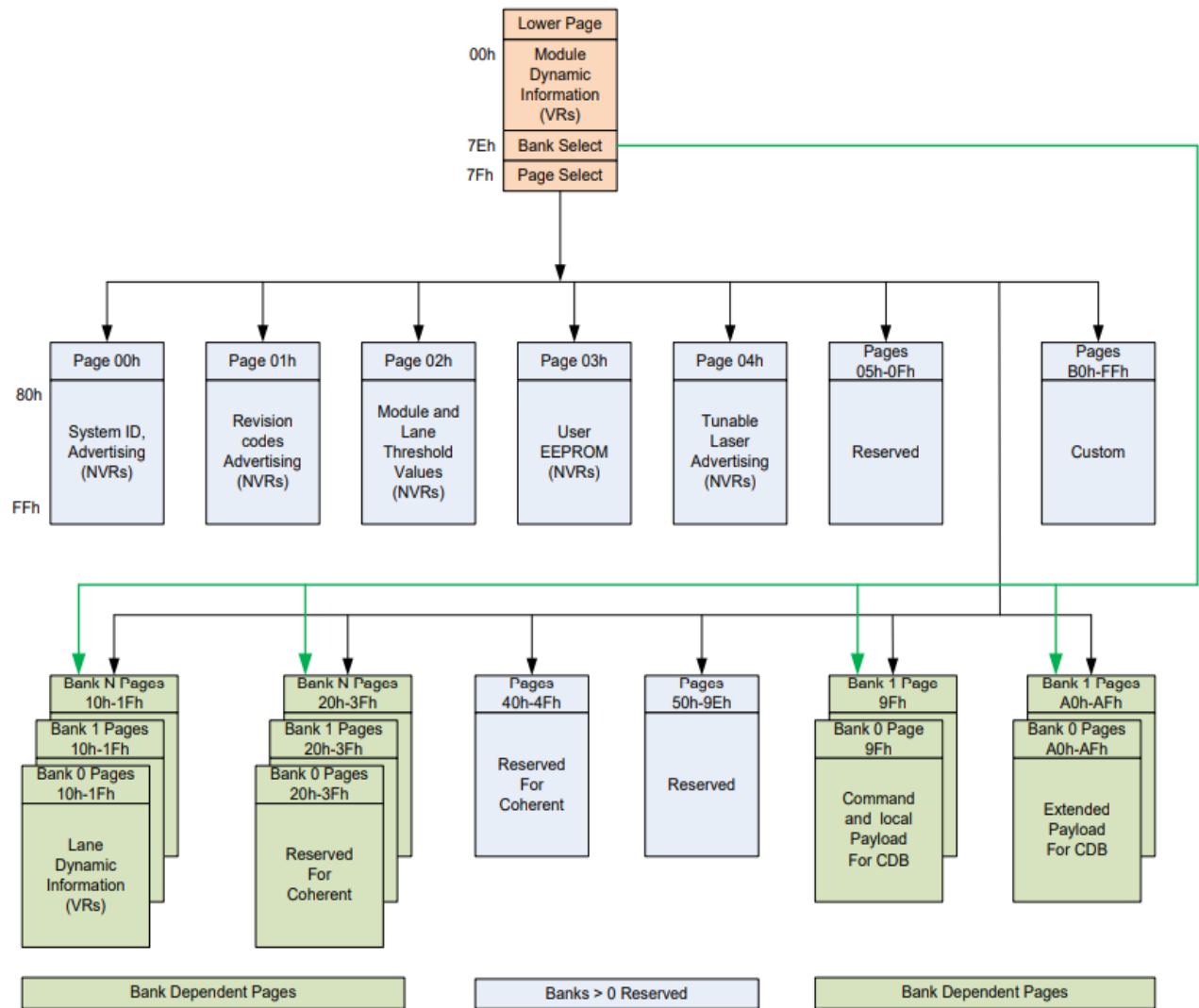
Data Rate Specifications	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Baud Rate(per channel) PAM4	BR		26.5625		GBd	1
Operating Case Temperature	T_c	0		70	°C	

Notes1: Supports 200GBASE-SR4 per IEEE 802.3cd.

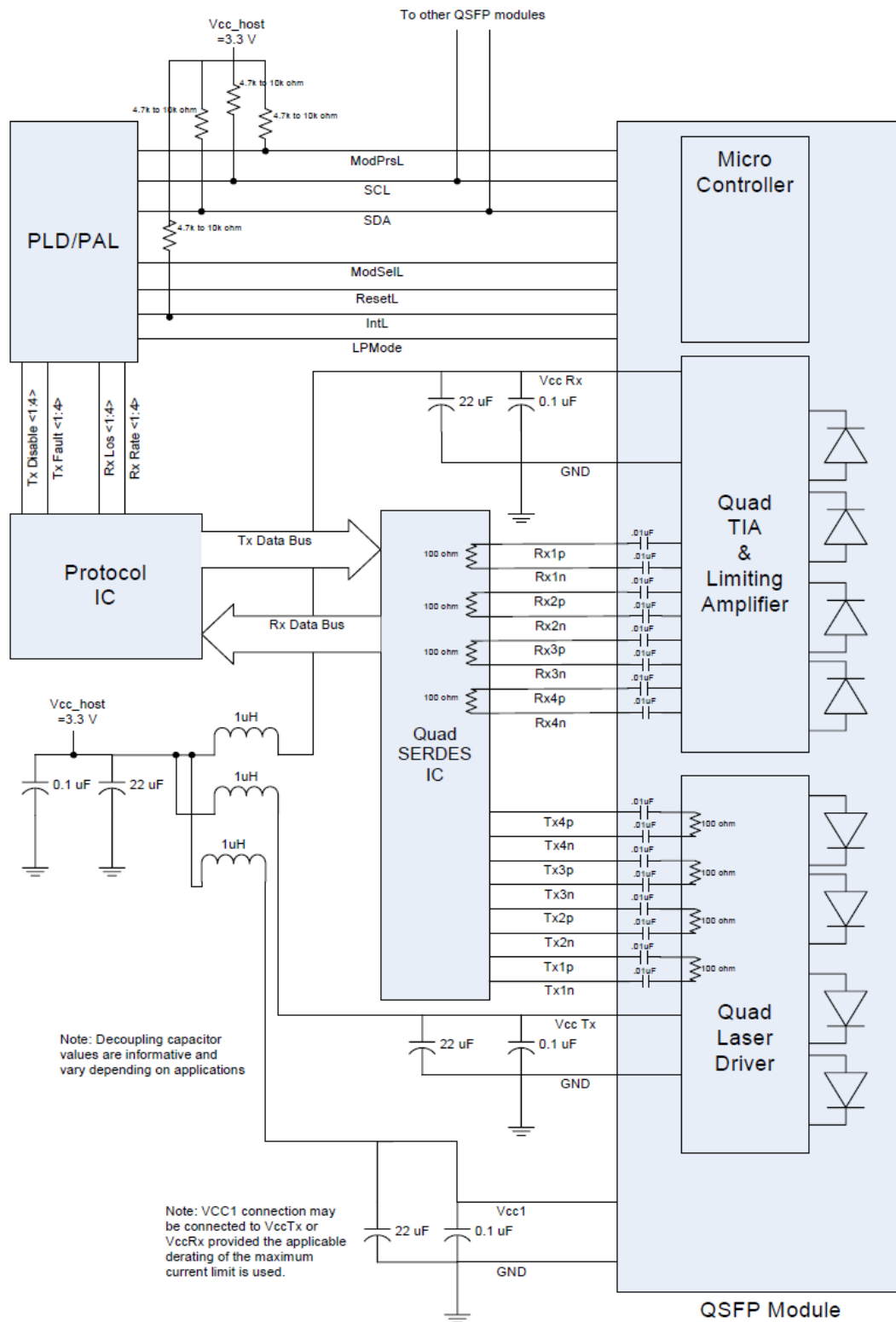
V. Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V_{CC1} , $V_{CC}T_X$, $V_{CC}R_X$	3.13		3.47	V	
Power Dissipation	P_d			6	W	
Transmitter(per Lane)						
Input different impedance	R_{in}	90	100	110	Ω	
Single ended input voltage tolerance	V_{inT}	-0.3		4.0	V	
Differential Input Voltage Amplitude	$V_{in,pp}$			900	mV	
Receiver (per Lane)						
Error Bit Rate	BER			2.4E-4		
Output different impedance	R_{out}	90	100	110	Ω	
Single-ended output voltage	V_{outR}	-0.3		4.0	V	
Differential Output Voltage Amplitude	$V_{out,pp}$			900	mV	

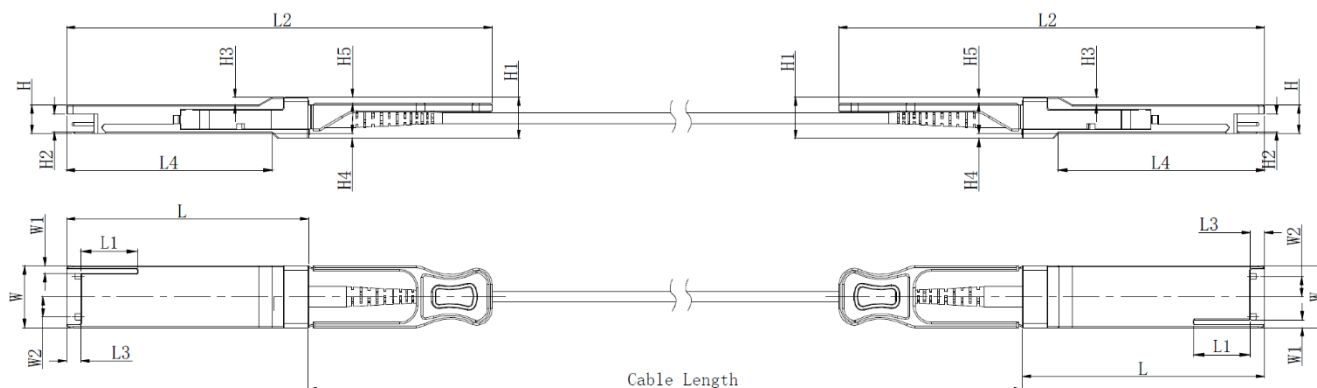
VI. Digital Diagnostic Functions



VII. Recommended Interface Circuit



VIII.Mechanical Specifications (Unit: mm)



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

Parameter	Value	Units
Diameter	3	mm
Minimum bend radius	30	mm
Length tolerance	Length<1m: +5/-0	cm
	1≤Length≤4.5m: +15/-0	cm
	5≤Length≤14.5m: +30/-0	cm
	Length≥15.0m: +2/-0	m
Cable color	Orange(OM2),Aqua(OM3),Magenta(OM4)	

Appendix A. Document Revision

Version	Initiated	Reviewed	Revision	Release Date
A0	Lynn	Luke	New Release	2019-10-31
A1	Lynn	Luke	Fixed DDMI description	2022-9-20