

LPBQAA31-M(L)xxC

QSFP28 112Gb/s Active Optical Cable DDM

PRODUCT FEATURES

- Multi rate of up to 28.125 Gb/s per channel
- Complies with QSFP28 MSA form factors
- Hot-pluggable
- +3.3V Single power supply
- Low power consumption
- RoHS-6 Compliant
- Case operating temperature Commercial: 0°C to +70°C



APPLICATIONS

- 4x28.125G Ethernet
- InfiniBand QDR, EDR
- Other optical links

Compliance

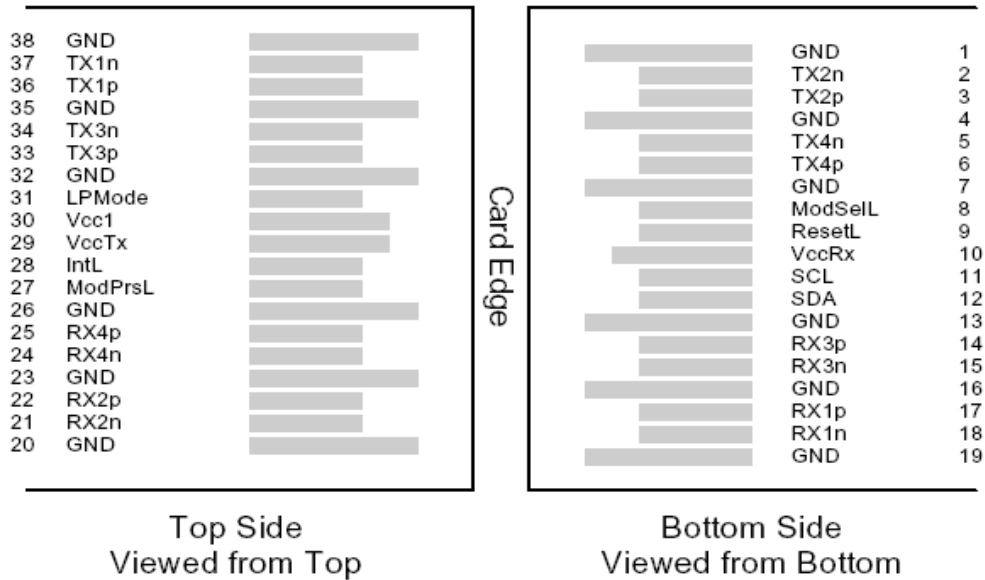
- SFF-8636
- QSFP28 MSA
- RoHS

Ordering information

Package	Product part NO.	Distance	Temperature Range
QSFP28	LPBQAA31-M01C	1-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M03C	3-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M05C	5-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M06C	6-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M10C	10-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M15C	15-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M20C	20-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M25C	25-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M30C	30-metercable	Commercial: 0~70℃
QSFP28	LPBQAA31-M50C	50-metercable	Commercial: 0~70℃
*For availability of additional cable lengths, please contact Oubochao.			

I. Pin Descriptions

QSFP28 end



QSFP MSA-compliant 38-pinconnector

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	VccRx	+3.3 V 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	VccTx	+3.3 V Power supply transmitter	
30	Vcc1	+3.3 V 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

Notes:

1. Circuit ground is internally isolated from chassis ground.

II. Absolute Maximum Ratings

Parameter	Symbol	Min.	Type	Max.	Unit	Ref.
Maximum Supply Voltage	V _{CC1} , V _{CCT} , V _{CCRx}	-0.5		3.6	V	
Storage Temperature	T _S	-40		85	°C	1
Case Operating Temperature	T _{OP}	0		70	°C	
Relative Humidity	RH	0		85	%	2

Notes:

- 1.Limited by the fiber cable jacket, not the active ends.
- 2.Non-condensing.

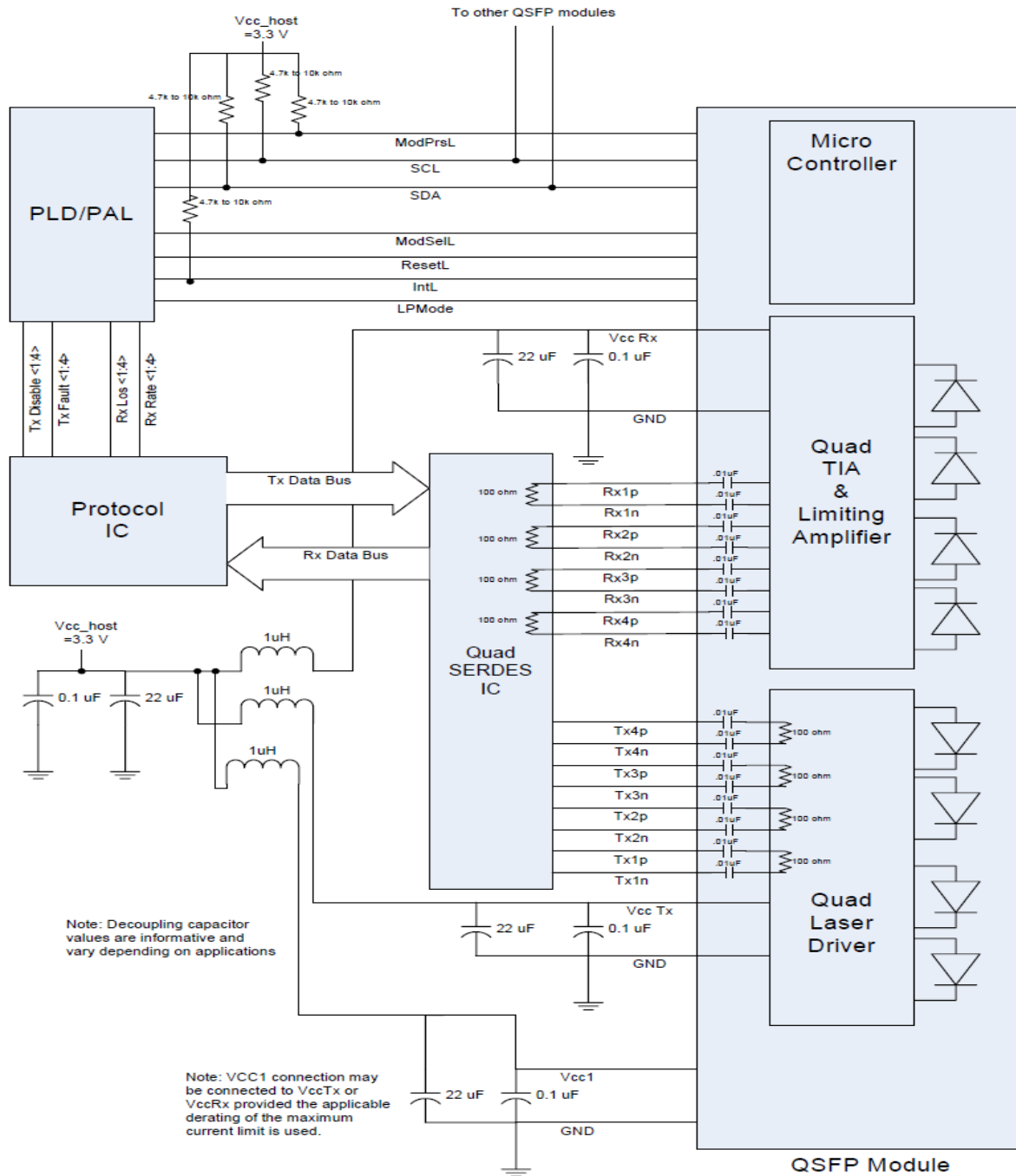
III. Electrical Characteristics (T_{OP} = 0 to 70°C, V_{CC} = 3.3 ± 5% Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{CC1} , V _{CCTx} , V _{CCRx}	3.15		3.45	V	
Supply Current	I _{CC}			750	mA	
Transmitter(per Lane)						
Input different impedance	R _{in}	90	100	110	Ω	
Single ended input voltage tolerance	V _{inT}	-0.3		4.0	V	
Single ended data input swing	V _{in,pp}	200		1000	mV	
Receiver (per Lane)						
Output different impedance	R _{out}	90	100	110	Ω	
Single ended data output swing	V _{out,pp}	200		1000	mV	
Single-ended output voltage	V _{outR}	-0.3		4.0	V	

IV.Memory Map and Control Registers

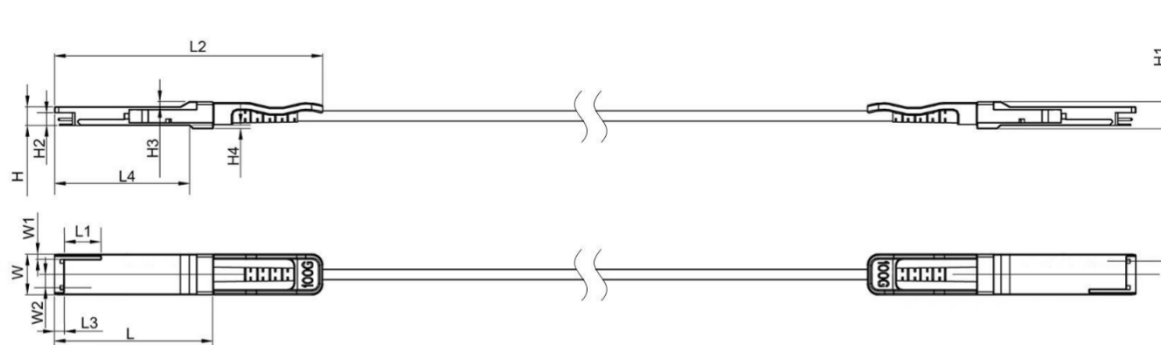
Compatible with SFF-8636 .

V. Recommended Interface Circuit



VI. Mechanical Specifications

The Quadwire mechanical specifications are based on QSFP28 transceiver module specifications, substituting the optical connectors with a cable connecting both ends.



Unit mm

	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4
Max	72.2	-	-	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6
Type	72	-	121	4.2	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5
Min	68.8	16.5	-	4.05	61	18.25	2.2	5.8	8.4	12	5.05	2.1	1.3

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	2019-7-31