

LPANLB31-K80C

QSFP+ 40Gb/s 1310nm ZR4 80km DDML

PRODUCT FEATURES

- Hot-pluggable QSFP+ form factor
- Up to 11.2Gbps per channel bandwidth
- Up to 80km transmission
- Aggregate bandwidth of > 40Gbps
- Power dissipation < 3.5W
- 4 lanes MUX/DEMUX design
- Integrated LAN WDM TOSA/ROSA
- Compliant with 40G Ethernet IEEE802.3ba and 40G BASE-ZR4
- QSFP MSA compliant
- APD photo-detector
- Single 3.3V power supply
- Compliant with QDR/DDR Infiniband data rates
- RoHS Compliant Part
- Duplex LC receptacles
- Built-in digital diagnostic functions
- Case operating temperature Commercial: 0°C to +70°C

APPLICATIONS

- 40G BASE-ZR4
- Rack to rack
- Data centers Switches and Routers

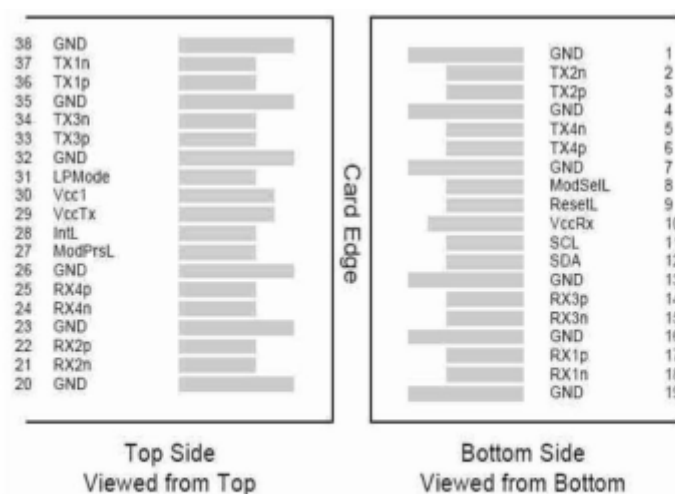
COMPLIANCE

- QSFP MSA.
- IEEE802.3ba
- RoHS

Ordering information

Part NO.	Bit Rate (Gbps)	Laser (nm)	Distance(km)	Media	DDMI	Connector	Temp (℃)
LPANLB31-K80C	10.3125*4	1310	80	single-mode fiber	YES	LC	0~70

I. Pin Diagram



II. Pin Descriptions

Pin	Symbol	Name/Description	Ref.
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	ModSe1L	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power supply receiver	2

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	+3.3V Power supply transmitter	2
30	Vcc1	+3.3V Power Supply	2
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.
2. VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be

applied concurrently. Recommended host board power supply filtering is shown below. VccRx, Vcc1 and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for maximum current of 500mA.

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	$V_{CC1},$ $V_{CCTx},$ V_{CCRx}	-0.5		3.6	V	
Supply Voltage	$V_{CCT,R}$	-0.5		4.0	V	

IV. Recommended Operating Environment

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Case operating Temperature	T_C	0		70	°C	
Supply Voltage	$V_{CCT,R}$	3.13	3.3	3.47	V	
Supply Current	I_{CC}			1000	mA	
Power Dissipation	PD			3.5	W	

V. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter						
Signaling Speed per Lane			10.3125	11.2	Gbps	
Total Average Launch Power	P_{OUT}			10.5	dBm	
Average Output Power per lane	P_{OUT}	4		7	dBm	
Transmit OMA per Lane	$TxOMA$	0.3		5.0	dBm	1
Extinction Ratio	ER	5.5	6.5		dB	
Center Wavelength	λ_C	1294.53 1299.02	1295.56 1300.05	1296.59 1301.09	nm	

		1303.54 1308.09	1304.58 1309.14	1305.63 1310.19		
Sidemode Suppression ratio	SMSR	30			dB	
Transmitter and Dispersion Penalty	TDP			2.6	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	2
Transmitter OFF Output Power	POff			-30	dBm	
Optical Return Loss Tolerance				12	dB	
Transmitter eye mask definition {X1,X2,X3,Y1,Y2,Y3}		0.25,0.4,0.45,0.25,0.28,0.4				
Receiver						
Damage Threshold	THd	0			dBm	2
Average Power at Receiver Input, each Lane	R	-24		-6	dBm	
Receive Electrical 3dB upper Cut off Frequency, each Lane				12.3	GHz	
RSSI Accuracy		-2		2	dB	
Receiver Power(OMA), each Lane				-4	dBm	
Receiver Reflectance	Rfl			-26	dBm	
Loss of Signal Assert	P _A	-35			dBm	
Loss of Signal De-assert	P _D			-25	dBm	
LOS Hysteresis	P _D - P _A	0.5			dB	

Notes:

1. Minimum value is informative.
2. 12dB Reflection.

VI. Electrical Interface Characteristics

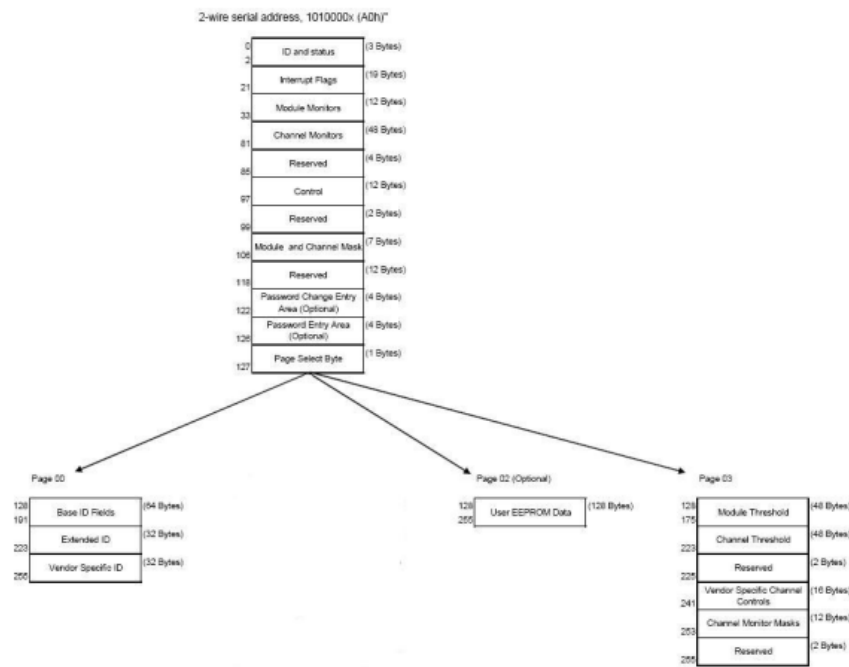
Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Signaling Speed per Lane			10.3125	11.2	Gbps	
Power Consumption			2.5	5	W	
Supply Current	I _{CC}		0.75	1.3	A	
Control I/O Voltage-High	VIH	2		V _{CC}	V	

Control I/O Voltage-Low	VIL	0		0.7	V	
Inter-Channel Skew	TSK			150	Ps	
RESETL Duration			10		Us	
RESETL De-assert time				100	ms	
Power On Time				100	ms	
Transmitter						
Single Ended Output Voltage Tolerance		0.3		4	V	1
Common mode Voltage Tolerance		15			mV	
Transmit Input Diff Voltage	VI	150		1200	mV	
Transmit Input Diff Impedance	ZIN	85	100	115		
Data Dependent Input Jitter	DDJ		0.3		UI	
Receiver						
Single Ended Output Voltage Tolerance		0.3		4	V	
Rx Output Diff Voltage	Vo	370	600	950	mV	
Rx Output Riseand Fall Voltage	Tr/Tf			35	ps	
Total Jitter	Tj		0.3		UI	

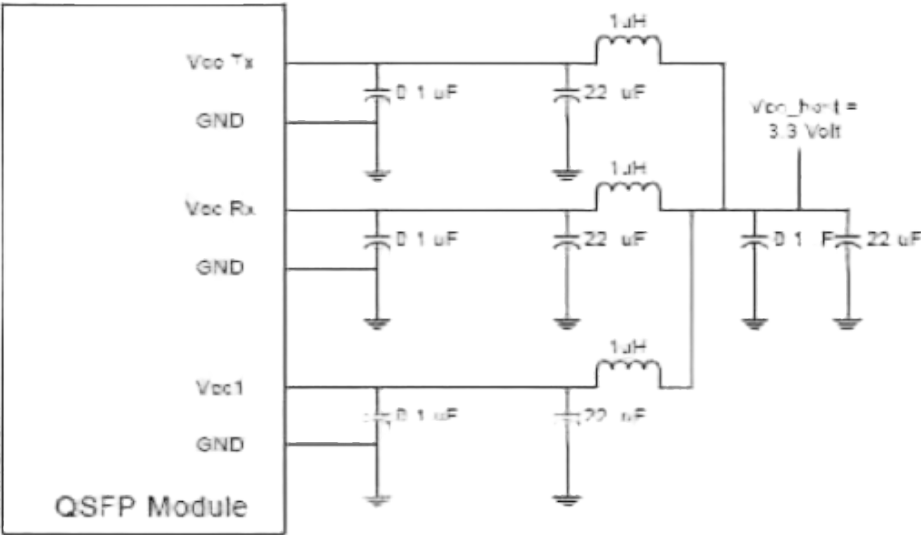
Notes :

1. 20%~80%.

VII. Diagnostic Monitoring Interface



VIII.Recommended Circuit



IX. Mechanical Specifications(Unit: mm)

