



LTA1305-PC+ QSFP+ Optical Transceiver

CWDM 4X10.3125Gb/s 10kM

The LTA1305 QSFP+ Optical transceiver is intended for the service with single mode fiber in 40Gb/s high speed data communications and computing applications. It meets the requirements of QSFP+ MSA, IEEE802.3ba 40GBASE-LR4, operates from a 3.3V DC power supply and is offered in the commercial temperature range. The module has an aggregate link bandwidth in excess of 40Gb/s by multiplexing of 4 CWDM optical lanes, each lane capable of transmitting 10.3125Gb/s over 10km on SMF optical fiber. It is fabricated with a rugged die cast metal housing and cage assembly. The device is Class I laser safety compliant and meets the EU Directive 2002/95/EC for RoHS compliance.

Applications

- High performance computing, data com and sever data links
- High speed access
- 40G Ethernet

Features

- 4 independent optical lanes
- Lane data rate of 10.3125Gb/s
- Aggregate data rate in excess of 41Gb/s (over 4 lanes)
- Hot Pluggable
- 10km link on SMF single-mode Fiber
- CWDM Laser/ Pin PD Array Technology
- QSFP+ MSA Compatible electrical I/O
- Case Operating Temperature:
 - Commercial: 0 to 70°C
- +3.3V power supply
- RoHS compliance

Ordering Information	
Part Number	Case Operating Temperature
LTA1305-PC+	0 to 70 °C

Absolute Maximum Ratings					
Parameter	Symbol	Min	Max	Units	Notes
Storage Ambient Temperature	T _{stg}	-40	85	°C	Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
Relative Humidity (non-condensing)	RH	10	85	%	
Module Supply Voltage	V _{cc}	0	3.6	V	



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Recommended Operating Conditions						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Case Operating Temperature	T_{case}	0	+25	+70	°C	Temperature Range = C
Module Supply Voltage	V_{CC}	3.14	3.3	3.46	V	
Power Consumption	P_{CON}	-	-	3.5	W	
Data Rate Per Channel		-	10.3125	-	Gb/s	

Transmitter Electrical Interfaces						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Tx_Data Differential Input Voltage	V_{IN}	200	-	1200	mV	
Tx_Data Differential Input Impedance	Z_{IN}	-	100	-	Ω	

Receiver Electrical Interfaces						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Rx_Data Differential Output Voltage	V_{OUT}	300	-	1200	mV	
Rx_Data Differential Output Impedance	Z_{OUT}	90	100	110	Ω	
Differential Output Return Loss		Per IEEE P802.3ba, Section 86A.4.2.1			dB	
Common Mode Output Return Loss		Per IEEE P802.3ba, Section 86A.4.2.2			dB	
Tx Input Data Rising Time (20% to 80%)	T_r	-	-	60	ps	
Tx Input Data Falling Time (20% to 80%)	T_f	-	-	60	ps	



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Transmitter Optical Characteristics						
Parameter	Symbol	LTA1305			Units	Notes
		Min	Typ	Max		
Transmitter Type		CWDM DFB				
Average Total Optical Power	P_{TOTAL}	-	-	8.3	dBm	
Average Launch Power ,each lane	P_{OUT}	-4	-	2.3	dBm	Average Optical Output
Tx Power (OMA) difference		-	-	6.5	dB	Between any 2 lanes
Tx Power in OMA minus TDP		-4.8	-	-	dBm	Each Lane
Optical Output with Tx OFF	P_{OFF}	-	-	-30	dBm	
Center Wavelength, each Lane	λ	1264.5-1277.5			nm	
		1284.5-1297.5				
		1304.5-1317.5				
		1324.5-1337.5				
Extinction Ratio	ER	3.5	-	-	dB	
Optical RL Tolerance	ORL	-	-	20	dB	
Transmit Reflectance	RFL	-	-	-12	dB	
Transmit Eye Mask		802.3ba Compliant				

Receiver Optical Characteristics						
Parameter	Symbol	LTA1305			Units	Notes
		Min	Typ	Max		
Receiver Type		CWDM and PIN/TIA				
Rx sensitivity (OMA)	P_{IN}	-	-	-11.5	dBm	Each Lane (Note1)
Rx Stressed Sensitivity (OMA)	P_S	-	-	-9.6	dBm	Each Lane
Rx Power OMA		-	-	2.3	dBm	Each Lane
Rx Power (OMA) Difference		-	-	7.5	dBm	Between any 2 lanes
Receive Reflectance	RFL	-	-	-26	dB	
Center Wavelength	λ	1264.5-1277.5			nm	
		1284.5-1297.5				
		1304.5-1317.5				
		1324.5-1337.5				
Rx Elec 3dB Cutoff Frequency		-	-	12.3	GHz	Each Lane
Rx_LOS of Signal - Assert	P_A	-30	-	-	dBm	
Rx_LOS of Signal - Deassert	P_D	-	-	-15	dBm	
Rx_LOS of Signal - Hysteresis	P_{Hy}	0.5	-	-	dBm	
Note 1: BER 1E-12, measured with PRBS 2 ³¹ -1 @10.3125Gb/s						

Block Diagram

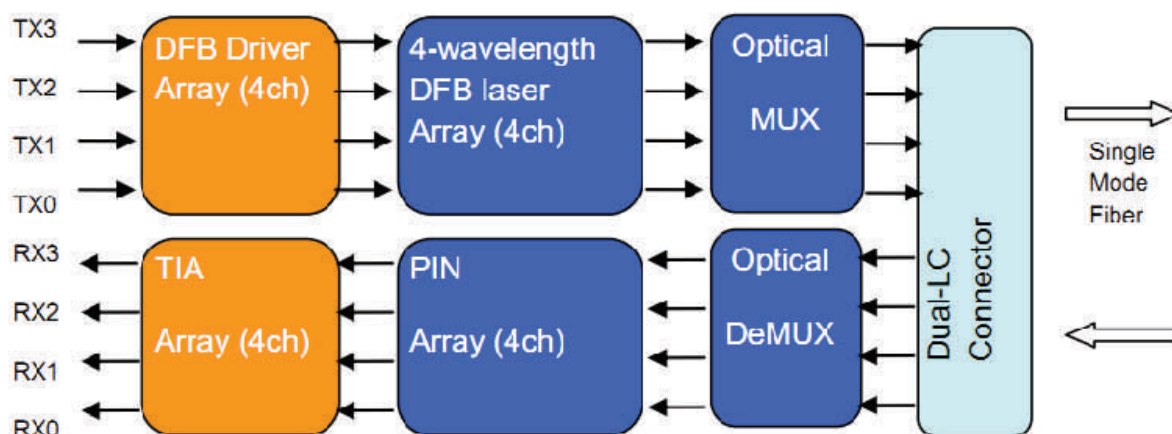
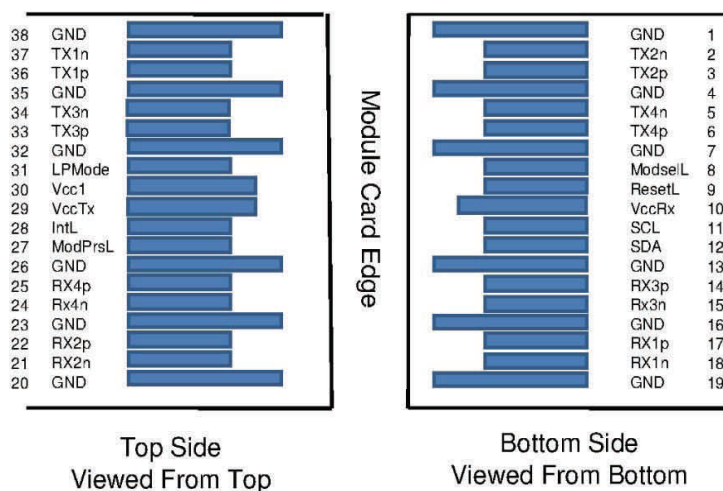


Figure 1 40Gb/s LR4 QSFP+ Transceiver Block Diagram

Pin Assignment



Pin Description			
Pin	Symbol	Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non Inverted Data Input	
7	GND	Ground	
8	ModselL	Module Select (Low active, pull-up in module)	
9	RetsetL	Module Reset (Pull-up in module)	
10	V _{CC} Rx	+3.3V DC Power Supply	
11	SCL	I ² C Serial Clock	
12	SDA	I ² C Serial Data	
13	GND	Ground	
14	Rx3p	Receiver Non Inverted Differential Output (AC-coupled)	
15	Rx3n	Receiver Non Inverted Differential Output	
16	GND	Ground	
17	Rx1p	Receiver Non Inverted Differential Output	
18	Rx1n	Receiver Inverted Differential Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Differential Output	
22	Rx2p	Receiver Non Inverted Differential Output	
23	GND	Ground	

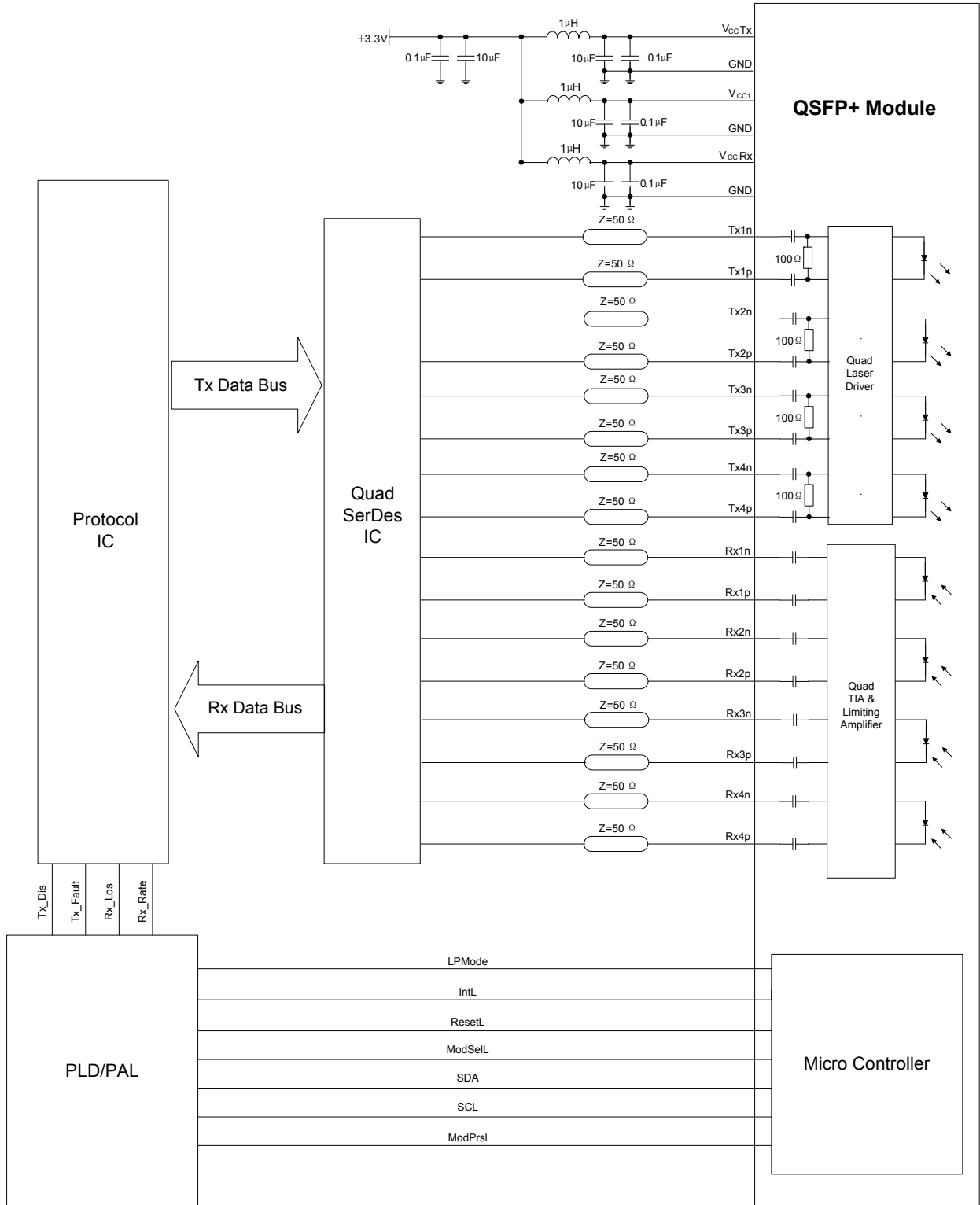


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24	Rx4n	Receiver Inverted Differential Output	
25	Rx4p	Receiver Non Inverted Differential Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	V _{CC} Tx	+3.3V DC Power Supply	
30	V _{CC1}	+3.3V DC Power Supply	
31	LPMoD	Low Power Mode	
32	GND	Ground	
33	Tx3p	Transmitter Non Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	

Electrical Interface

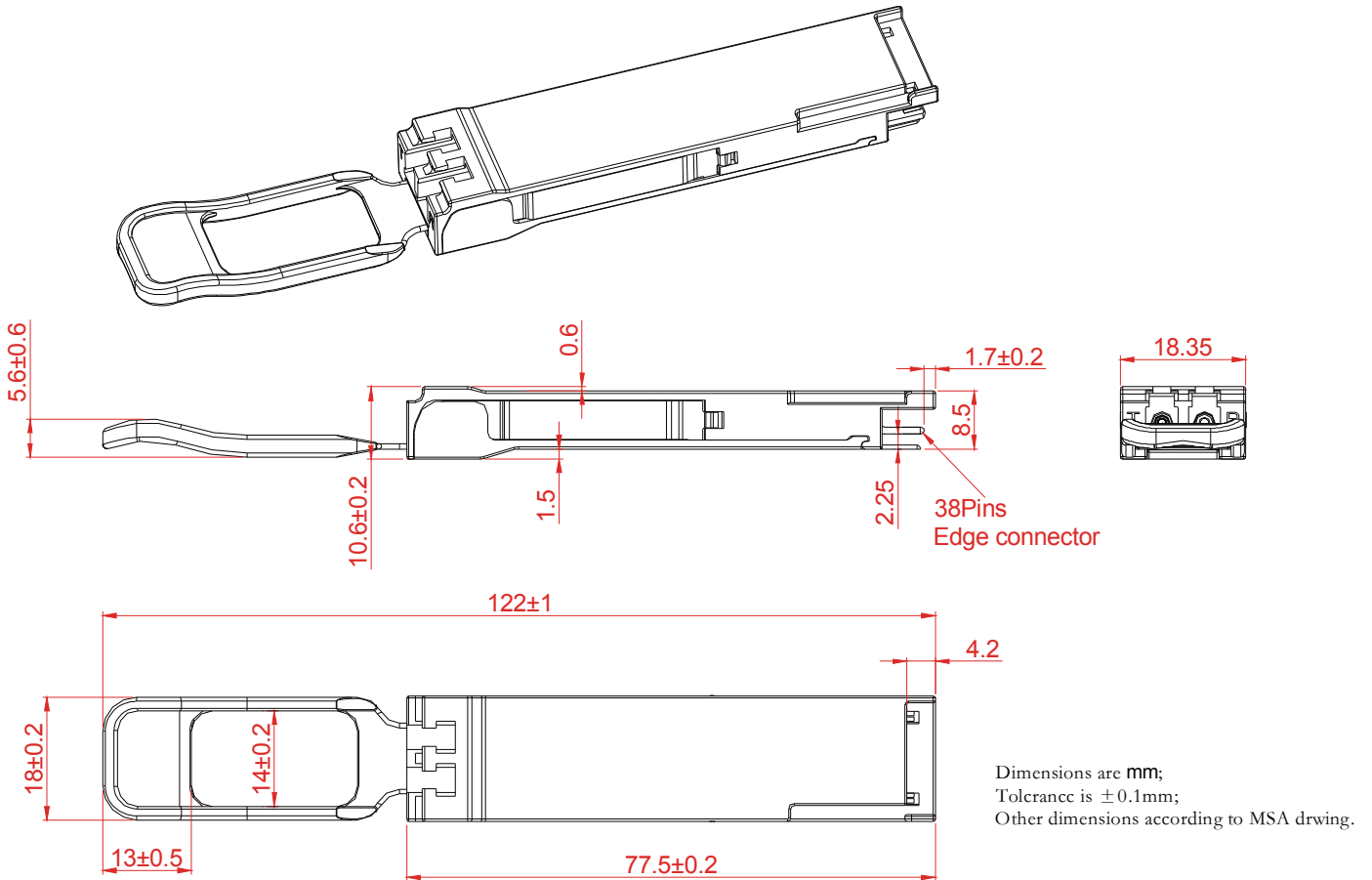




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Mechanical Dimensions





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Warnings

Handling Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety:

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

Notice:

The information provided on this page contains the product target specifications which are subject to change without notice.

Check with your Hisense Sales Office for product updates, changes in specifications, sample availability and production release dates.

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