YC21H-3110

Features

- ✓ Support line rates 103.125Gbps
- ✓ 4x26Gbps LAN-WDM transmitter
- ✓ PIN-TIA receiver
- ✓ Up to 10km on SMF
- ✓ Duplex LC receptacles
- ✓ Hot pluggable CFP2 footprint
- ✓ Power dissipation < 6W
- ✓ Single 3.3V power supply
- ✓ RoHS6 compliant (lead free)
- ✓ Operating case temperature:
  Commercial: 0ºC to +70°C

Applications

- ✓ 100G Ethernet

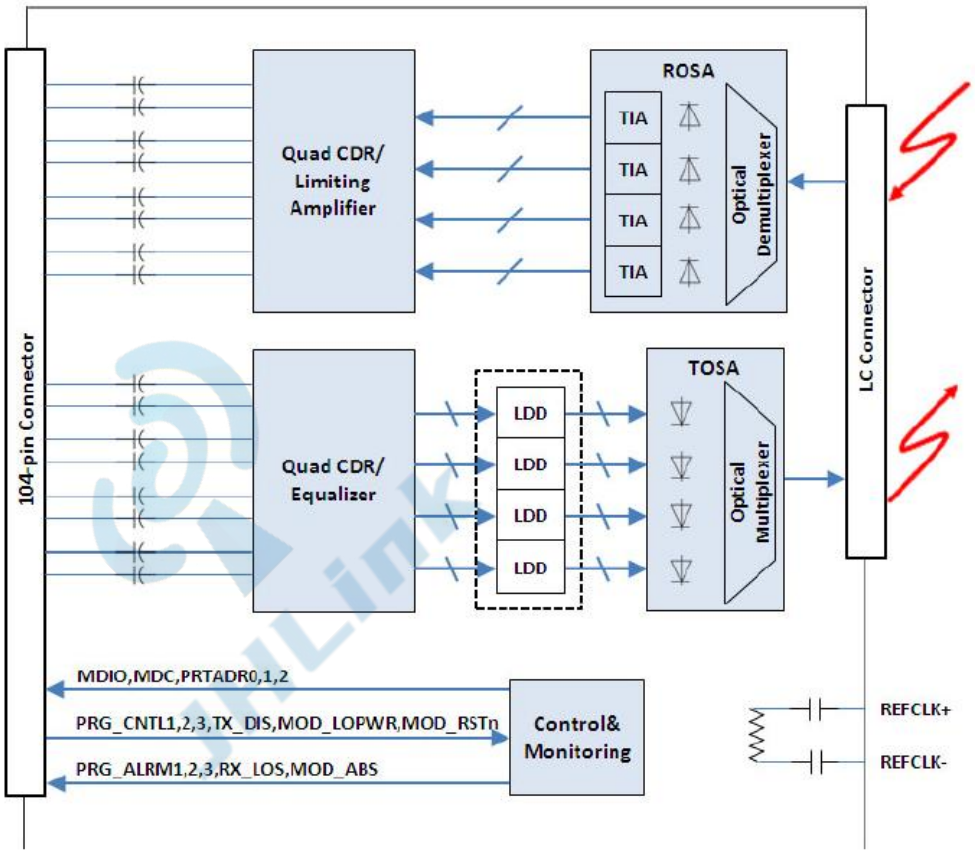
Standards

- ✓ Compliant with CFP MSA CFP2 Hardware Specification
- ✓ Compliant with CFP MSA CFP2 Management Interface Specification
- ✓ Compatible with IEEE 802.3ba

Description

The CFP2 transceivers are designed for use in 100-Gigabit Ethernet links up to 10km over Single Mode Fiber.

Module Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	V_{CC}	0		3.6	V
Storage Temperature	Ts	-40		+85	°C
Relative Humidity	RH	5		85	%
RX Input Average Power per Lane	P_{max}	-		5.5	dBm

Recommended Operating Environment

Parameter	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	V_{CC}	3.13	3.3	3.46	V
Power Supply Current	I_{CC}			1800	mA
Power Dissipation	P_D			6	W
Operating Case Temperature	T_C	0		+70	°C
Aggregate Data Rate	-		103.125		Gbps
Bit Rate per Lane	BR		25.78125		Gbps

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section						
Input Differential Impedance	R_{in}	90	100	110	Ω	
Differential Data Input Swing	$V_{in\ PP}$	180		1200	mV	1
Receiver Section						
Differential Data Output Swing	$V_{out\ PP}$	300		1200	mV	

Notes:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC.

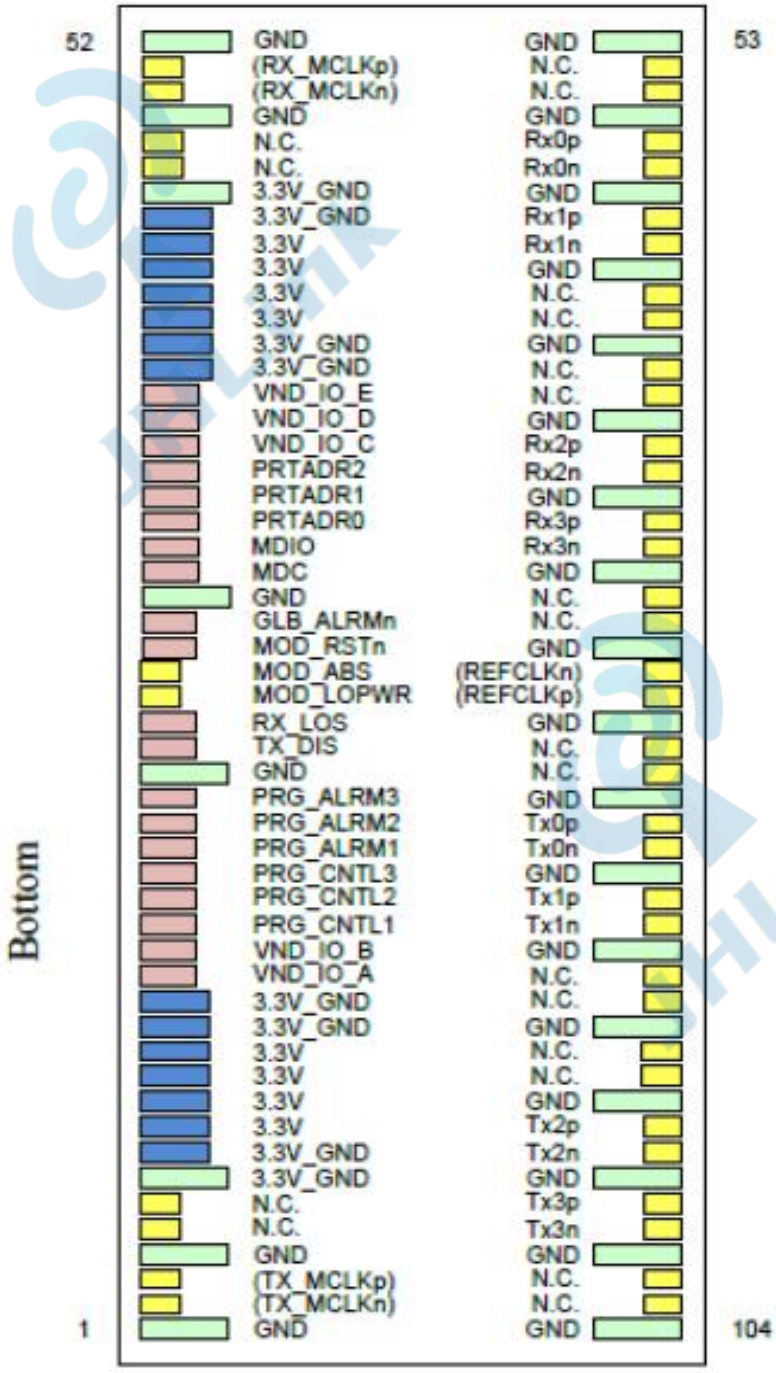
Optical Parameters

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section						
Lane Centre Wavelength (range)	λ_0	1294.53	1295.56	1296.59	nm	
	λ_1	1299.02	1300.05	1301.09	nm	
	λ_2	1303.54	1304.58	1305.63	nm	
	λ_3	1308.09	1309.14	1310.19	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power per Lane	P_{out}	-4.3		+4.5	dBm	1
OMA Power per Lane	OMA	-1.3		4.5	dBm	1
Laser Off Power per Lane	P_{off}	-	-	-30	dBm	
Extinction Ratio	ER	4	-	-	dB	2
Relative Intensity Noise	RIN	-	-	-128	dB/Hz	
Optical Return Loss Tolerance		-	-	20	dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	Compliant with IEEE802.3ba {0.25, 0.4, 0.45, 0.25, 0.28, 0.4}					2
Receiver Section						
Lane Center Wavelength (range)	λ_0	1294.53	1295.56	1296.59	nm	
	λ_1	1299.02	1300.05	1301.09	nm	
	λ_2	1303.54	1304.58	1305.63	nm	
	λ_3	1308.09	1309.14	1310.19	nm	
Average Receiver Power per Lane	RXP_X	-10.6		4.5	dBm	3
OMA Sensitivity per Lane	RX_{sens}			-8.6	dBm	3
Los Assert	LOS_A	-30	-	-	dBm	
Los Dessert	LOS_D	-	-	-12	dBm	
Los Hysteresis	LOS_H	0.5	-	5	dB	
Overload per Lane	$P_{in\text{-}max}$	-	-	4.5	dBm	3
Receiver Reflectance		-	-	-12	dB	
Damage Threshold per Lane		-	-	5.5	dBm	

Notes:

1. The optical power is launched into 9/125μm SMF.
2. Measured with a PRBS 2^{31}-1 test pattern @25.78Gbps.
3. Measured with a PRBS 2^{31}-1 test pattern @25.78Gbps, ER=4dB, BER <10^{-12}.

Pin Definitions



Pin Descriptions

Pin	Name	Type	Description
1	GND		Module ground
2	(TX_MCLKn)	CML	No connect
3	(TX_MCLKp)	CML	No connect
4	GND		Module ground
5	N.C		No connect
6	N.C		No connect
7	3.3V_GND		3.3V ground; tied with module ground
8	3.3V_GND		3.3V ground; tied with module ground
9	3.3V		3.3V module supply voltage
10	3.3V		3.3V module supply voltage
11	3.3V		3.3V module supply voltage
12	3.3V		3.3V module supply voltage
13	3.3V_GND		3.3V ground; tied with module ground
14	3.3V_GND		3.3V ground; tied with module ground
15	VND_IO_A		Module vendor IO A; do not connect
16	VND_IO_B		Module vendor IO B; do not connect
17	PRG_CNTL1	LVCMOS1	Programmable Control 1; MSA default: TRXIC_RSTn; “0”:reset; “1” or NC: not used
18	PRG_CNTL2	LVCMOS2	Programmable control 2; MSA default: Hardware interlock LSB; Default “ 0”: ⩽ 9W
19	PRG_CNTL3	LVCMOS3	Programmable control 3; MSA default: Hardware interlock MSB; Default “1”: ⩽ 9W
20	PRG_ALRM1	LVCMOS	Programmable alarm 1; MSA default: HIPWR_ON; “1”: module power up completed, “0”: module not high powered up
21	PRG_ALRM2	LVCMOS	Programmable alarm 2; MSA default: MOD_READY, “1”: Ready, “0”: no Ready
22	PRG_ALRM3	LVCMOS	Programmable alarm 3; MSA default: MOD_FAULT, “1”: Fault, “0”: no Fault
23		GND	Module ground
24	TX_DIS	LVMOS1	Transmitter disable for all lanes; “1” or NC: transmitter disabled; “0”: transmitter enabled
25	RX_LOS	LVCMOS	Receiver loss of optical signal; “1”: low optical signal, “0”: normal condition
26	MOD_LOPWR	LVCMOS1	Module low power mode; “1” or NC: module in low power mode, “0”: power on enabled
27	MOD_ABS	GND	Module absent; “1” or NC: module absent; “0”: module present. Pull up resistor on host.
28	MOD_RSTn	LVCMOS2	Module reset; “0”: reset the module; “1” or NC: module enabled.
29	GLB_ALRMn	LVCMOS	Global alarm; “0”: alarm in any MDIO alarm register; “1”: no alarm condition. Pull up resistor on host.
30	GND		Module ground
31	MDC	1.2V CMOS	Management interface clock input
32	MDIO	1.2V CMOS	Management interface bi-directional data
33	PRTADR0	1.2V CMOS	MDIO physical port address bit 0
34	PRTADR1	1.2V CMOS	MDIO physical port address bit 1
35	PRTADR2	1.2V CMOS	MDIO physical port address bit 2
36	VND_IO_C		Module vendor IO C; do not connect
37	VND_IO_D		Module vendor IO D; do not connect
38	VND_IO_E		Module vendor IO E; do not connect
39	3.3V_GND		3.3V ground; tied with module ground

Pin	Name	Type	Description
40	3.3V_GND		3.3V ground; tied with module ground
41	3.3V		3.3V module supply voltage
42	3.3V		3.3V module supply voltage
43	3.3V		3.3V module supply voltage
44	3.3V		3.3V module supply voltage
45	3.3V_GND		3.3V ground; tied with module ground
46	3.3V_GND		3.3V ground; tied with module ground
47	N.C		No connect
48	N.C		No connect
49	GND		Module ground
50	(RX_MCLKn)	CML	No connect
51	(RX_MCLKp)	CML	No connect
52	GND		Module ground
53	GND		Module ground
54	N.C		No connect
55	N.C		No connect
56	GND		Module ground
57	RX0P		25 Gbps receiver data; Lane 0
58	RX0n		25 Gbps receiver data bar; Lane 0
59	GND		Module ground
60	RX1p		25 Gbps receiver data; Lane 1
61	RX1n		25 Gbps receiver data bar; Lane 1
62	GND		Module ground
63	N.C		No connect
64	N.C		No connect
65	GND		Module ground
66	N.C		No connect
67	N.C		No connect
68	GND		Module ground
69	RX2p		25 Gbps receiver data; Lane 2
70	RX2n		25 Gbps receiver data bar; Lane 2
71	GND		Module ground
72	RX3p		25 Gbps receiver data; Lane 3
73	RX3n		25 Gbps receiver data bar; Lane 3
74	GND		Module ground
75	N.C		No connect
76	N.C		No connect
77	GND		Module ground
78	(REFCLKp)	CML	Module reference clock. No connect.
79	(REFCLKn)	CML	Module reference clock. No connect.
80	GND		Module ground
81	N.C		No connect
82	N.C		No connect
83	GND		Module ground
84	TX0p		25 Gbps transmitter data; Lane 0
85	TX0n		25 Gbps transmitter data bar; Lane 0
86	GND		Module ground
87	TX1p		25 Gbps transmitter data; Lane 1
88	TX1n		25 Gbps transmitter data bar; Lane 1
89	GND		Module ground
90	N.C		No connect

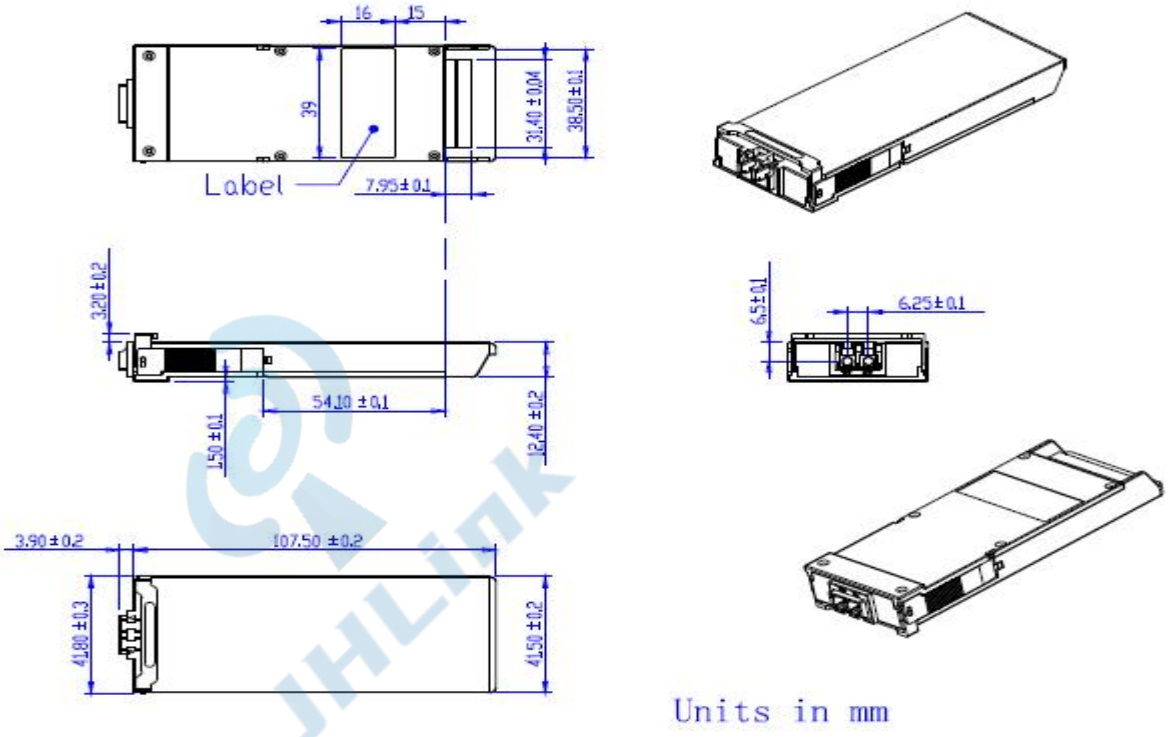
Pin	Name	Type	Description
91	N.C		No connect
92	GND		Module ground
93	N.C		No connect
94	N.C		No connect
95	GND		Module ground
96	TX2p		25 Gbps transmitter data; Lane 2
97	TX2n		25 Gbps transmitter data bar; Lane 2
98	GND		Module ground
99	TX3p		25 Gbps transmitter data; Lane 3
100	TX3n		25 Gbps transmitter data bar; Lane 3
101	GND		Module ground
102	N.C		No connect
103	N.C		No connect
104	GND		Module ground
1. Pulled up with 4.7kΩ – 10kΩ to 3.3V inside the module.			
2. Pulled down with 4.7kΩ – 10kΩ to GND inside the module			

MDIO Management Interface

The CFP2 Transceiver incorporates MDIO management interface which is used for serial ID, digital diagnostics, and certain control and status report functions. The CFP2 transceiver supports MDIO pages 8000h NVR 1 Based ID registers, 8080h NVR 2 Extended ID registers, 8100h NVR 3 network lane specific registers , and pages A000h CFP module VR 1 registers, A080h MLG VR 1 registers, A200h network lane VR 1 registers, A280h network lane VR 2 registers.

Details of the protocol and interface are explicitly described in CFP MSA Management Interface Specification. Please refer to the specifications for design reference.

Mechanical Dimensions



Ordering information

Part Number	Product Description
YC21H-3110	103Gbps CFP2 LR4, 10km on SMF, 0ºC ~ +70ºC, With DDM.

References

1. CFP2 MSA.
2. IEE 802.3ba - PMD Type 100GBASE-LR4.

Important Notice

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