Preliminary

TCB-8A81-712

Chip-on-Board for 40Gbps QSFP SR4 Application

Features:

- 4 independent full-duplex channels
- MTP/MPO optical connector
- Compliant to IEEE 802.3 ba-2010
- Compliant to SFF-8436
- Operating case temperature: -40~85℃
- XLPPI electric interface (with 1.5W Max power)
- RoHS-6 compliant

Applications:

- • Data Center
- 40G Ethernet

Absolute Maximum Ratings:

PARAMETERS	SYMBOL	MIN	MAX	UNIT	REF.
Storage Temperature	T_s	-40	85	°C	
Supply Voltage	Vcc	-0.5	3.6	V	
Damage Threshold, per Lane	DT	3.4		dBm	

Recommended Operating Conditions:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT
Operating Temperature	T_{case}	-40		85	°C
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Signal Rate, per Channel			10.3125		Gbps
Receiver Differential Data Output Load			100		Ohm

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Electrical Characteristics:

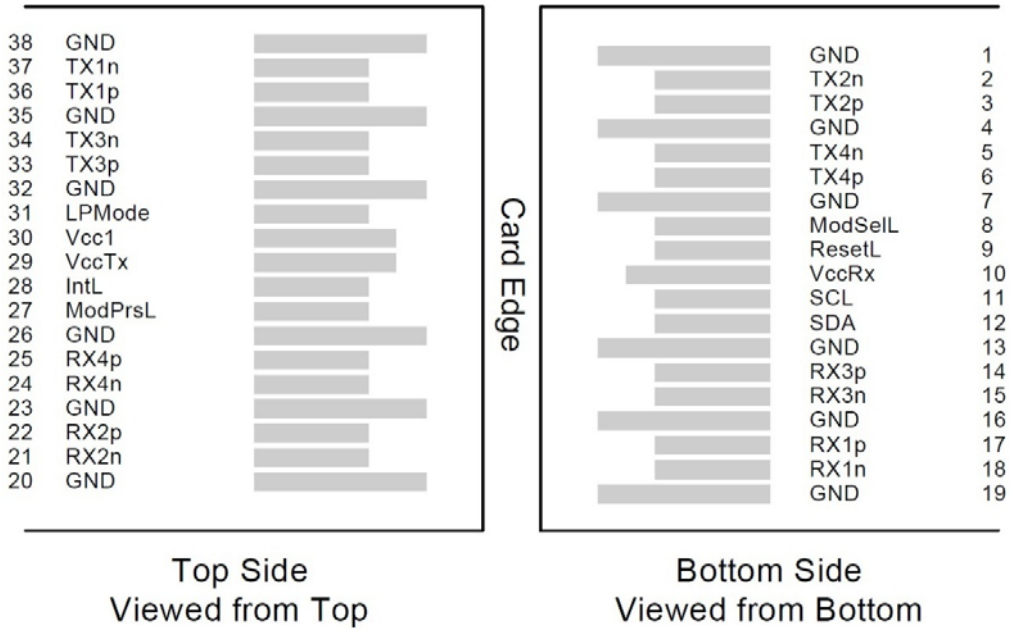
PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	Vcc_1, Vcc_{Tx}, Vcc_{Rx}		3.3		V
Supply Current	Icc		180	350	mA
Transmitter (per Lane) (From Table 86A-2 of IEEE 802.3ba)					
Data Input Differential Impedance	Z_{IN}	80	100	120	Ohm
Data Input Differential voltage	$\triangle V_{In}$	100		1200	mVpp
Receiver (per Lane) (From Table 86A-3 of IEEE 802.3ba)					
Output Differential Load Impedance	Z_L	80	100	120	dB
Rx Output Differential Voltage			380		mV
Single ended output voltage tolerance (1)		-0.3		4	V

Notes:
1. Referred to TP1 signal common.

Optical Characteristics:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT
Transmitter (per Lane) (From Table 86-6 of IEEE 802.3ba)					
Center Wavelength	λ	840	850	860	nm
RMS Spectral Width	SW			0.65	nm
Average Launch Power, per Lane	P_{Avg}	-7.6		2.4	dBm
Transmit OMA, per Lane	Tx_{Oma}	-5.6		3	dBm
Peak Power, per Lane	$P_{Peak\ T}$			4	dBm
Extinction Ratio	ER	3			dB
Optical return loss tolerance	ORL			12	dB
Transmitter Eye Mask Definition {X1, X2, X3, Y1,Y2, Y3} Hit ratio $5x10^{-5}$ hits per sample		0.23, 0.34, 0.43, 0.27, 0.35, 0.4			
Average Launch Power OFF Transmitter , each Lane	P_{Off}	-30			dBm
Receiver (per Lane) (From Table 86-8 of IEEE 802.3ba)					
Center wavelength	λ	840		860	nm
Saturation Power	P_{Sat}			2.4	dBm
Receiver reflectance	Rfl			12	dB
Optical Modulation Amplitude (OMA) , each lane				3	dBm
Receiver Sensitivity, each Lane	P_{Sens}			-9.5	dBm
Peak Power, each Lane	P_{Peak-R}			4	dBm

QSFP Transceiver Pad Layout:



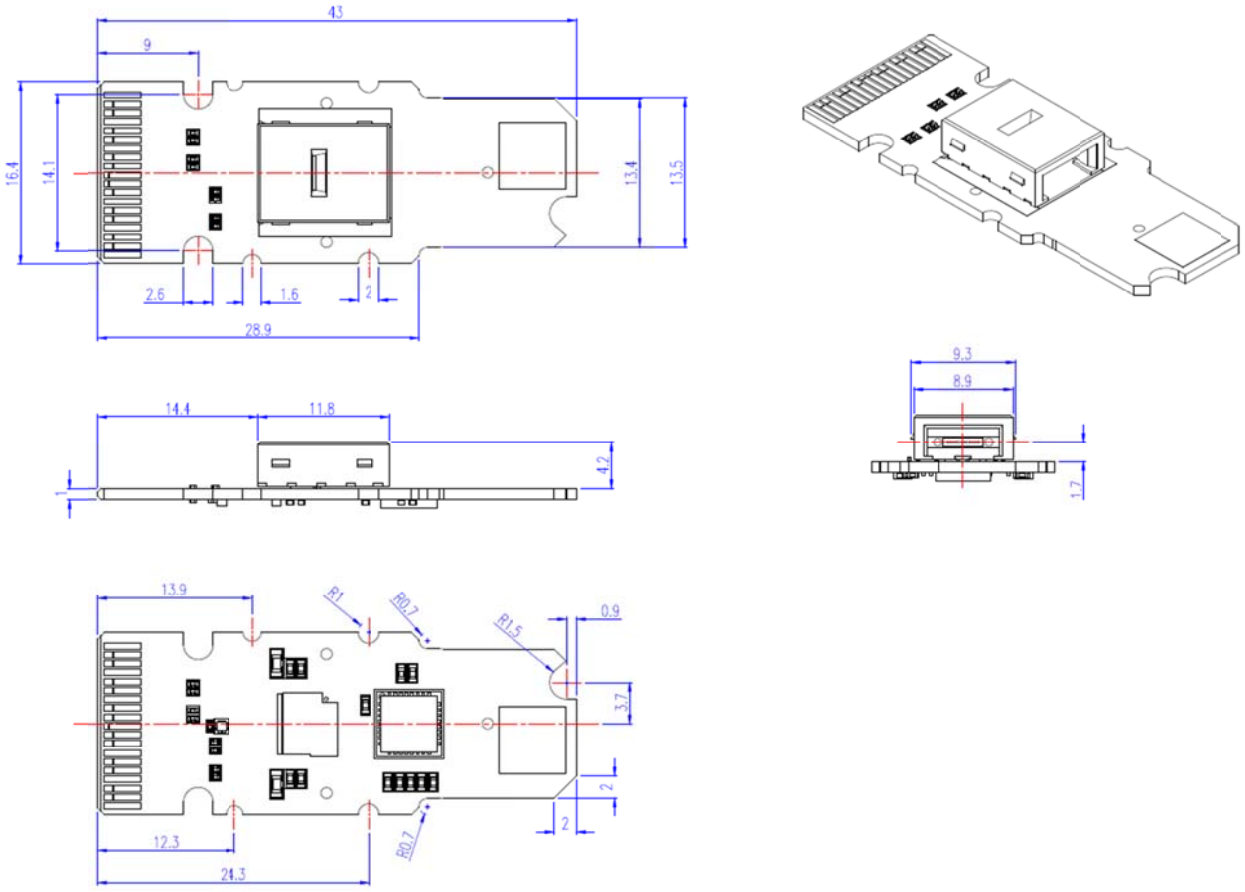
Pin Function Definition:

PIN	LOGIC	SYMBOL	NAME/DESCRIPTION	NOTES
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	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3 V Power supply receiver	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	
12	LVCMOS-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	+3.3 V Power supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
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

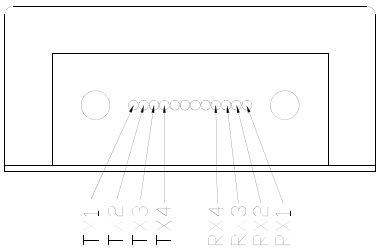
Note 1: GND is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note 2: VccRx, Vcc1 and VccTx are the receiver and transmitter power supplies and shall be applied concurrently.

Outline Dimensions: (Unit:mm)



Optical Interface:
(MT Connector)



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