E-QSFP+-LH4

40GBASE-LH4 QSFP+ 1310nm 20km DDM SMF Transceiver

Features

- 4 CWDM lanes Mux/Demux design
- Up to 10.3125Gbps Data rate per wavelength
- Up to 20km transmission on SMF
- Electrically hot-pluggable
- Digital Diagnostics Monitoring Interface
- Compliant with QSFP+ MSA with LC connector
- Case operating temperature range:0°C to 70°C
- Power dissipation < 3.5 W
- Compliant to IEEE 802.3ba
- RoHS Compliant.

Applications

- 40G Ethernet
- Data Center and LAN

1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40	-	85	ºC	
Relative Humidity	RH	5	-	95	%	
Power Supply Voltage	VCC	-0.5	-	3.6	V	
Signal Input Voltage		Vcc-0.3	-	Vcc+0.3	V	

2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0	-	70	ºC	Without air flow
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC	-		1130	mA	
Data Rate	BR		10.3125		Gbps	Each channel
Transmission Distance	TD		-	20	km	
Coupled fiber	Single mode fiber					9/125um SMF

3. Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	NOTE
Transmitter						
Wavelength Assignment	λ0	1264.5	1271	1277.5	nm	
	λ1	1284.5	1291	1297.5	nm	
	λ2	1304.5	1311	1317.5	nm	
	λ3	1324.5	1331	1337.5	nm	
Total Output. Power	POUT			8.3	dBm	
Average Launch Power Per lane		-4.5		2.3	dBm	
Spectral Width (-20dB)	σ			1	nm	
SMSR		30			dB	
Optical Extinction Ratio	ER	4.5			dB	
Average launch Power off per lane	Poff			-30	dBm	
RIN	RIN			-128	dB/Hz	
Output Eye Mask	Compliant with IEEE 802.3ba					
Receiver						
Rx Sensitivity per lane（OMA）	RSENS			-12.5	dBm	1
Input Saturation Power (Overload)	Psat	2.3			dBm	
Receiver Reflectance	Rr			-26	dB	

Notes:
1. Measured with a PRBS 231-1 test pattern, @10.325Gb/s, BER<10-12

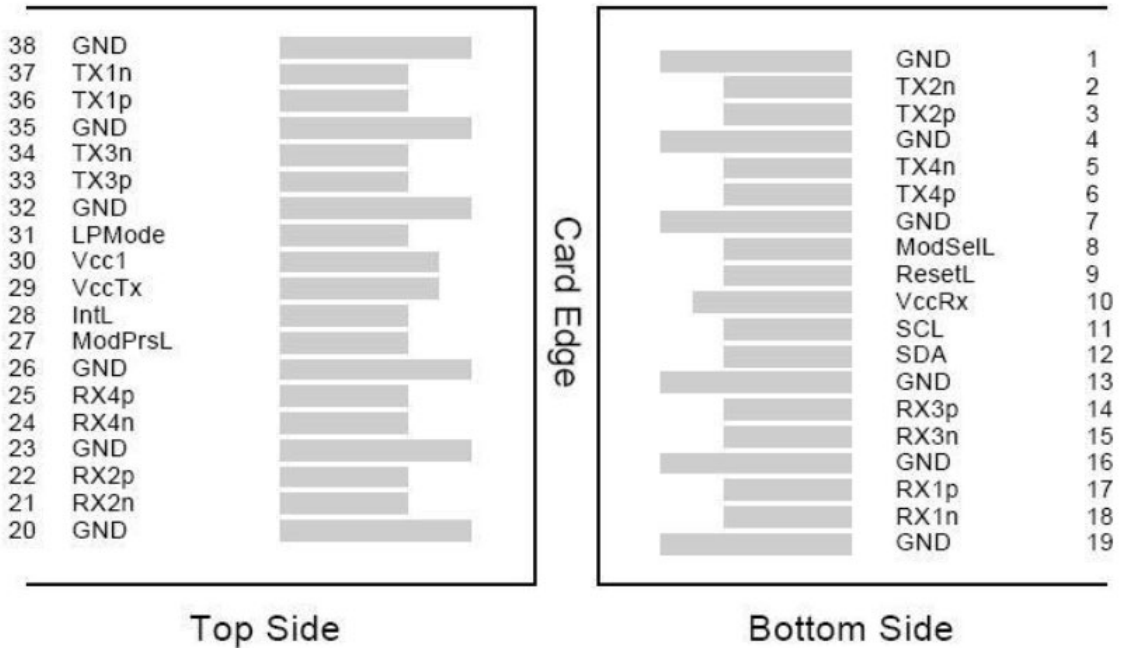
4. Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	NOTE
Supply Voltage	Vcc	3.13	3.3	3.47	V	
Supply Current	Icc			1130	mA	
Transmitter						
Input differential impedance	Rin		100		Ω	1
Differential data input swing	Vin,pp	180		1000	mV	
Transmit Disable Voltage	VD	Vcc–1.3		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+ 0.8	V	2
Transmit Disable Assert Time				10	us	
Receiver						
Differential data output swing	Vout,pp	300		850	mV	3
Data output rise time	tr	28			ps	4
Data output fall time	tf	28			ps	4
LOS Fault	VLOS fault	Vcc–1.3		VccHOST	V	5
LOS Normal	VLOS norm	Vee		Vee+0.8	V	5

Notes:
1.Connected directly to TX data input pins. AC coupled thereafter.
2.Or open circuit.
3. Into 100 ohms differential termination.

4.20 -80 %.
5.Loss of Signal is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

5. Pin Assignment



Pin	Symbol	Name/Description	NOTE
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	3.3V Power Supply Receiver	2
11	SCL	2-Wire serial Interface Clock	
12	SDA	2-Wire serial Interface Data	
13	GND	Transmitter Ground (Common with Receiver Ground)	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	

23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4n	Receiver Inverted Data Output	1
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver 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	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. GND is the symbol for signal and supply (power) common for QSFP+ modules. 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.

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