

40G QSFP+ LR4 10km Optical Transceiver

Features

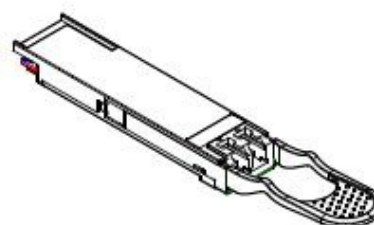
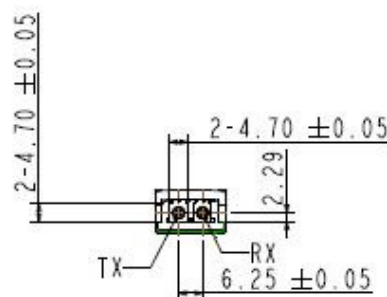
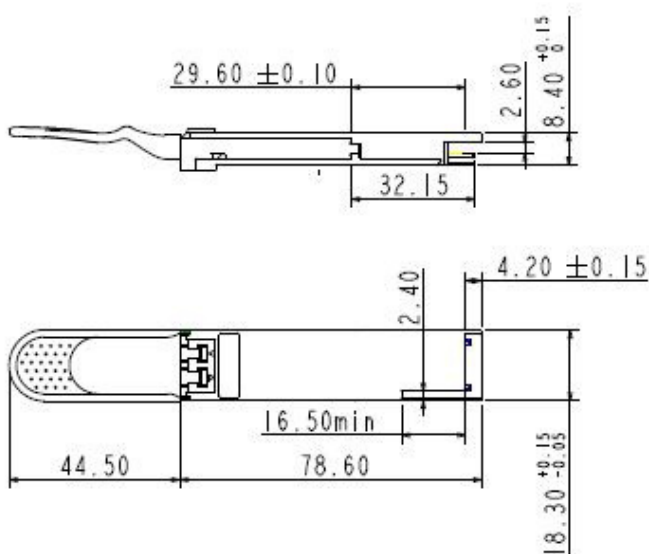
- Transmission data rate up to 10.3125Gbps per channel
- QSFP+ MSA compliant Compliant to IEEE 802.3ba specification for 40GBASE-LR4 links
- 4 CWDM un-cooled DFB lasers, using ITU G.694.2 wavelength grid at 1271, 1291, 1311, and 1331nm
- High-sensitivity PIN-TIA with optical DEMUX
- Up to 10km reach over standard single mode fiber
- Compliant with QDR/DDR InfiniBand data rates
- Hot-pluggable electrical interface
- Power consumption < 3.5W
- Operating case temperature 0°C to +70°C
- 3.3V power supply
- RoHS-6 compliant (lead free)



Applications

- 40G Ethernet InfiniBand QDR and DDR interconnects Client-side 40G Telecom connections

Mechanical Dimensions



Functional Block Diagram

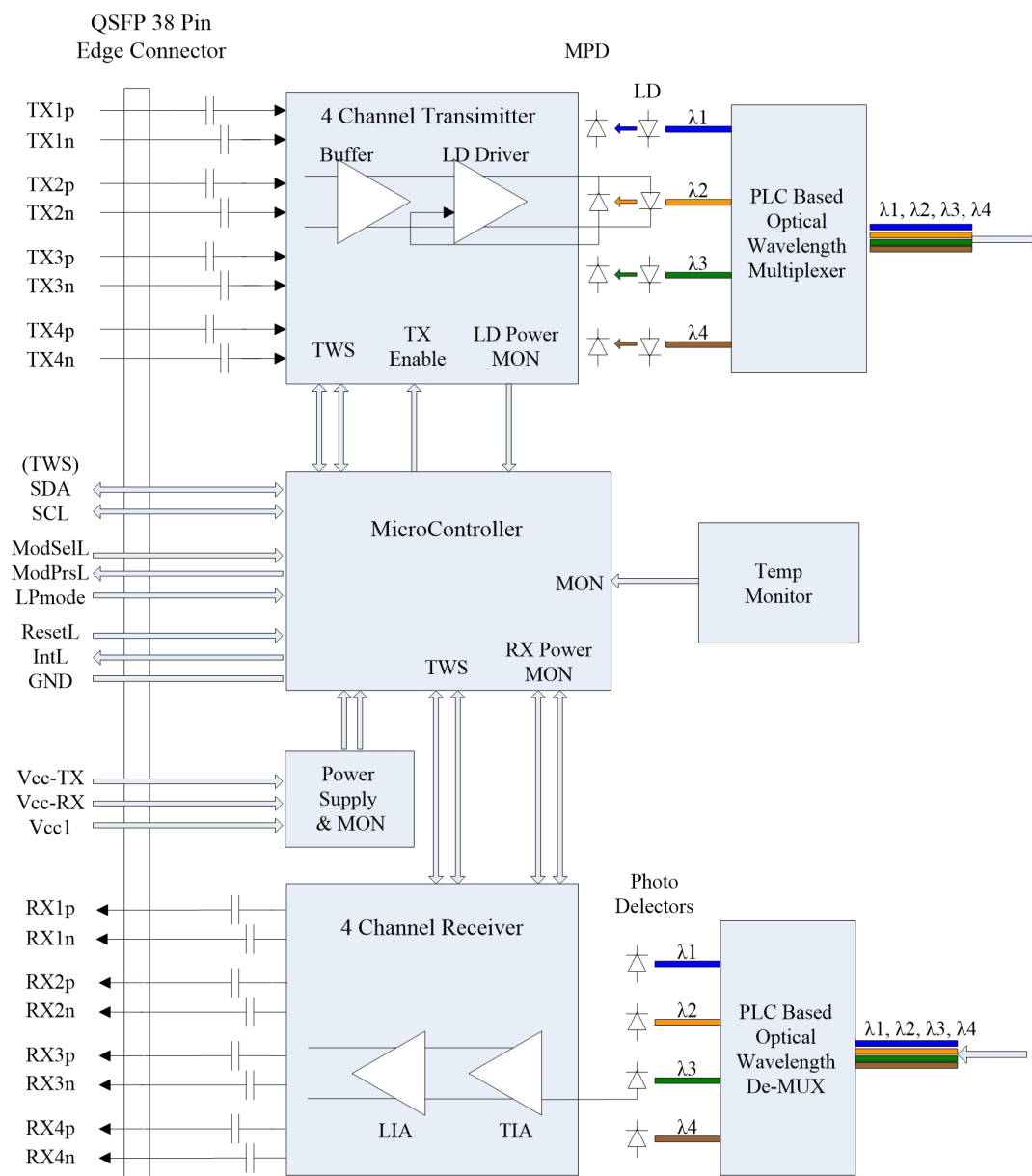


Figure 1: Functional Block Diagram

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc-Tx Vcc-Rx Vcc1	-0.5	3.6	V
Storage Temperature Range	TSTG	-4	+85	°C
Maximum Average Input Optical Power per lane (Damage Threshold)	P _{IN}	0 3.4		dBm
Relative Humidity	RH	10 % to 90 % (non-condensing)		

Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc-Tx Vcc-Rx Vcc1	3.1	3.5	V
Operating Case temperature	TCASE	0	70	°C
Power Consumption	PDISS		3.5	W
SMF Link Length	LKM		10	km

Recommended Host Board Power Supply Filtering

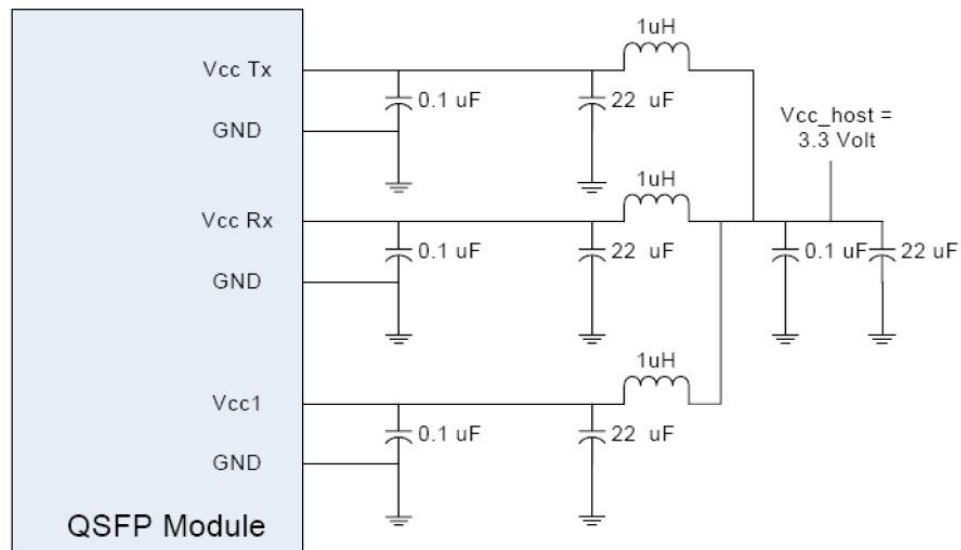


Figure 2. QSFP voltage supply and filtering scheme

Optical Characteristics Transmitter Specifications

Parameter	Mi	Typical	Max	Unit
Lane Wavelength Range	1264.5 1284.5 1304.5 1324.5	1271 1291 1311 1331 10.3125	1277.5 1297.5 1317.5 1337.5	nm
Data Rate Per Lane Average Optical				Gb/s
power per lane Total Average Launch	-7.6		2.3	dBm
power			8.3	dBm
Optical Modulation Amplitude (OMA), each lane	-4		3.5	dBm
Extinction Ratio	3.5			dB
Difference in launch power between any two lanes			6.5	dB
Relative Intensity Noise (RIN)			-128	dB/Hz
Launch Power in OMA minus TDP, each lane	-4.8			dBm
Transmitter and dispersion penalty (TDP), each lane			2.6	dB
Side-Mode Suppression Ratio (SMSR)	30			dB
Average Launch Power per lane @ TX off state			-30	dBm
Transmitter Reflectance			-12	dB
Optical return loss tolerance			20	dB
Transmitter Eye Mask definition: X1, X2, X3, Y1, Y2, Y3	Compliant with 802.3ba standard {0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			
Eye Mask Criteria	5% mask margin over specified ranges of temperature, voltage and power supply noise at end of life.			

Receiver Specifications – Optical

Parameter	Min	Typical	Max	Unit
Lane Wavelength Range	1264.5 1284.5 1304.5 1324.5	1271 1291 1311 1331	1277.5 1297.5 1317.5 1337.5	nm
Damage Threshold Average Receive Power, each			3.4 2.3	dBm
lane Receive Power, each lane (OMA)	-13.7		3.5 7.5	dBm
Difference in Receive Power between any two lanes (OMA)			-26	dBm
Receiver Reflectance				dB
Receiver Sensitivity (OMA) per lane (10.3125Gb/s @ PRBS 231-1 and BER=10 ⁻¹²)				dB
Receiver 3 dB electrical upper cutoff frequency, each lane			-11.5	dBm
Stressed Receiver Sensitivity OMA), each lane			12.3	GHz
			-9.6	dBm
RX_ LOS_ Assert Min/Max	-3 0			dBm
RX_ LOS_ De-Assert Max			-14	dBm
RX_ LOS_ Hysteresis	0.5			dB