maXoptix™

OPTX-QSFP-40-SR4

850nm 40Gbps MPO Terminated

Features

- Compliant with IEEE Std 802.3ba, 40G Ethernet SR4
- Compliant with QSFP+ MSA
- MPO connector receptacle
- 4 channel 850nm VCSEL array & 4 channel PIN photo detector array
- Up to 10.3Gb/s per channel data links
- Operating case temperature (0°C~70°C)
- Up to 100m on OM3 MMF and 150m on OM4 MMF
- RoHS6 Compliant

Applications

- 40GBASE-SR4 40G Ethernet
- Infiniband QDR and DDR interconnects
- Fiber channel
- Monitoring Networks

Specification

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min.**	**Max.**	**Unit**
Storage Temperature	T_S	-40	+85	℃
Supply Voltage	V_{CC}	-0.5	4.0	V
Relative Humidity	RH	5	95	%

Recommended Operating Conditions						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Note**
Operating Case Temperature	T_C	0	25	70	℃	C-temp
Power Supply Voltage	V_{CC3}	3.135	3.3	3.465	V	
Data Rate PER Channel	-	-	10.3125	-	Gb/s	

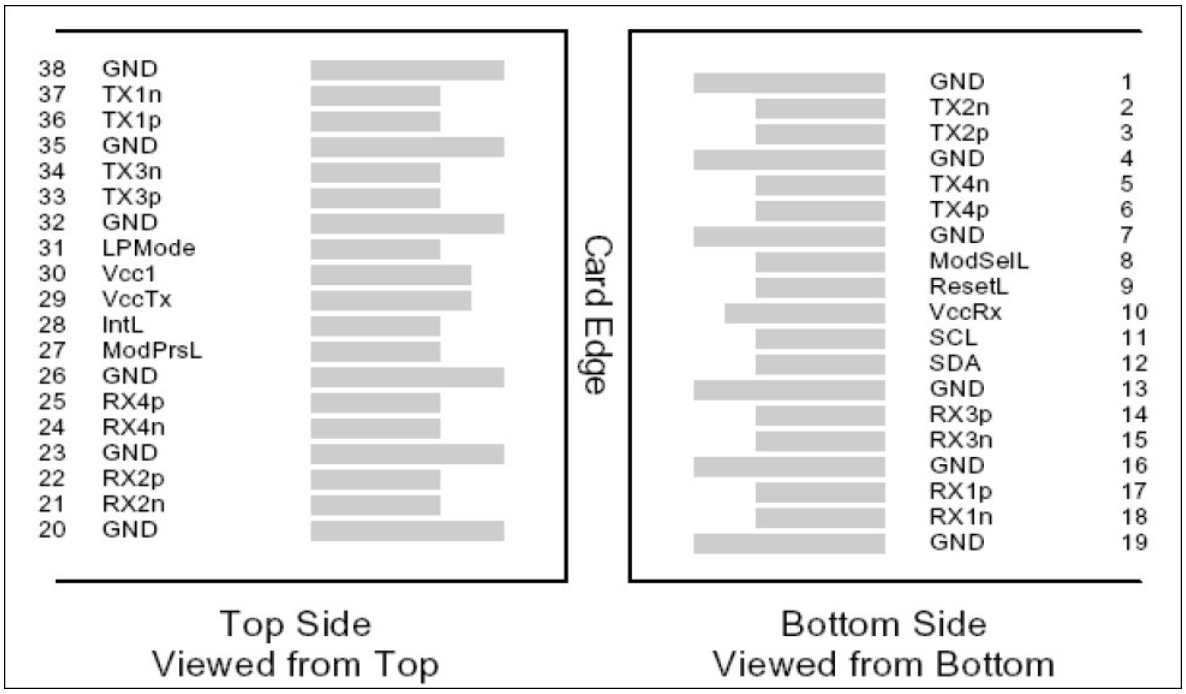
Transmitter Optical Characteristic						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Note**
Launch Optical Power, each lane	P_{AVG}	-7.6	-	+2.4	dBm	
Optical Modulation Amplitude(OMA), each lane	P_{OMA}	-5.6	-	+3	dBm	
Difference in Launch Power between any two lanes (OMA)	P_{tx}, diff			4	dB	
Center Wavelength	λ	840	-	860	nm	C-temp
Extinction Ratio	ER	3	-	-	dB	
Spectral width(RMS)	Δλ	-	-	0.65	nm	
Optical Return Loss Tolerance	TOL	-		12	dB	
Average launch power of OFF transmitter transmitter,each lane	P_{off}	-	-	-30	dBm	
Eye Mask {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}					

Receiver Optical Characteristic						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Center Wavelength, each lane	λ	840	-	860	nm	C-temp
Damage threshold	THd	+3.4			dBm	
Overload, each lane	OVL	+2.4			dBm	

Receiver Sensitivity (P_{AVG}), each lane	S_{AVG}			-9.5	dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Hysteresis	LOSH	0.5		6	dBm	

Transceiver Electrical Characteristic						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Note**
Module Supply Current	Icc			430	mA	
Power Dissipation	PD			1500	mW	
Transmitter						
-Single-ended Input Voltage Tolerance	-	-0.3	-	4.0	V	
Input differential impedance	ZIN	-	100		Ω	
Differential data input swing	VIN, P-P	180	-	900	mVP-P	
AC Common Mode Input Voltage Tolerance	-	15	-	-	mV	
Differential Input Voltage Swing Threshold	-	50	-	-	mVpp	
Receiver						
Single-ended Output Voltage Tolerance	-	-0.3	-	4.0	V	
Output Differential Impedance	ZO	90	100	110	Ω	
Differential Data Output Swing	VOUT, P-P	300	-	850	mVP-P	
AC Common Mode Output Voltage	-	-	-	7.5	mV	

Pin-out Definition



Pin Assignment

Pin	Name	Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	Vcc Rx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	2
12	SDA	2-wire serial interface data	2
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	

16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	1
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	2
29	VccTx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMode	Low Power Mode	2
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Notes：

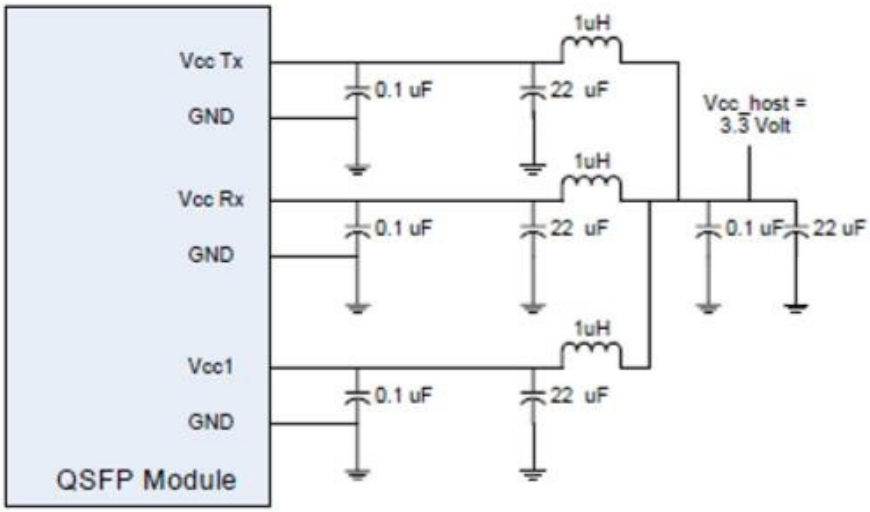
[1] GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

[2] VccRx, Vcc1 and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering is shown in Figure 7. VccRx, Vcc1 and VccTx may be internally connected within the QSFP28 Module in any combination. The connector pins are each rated for a maximum current of 500 mA.

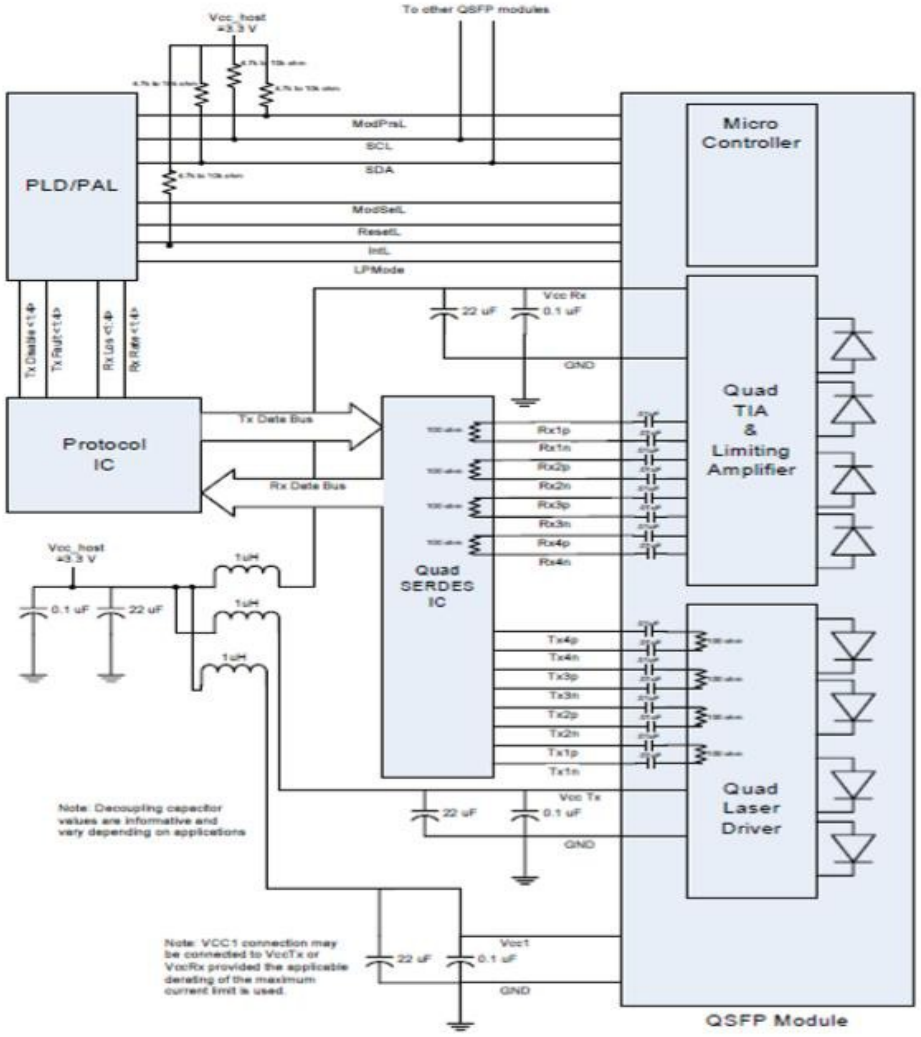
Digital Diagnostic Function

Parameters	Unit	Requirements
Temperature	℃	±3
Voltage	V	±3%
Ibias	mA	±10%
Rx power	dB	±2

Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram



Mechanical Dimensions

Unit is millimeter. All dimensions are ±0.1mm unless otherwise specified.

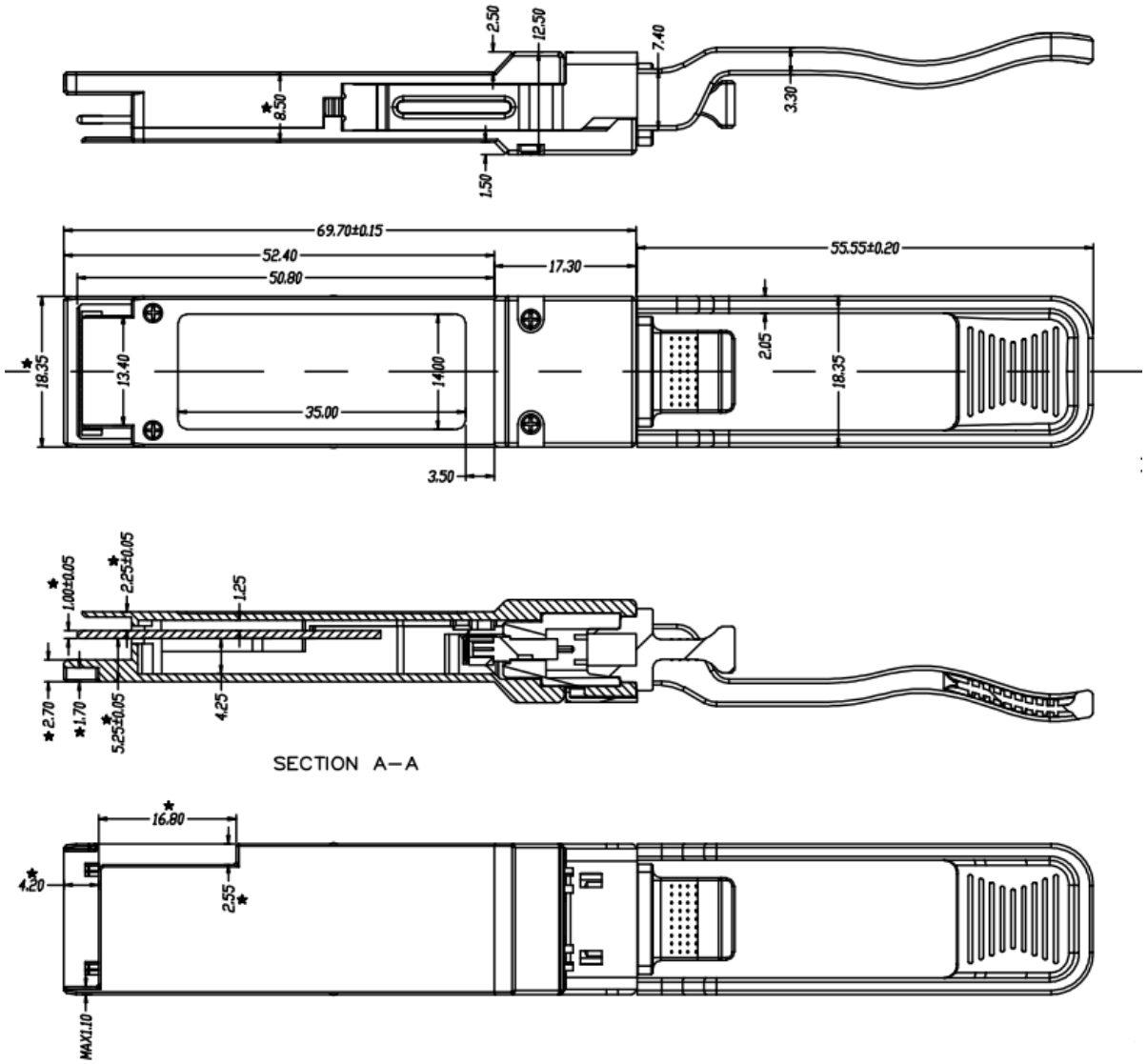


Figure 1: Mechanical Package Outline

Ordering Information

OptiX²'s 40G SR4 QSFP is available as a standard QSFP, as a Tx only QSFP, and as a Rx only QSFP. Use the following part numbers to order the correct QSFP for your application.

- OPTX-QSFP-40-SR4
- OPTX-QSFP-40-SR-T (Tx only)
- OPTX-QSFP-40-SR-M (Rx only)

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