

QFP85P1040PD000

MSA and TAA 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 150m, MPO, DOM)

Product Description

This MSA Compliant QSFP+ transceiver provides 40GBase-SR4 throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- SFF-8436 Compliance
- MPO Connector
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 40GBase Ethernet
- Access and Enterprise
- 4x10G Breakout Option

For your product safety, please read the following information carefully before any manipulation of the transceiver:



This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Тур.	Max.	Unit
Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Тс	0	25	70	°C
Relative Humidity	RH	5		95	%
Data Rate Per Channel			10.3125		Gbps

Electrical Characteristics

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Supply Voltage	Vcc	3.135	3.3	3.465	V		
Module Supply Current	Icc			430	mA		
Power Dissipation	P _{DISS}			1.5	W		
Transmitter							
Input Differential Impedance	ZIN		100		Ω		
Differential Data Input Swing	VIN,pp	180		900	mVp-p		
Receiver							
Output Differential Impedance	ZOUT		100		Ω		
Differential Data Output Swing	VOUT,pp	300		850	mVp-p	1	
Data Output Rise Time/Fall Time	Tr/Tf	28			ps	2	

Notes:

- 1. Internally AC coupled but requires an external 100Ω differential load termination.
- 2. 20 80 %.

Optical Characteristics

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Transmitter							
Launch Optical Power	Po	-7.6		+2.4	dBm	1	
Center Wavelength Range	λC	830	850	860	nm		
Extinction Ratio	ER	3			dB	2	
Spectral Width (RMS)	Δλ			0.65	nm		
Transmitter and Dispersion Penalty	TDP			3.2	dB		
Optical Return Loss Tolerance	ORLT			12	dB		
Eye Diagram	IEEE Std 802.3ba Compatible						
Receiver							
Center Wavelength	λC	830	850	860	nm		
Receiver Sensitivity (Pavg)	S			-9.5	dBm	3	
Damage Threshold	P _{OL}	2.5			dBm	3	
Optical Return Loss	ORL	12			dB		
LOS Assert	LOSA	-30			dBm		
LOS De-Assert	LOSD			-11	dBm		
LOS Hysteresis		0.5			dB		

Notes:

- 1. The optical power is launched into OM3 MMF.
- 2. Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.
- 3. Measured with PRBS 2^{31} -1 test pattern, 10.3125Gbps, and BER<10⁻¹².

Pin Descriptions

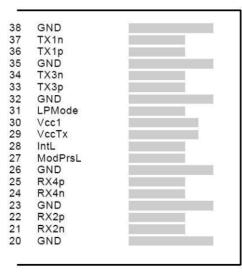
Notes Notes Notes Name		scriptions					
CML-I Tx2-	Pin	Logic	Symbol	Name/Descriptions			
CML-I Tx2+	1		GND	Module Ground.			
4 GND Module Ground. 1 5 CML-I Tx4- Transmitter Inverted Data Input. 6 CML-I Tx4+ Transmitter Non-Inverted Data Input. 7 GND Module Ground. 1 8 LVTTL-I ModSelL Module Select. 2 9 LVTTL-I ResetL Module Reset. 2 10 VCCRX +3.3V Receiver Power Supply. 2 11 LVCMOS-II SCL -2-Wire Serial Interface Clock. 2 12 LVCMOS-I/O SDA 2-Wire Serial Interface Data. 2 13 GND Module Ground. 1 14 CML-O Rx3+ Receiver Non-Inverted Data Output. 15 CML-O Rx3- Receiver Inverted Data Output. 16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Inverted Data Output. 1 19 GND Module Ground. 1 1 20 GND Module Gr	2	CML-I	Tx2-	Transmitter Inverted Data Input.			
5 CML-I Tx4- Transmitter Inverted Data Input. 6 CML-I Tx4+ Transmitter Non-Inverted Data Input. 7 GND Module Ground. 1 8 LVTTL-I ModSell. Module Reset. 2 9 LVTTL-I Resett. Module Reset. 2 10 VCxRx +3.3V Receiver Power Supply. 2 11 LVCMOS-I SCL 2-Wire Serial Interface Clock. 2 12 LVCMOS-I/O SDA 2-Wire Serial Interface Data. 2 13 GND Module Ground. 1 14 CML-O Rx3+ Receiver Inverted Data Output. 15 CML-O Rx3- Receiver Inverted Data Output. 16 GND Module Ground. 1 17 CML-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Outp	3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.			
6 CML-I Tx4+ Transmitter Non-Inverted Data Input. 7 SND Module Ground. 1 8 LYTIL-I ModSell Module Select. 2 9 LYTIL-I ResetL Module Reset. 2 10 VccRx +3.3V Receiver Power Supply. 2 11 LVCMOS-I SCL 2-Wire Serial Interface Clock. 2 12 LVCMOS-I/O SDA 2-Wire Serial Interface Data. 2 13 GND Module Ground. 1 14 CML-O Rx3+ Receiver Non-Inverted Data Output. 1 15 CML-O Rx3- Receiver Inverted Data Output. 1 16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Non-Inverted Data Output. 1 18 CML-O Rx1- Receiver Inverted Data Output. 1 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 1 22 CML-O Rx2- Receiver Inverted Data Output. 1 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4- Receiver Inverted Data Output. 1 26 GND Module Ground. 1 27 LYTIL-O ModPrst Receiver Non-Inverted Data Output. 1 28 LVTIL-O Rx4- Receiver Inverted Data Output. 1 29 VccTx +3.3V Transmitter Power Supply. 1 30 Vcc1 +3.3V Power Supply. 1 31 LVTIL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 2 33 CML-I Tx3+ Transmitter Power Supply. 1	4		GND	Module Ground.	1		
7 GND Module Ground. 1 8 LVTTL-I ModSelL Module Select. 2 9 LVTTL-I Resett. Module Reset. 2 10 VCCRX +3.3V Receiver Power Supply. 2 11 LVCMOS-I SCL 2-Wire Serial Interface Clock. 2 12 LVCMOS-I/O SDA 2-Wire Serial Interface Data. 2 13 GND Module Ground. 1 14 CML-O Rx3+ Receiver Non-Inverted Data Output. 15 CML-O Rx3- Receiver Inverted Data Output. 16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Inverted Data Output. 1 18 CML-O Rx1- Receiver Inverted Data Output. 1 19 GND Module Ground. 1 1 20 GND Module Ground. 1 1 21 CML-O Rx2+ Receiver Non-Inverted Data Output. 1	5	CML-I	Tx4-	Transmitter Inverted Data Input.			
8 LVTTL-I ModSelL Module Select. 2 9 LVTTL-I Resett Module Reset. 2 10 VCcRX +3.3V Receiver Power Supply. 2 11 LVCMOS-I SCL 2-Wire Serial Interface Clock. 2 12 LVCMOS-I/O SDA 2-Wire Serial Interface Data. 2 13 GND Module Ground. 1 14 CML-O Rx3+ Receiver Non-Inverted Data Output. 1 15 CML-O Rx3- Receiver Inverted Data Output. 1 16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Inverted Data Output. 1 19 GND Module Ground. 1 1 20 GND Module Ground. 1 1 21 CML-O Rx2- Receiver Inverted Data Output. 1 22 CML-O Rx4+ Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receive	6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.			
10	7		GND	Module Ground.	1		
10	8	LVTTL-I	ModSelL	Module Select.	2		
11	9	LVTTL-I	ResetL	Module Reset.	2		
12	10		VccRx	+3.3V Receiver Power Supply.			
1	11	LVCMOS-I	SCL	2-Wire Serial Interface Clock.	2		
14 CMI-O Rx3+ Receiver Non-Inverted Data Output. 15 CMI-O Rx3- Receiver Inverted Data Output. 16 GND Module Ground. 1 17 CMI-O Rx1+ Receiver Non-Inverted Data Output. 18 CMI-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CMI-O Rx2- Receiver Inverted Data Output. 1 22 CMI-O Rx2+ Receiver Non-Inverted Data Output. 1 23 GND Module Ground. 1 24 CMI-O Rx4- Receiver Inverted Data Output. 1 25 CMI-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTIL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O Inttl. Interrupt Output. Should be pulled up on the host board. 2 <tr< th=""><td>12</td><td>LVCMOS-I/O</td><td>SDA</td><td>2-Wire Serial Interface Data.</td><td>2</td></tr<>	12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	2		
15 CML-O Rx3- Receiver Inverted Data Output. 1 16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Non-Inverted Data Output. 18 CML-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTIL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O Intl. Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 VccTx	13		GND	Module Ground.	1		
16 GND Module Ground. 1 17 CML-O Rx1+ Receiver Non-Inverted Data Output. 18 CML-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 2 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 1 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTIL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTIL-O Intl. Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 2 30 Vcc1 +3.3V Power Supply. 2 31	14	CML-O	Rx3+	Receiver Non-Inverted Data Output.			
17 CML-O Rx1+ Receiver Non-Inverted Data Output. 18 CML-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 VccT +3.3V Power Supply. 31 LVTIL-I LPMode Low-Power Mode. 2 32 GND Module Ground.<	15	CML-O	Rx3-	Receiver Inverted Data Output.			
18 CML-O Rx1- Receiver Inverted Data Output. 19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 1 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 30 Vcc1 +3.3V Power Supply. 2 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33	16		GND	Module Ground.	1		
19 GND Module Ground. 1 20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 2 30 Vcc1 +3.3V Power Supply. 2 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	17	CML-O	Rx1+	Receiver Non-Inverted Data Output.			
20 GND Module Ground. 1 21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 2 30 Vcc1 +3.3V Power Supply. 3 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	18	CML-O	Rx1-	Receiver Inverted Data Output.			
21 CML-O Rx2- Receiver Inverted Data Output. 22 CML-O Rx2+ Receiver Non-Inverted Data Output. 23 GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	19		GND	Module Ground.	1		
22CML-ORx2+Receiver Non-Inverted Data Output.23GNDModule Ground.124CML-ORx4-Receiver Inverted Data Output.125CML-ORx4+Receiver Non-Inverted Data Output.126GNDModule Ground.127LVTTL-OModPrsLModule Present. Internally pulled down to GND.28LVTTL-OIntLInterrupt Output. Should be pulled up on the host board.229VccTx+3.3V Transmitter Power Supply.30Vcc1+3.3V Power Supply.31LVTTL-ILPModeLow-Power Mode.232GNDModule Ground.133CML-ITx3+Transmitter Non-Inverted Data Input.	20		GND	Module Ground.			
GND Module Ground. 1 24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 1 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 1 30 Vcc1 +3.3V Power Supply. 1 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	21	CML-O	Rx2-	Receiver Inverted Data Output.			
24 CML-O Rx4- Receiver Inverted Data Output. 1 25 CML-O Rx4+ Receiver Non-Inverted Data Output. 1 26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 1 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 1 30 Vcc1 +3.3V Power Supply. 1 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	22	CML-O	Rx2+	Receiver Non-Inverted Data Output.			
25 CML-O Rx4+ Receiver Non-Inverted Data Output. 26 GND Module Ground. 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 GND Module Ground. 32 GND Module Ground. 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	23		GND	Module Ground.			
26 GND Module Ground. 1 27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	24	CML-O	Rx4-	Receiver Inverted Data Output.			
27 LVTTL-O ModPrsL Module Present. Internally pulled down to GND. 28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 GND Module Ground. 32 GNL-I Tx3+ Transmitter Non-Inverted Data Input.	25	CML-O	Rx4+	Receiver Non-Inverted Data Output.			
28 LVTTL-O IntL Interrupt Output. Should be pulled up on the host board. 2 29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	26		GND	Module Ground.			
29 VccTx +3.3V Transmitter Power Supply. 30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	27	LVTTL-O	ModPrsL	Module Present. Internally pulled down to GND.			
30 Vcc1 +3.3V Power Supply. 31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	28	LVTTL-O	IntL	Interrupt Output. Should be pulled up on the host board.			
31 LVTTL-I LPMode Low-Power Mode. 2 32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	29		VccTx	+3.3V Transmitter Power Supply.			
32 GND Module Ground. 1 33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	30		Vcc1	+3.3V Power Supply.			
33 CML-I Tx3+ Transmitter Non-Inverted Data Input.	31	LVTTL-I	LPMode	Low-Power Mode.			
· ·	32		GND	Module Ground.			
34 CML-I Tx3- Transmitter Inverted Data Input.	33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.			
	34	CML-I	Tx3-	Transmitter Inverted Data Input.			

35		GND	Module Ground.	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	
38		GND	Module Ground.	1

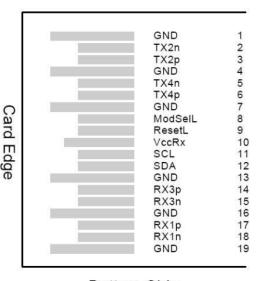
Notes:

- 1. The module signal grounds are isolated from the module case.
- 2. This is an open collector/drain output that on the host board requires a $4.7k\Omega$ - $10k\Omega$ pull-up resistor to the Host_Vcc.

Electrical Pin-Out Details

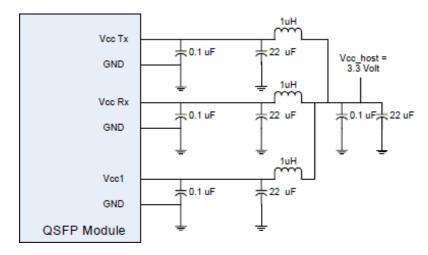


Top Side Viewed from Top

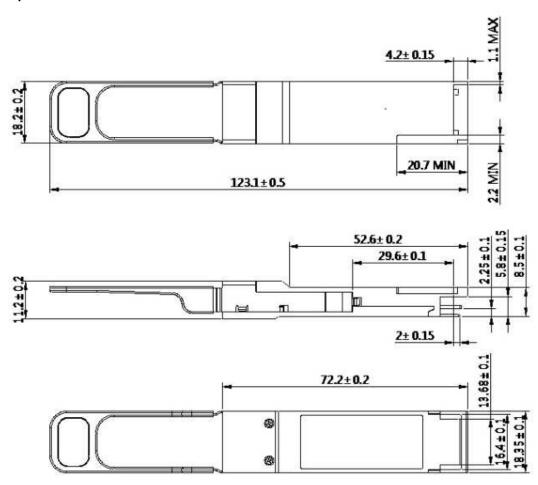


Bottom Side Viewed from Bottom

Recommended Host Board Power Supply Filter Network



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.











