QSFP112-400GB-DR4-VDM-MX-SKY

Mellanox® Compatible 400GBase-DR4 PAM4 QSFP112 Transceiver (SMF, 1310nm, 500m, MPO-12, DOM, CMIS 5.0) VDM

Product Description

This Mellanox® compatible QSFP112 transceiver provides 400GBase-DR4 throughput up to 500m over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. 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:

- QSFP112 MSA Compliant
- 4 Independent Parallel Optical Channels
- 4 Independent Electrical Input/Output Channels
- 3.3V Power Supply
- 500m Link on SMF
- MPO-12 APC Optical Connector
- Silicon Photonics Technology
- CMIS 5.2 Compliant
- Operating Temperature: 0 to 70 Celsius
- Hot-Pluggable
- RoHS Compliant and Lead-Free



Applications:

- 400GBase Ethernet
- CMIS Versatile Diagnostic Monitoring (VDM) Enabled
- HPC Interconnect & Data Centers

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



ESD

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.	Max.	Unit	Notes
Storage Ambient Temperature	Tstg	-40	+85	°C	
Relative Humidity – Storage	RHs	0	95	%	1
Relative Humidity – Operating	RHo	0	85	%	1
Module Supply Voltage	Vcc	-0.5	3.6	V	

Notes:

1. RH is a non-condensing condition.
2. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Case Operating Temperature	Tc	0	+25	70	°C	1
Module Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Consumption	PC		9		W	
PAM4 Signaling Rate Per Lane	S		53.125		GBaud/s	2

Notes:

1. Temperature range = C.
2. Range: ± 100ppm.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Tx_Data Differential Input Voltage	VIN			800	mV	
Tx_Data Differential Input Impedance	ZIN		100		Ω	
Signaling Rate Per Lane	S		53.125		GBaud/s	1
Receiver						
Rx_Data Differential Output Voltage	VOUT			900	mV	
Rx_Data Differential Output Impedance	ZOUT		100		Ω	
Signaling Rate Per Lane	S		53.125		GBaud/s	1

Notes:

1. Range: ± 100ppm.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
PAM4 Signaling Rate	SR	53.125 ± 100ppm			GBd	
Lane Wavelength	λ	1304.5	1310	1317.5	nm	
Side-Mode Suppression Ratio	SMSR	30				
Average Launch Power Per Lane	POUT	-2.9		4.0	dBm	1
Outer Optical Modulation Amplitude	OMAouter	-0.8		4.2	dBm	
Transmitter and Dispersion Penalty Eye Closure for PAM4	TDECQ			3.4	dB	
Optical Output with Tx Off Per Lane	Poff			-15	dBm	
Extinction Ratio	ER	3.5			dB	
Transmitter Reflectance	RFL			-26	dB	
Receiver						
PAM4 Signaling Rate	SR	53.125 ± 100ppm			GBd	
Lane Wavelength	λ	1304.5	1311	1317.5	nm	
Receiver Sensitivity OMA Per Lane	PIN			Max. (-3.9, SECQ-5.3)	dBm	2
Average Receive Power Per Lane	p	-5.9		4.0	dBm	2
Damage Threshold Per Lane		5			dBm	
Receiver Reflectance	RFL			-26	dB	
Rx_LOS Hysteresis	LOS_H	0.5			dB	

Notes:

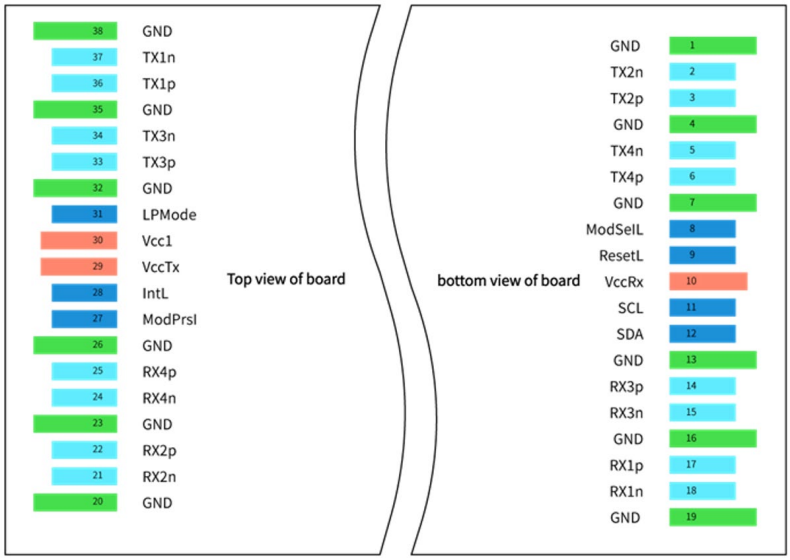
1. Average optical output.
2. BER = $2.4E^{-4}$, PAM4 signaling rate per lane @53.125GBaud, and PRBS 2^{31}-1.

Pin Descriptions

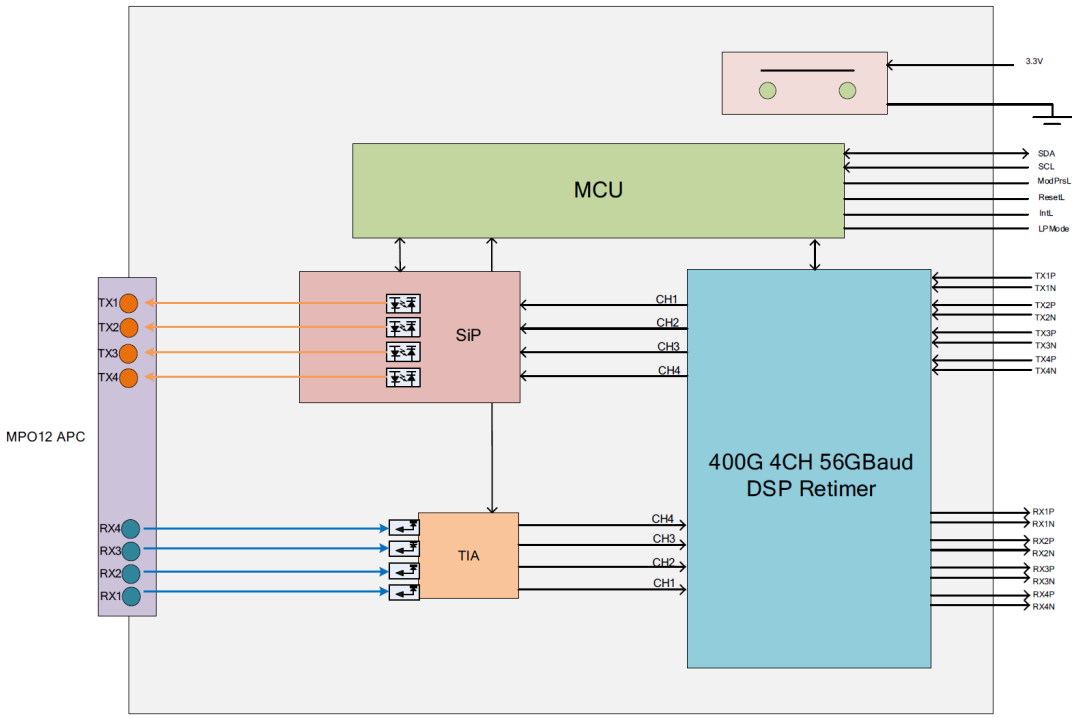
Pin	Symbol	Name/Description
1	GND	Module Ground.
2	Tx2n	Transmitter Inverted Data Input.
3	Tx2p	Transmitter Non-Inverted Data Input.
4	GND	Module Ground.
5	Tx4n	Transmitter Inverted Data Input.
6	Tx4p	Transmitter Non-Inverted Data Input.
7	GND	Module Ground.
8	ModSelL	Module Select.
9	ResetL	Module Reset.
10	VccRx	+3.3V DC Receiver Power Supply.
11	SCL	I^2C Serial Clock.
12	SDA	I^2C Serial Data.
13	GND	Module Ground.
14	Rx3p	Receiver Non-Inverted Data Output.
15	Rx3n	Receiver Inverted Data Output.
16	GND	Module Ground.
17	Rx1p	Receiver Non-Inverted Data Output.
18	Rx1n	Receiver Inverted Data Output.
19	GND	Module Ground.
20	GND	Module Ground.
21	Rx2n	Receiver Inverted Data Output.
22	Rx2p	Receiver Non-Inverted Data Output.
23	GND	Module Ground.
24	Rx4n	Receiver Inverted Data Output.
25	Rx4p	Receiver Non-Inverted Data Output.
26	GND	Module Ground.
27	ModPrsL	Module Present.
28	IntL	Interrupt.
29	VccTx	+3.3V DC Transmitter Power Supply.
30	Vcc1	+3.3V DC Power Supply.
31	LPMode	Low-Power Mode.
32	GND	Module Ground.
33	Tx3p	Transmitter Non-Inverted Data Input.
34	Tx3n	Transmitter Inverted Data Input.
35	GND	Module Ground.

36	Tx1p	Transmitter Non-Inverted Data Input.
37	Tx1n	Transmitter Inverted Data Input.
38	GND	Module Ground.

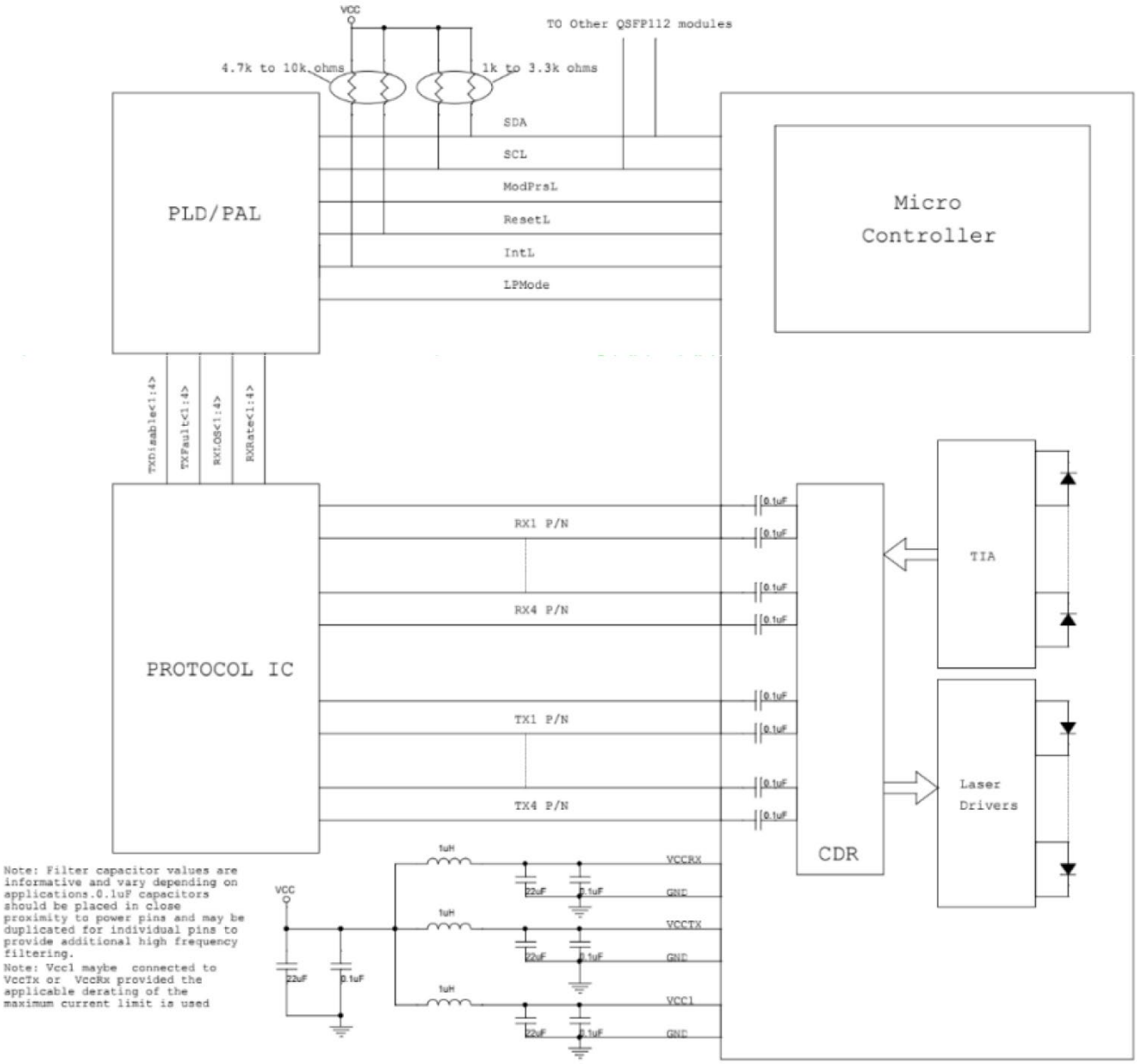
Pin Assignments



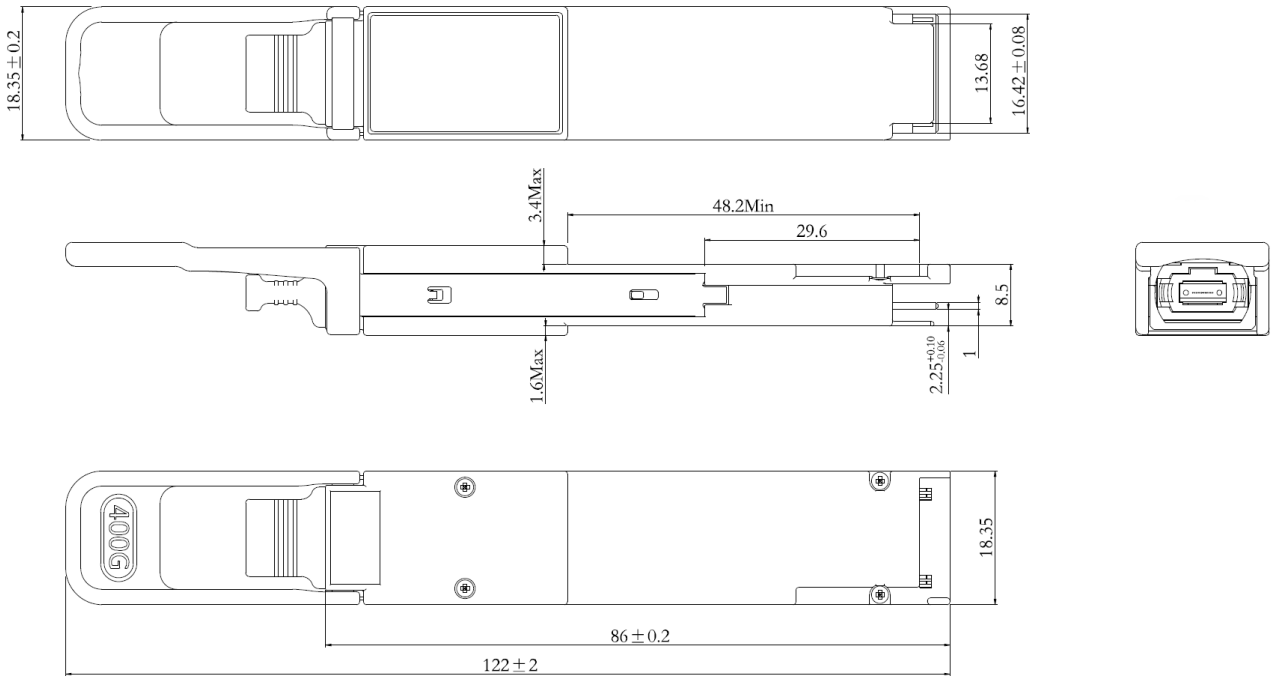
Transceiver Block Diagram



Host Board and Module Board Diagram



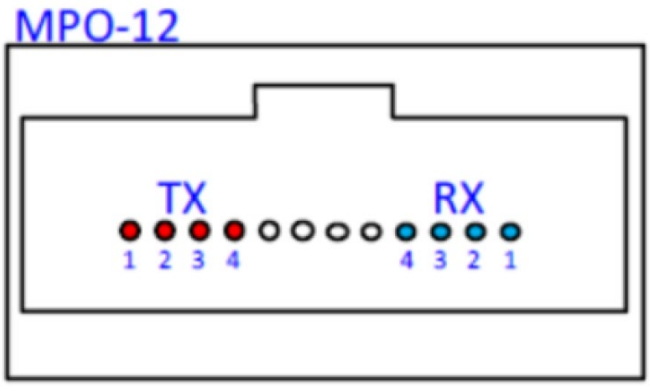
Mechanical Specifications



Notes:

1. Tolerance: ± 0.1mm.
2. Others according with QSFP112 MSA or customer specifications.
3. Light port according to fiber connector specifications.

Optical Lane Assignment



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.