



OSFP-800GB-2XFR4-LPO-SKY

MSA Compliant 800GBase-2xFR4 PAM4 OSFP-IHS Transceiver (SMF, 1310nm, 2km, 2xLC, DOM, CMIS 5.0) LPO

Product Description

This MSA compliant OSFP-IHS Transceiver provides 800GBase-2xFR4 throughput up to 2km over single-mode fiber (SMF) PAM4 using a wavelength of 1310nm via a 2xLC connector. It can operate at temperatures between 0 and 70C. 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:

- OSFP Package
- Duplex LC Receptacle Optical Connector
- 3.3V Power Supply
- 2x30 OSFP Electrical Interface
- Single-Mode Fiber
- Hot-Pluggable
- 1271nm/1291nm/1311nm/1331nm High-Power DFB Lasers, PIN PD Receiver
- Compliant to CMIS for 8-16x Pluggable Transceivers R5.2
- Operating Temperature: 0 to 70 Celsius
- 53GBaud Data Rate
- RoHS Compliant and Lead-Free



Applications:

- 2x400GBase Ethernet

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	RH	0	95	%	1
Relative Humidity – Operating	RH	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			8.5	W	
PAM4 Signaling Rate Per Lane	S		53.125		GBaud/s	2

Notes:

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

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Tx_Data VMA	VMA	175		350	mV	1
	VMA	200		350	mV	2
Tx_Data EECQ	EECQ			3.5	dB	1
	EECQ			3.0	dB	2
Tx_Data Ceeq	Ceeq	-0.5		0.75	dB	1
	Ceeq	-0.5		0.5	dB	2
Receiver						
Rx_Data Differential Output Voltage	VOUT			800	mV	
Rx_Data Differential Output Impedance	ZOUT		100		Ω	
Signaling Rate Per Lane	S		53.125		GBaud/s	3

Notes:

1. Loss>13dB.
2. Loss≤13dB.
3. Range: ±100ppm.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
PAM4 Signal Rate	SR	53.125 ± 100ppm			GBd	
Laser Type		High-Power DFB Lasers				
Lane Wavelength	λ	1264.5	1271	1277.5	nm	
		1284.5	1291	1297.5	nm	
		1304.5	1311	1317.5	nm	
		1324.5	1331	1337.5	nm	
Total Average Launch Power	Pt			10.4	dBm	
Average Launch Power Per Lane	POUT	-3.2		4.4	dBm	1
Outer Optical Modulation Amplitude	OMAuter	-0.3		3.7	dBm	
Transmitter and Dispersion Penalty Eye Closure for PAM4	TDECQ			3.4	dB	2
Optical Output with Tx Off	Poff			-15	dBm	3
Extinction Ratio	ER	2.5			dB	2
Transmit Reflectance	RFL			-26	dB	
Receiver						
PAM4 Signal Rate	SR	53.125 ± 100ppm			GBd	
Lane Wavelength	λ	1264.5	1271	1277.5	nm	
		1284.5	1291	1297.5	nm	
		1304.5	1311	1317.5	nm	
		1324.5	1331	1337.5	nm	
Average Receive Power	PIN	-7.2		4.4	dBm	3, 4
Damage Threshold		5.4			dBm	3
Receiver Sensitivity (OMAuter) Per Lane	Sen	Max. (-4.6, SECQ-6.0)			dBm	5
Receive Reflectance	RFL			-26	dB	

Notes:

1. Average optical output.
2. Test with SSPRQ pattern.
3. Each lane.
4. Average receive power, per lane (minimum), is informative and not the principal indicator of signal strength. A receive power below this value can't be compliant; however, a value above this does not ensure compliance.
5. BER = $2.4e^{-4}$, PAM4 signaling rate (each lane) 53.125GBaud, and PRBS $2^{31}-1$.

Pin Descriptions

Pin	Symbol	Name/Description	Logic	Direction	Plug Sequence	Notes
1	GND	Module Ground.			1	
2	Tx2p	CH2 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
3	Tx2n	CH2 Transmitter Data Inverted.	CML-I	Input from Host	3	
4	GND	Module Ground.			1	
5	Tx4p	CH4 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
6	Tx4n	CH4 Transmitter Data Inverted.	CML-I	Input from Host	3	
7	GND	Module Ground.			1	
8	Tx6p	CH6 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
9	Tx6n	CH6 Transmitter Data Inverted.	CML-I	Input from Host	3	
10	GND	Module Ground.			1	
11	Tx8p	CH8 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
12	Tx8n	CH8 Transmitter Data Inverted.	CML-I	Input from Host	3	
13	GND	Module Ground.			1	
14	SCL	2-Wire Serial Interface Clock.	LVC MOS-I/O	Bi-Directional	3	1
15	Vcc	+3.3V Power Supply.		Power from Host	2	
16	Vcc	+3.3V Power Supply.		Power from Host	2	
17	LPWn/PRSn	Low-Power Mode/Module Present.	Multi-Level	Bi-Directional	3	2
18	GND	Module Ground.			1	
19	Rx7n	CH7 Receiver Data Inverted.	CML-O	Output to Host	3	
20	Rx7p	CH7 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
21	GND	Module Ground.			1	
22	Rx5n	CH5 Receiver Data Inverted.	CML-O	Output to Host	3	
23	Rx5p	CH5 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
24	GND	Module Ground.			1	
25	Rx3n	CH3 Receiver Data Inverted.	CML-O	Output to Host	3	
26	Rx3p	CH3 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
27	GND	Module Ground.			1	
28	Rx1n	CH1 Receiver Data Inverted.	CML-O	Output to Host	3	
29	Rx1p	CH1 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
30	GND	Module Ground.			1	
31	GND	Module Ground.			1	
32	Rx2p	CH2 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
33	Rx2n	CH2 Receiver Data Inverted.	CML-O	Output to Host	3	
34	GND	Module Ground.			1	

35	Rx4p	CH4 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
36	Rx4n	CH4 Receiver Data Inverted.	CML-O	Output to Host	3	
37	GND	Module Ground.			1	
38	Rx6p	CH6 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
39	Rx6n	CH6 Receiver Data Inverted.	CML-O	Output to Host	3	
40	GND	Module Ground.			1	
41	Rx8p	CH8 Receiver Data Non-Inverted.	CML-O	Output to Host	3	
42	Rx8n	CH8 Receiver Data Inverted.	CML-O	Output to Host	3	
43	GND	Module Ground.			1	
44	INT/RSTn	Module Interrupt/Module Reset.	Multi-Level	Bi-Directional	3	3
45	Vcc	+3.3V Power Supply.		Power from Host	2	
46	Vcc	+3.3V Power Supply.		Power from Host	2	
47	SDA	2-Wire Serial Interface Data.	LVC MOS-I/O	Bi-Directional	3	1
48	GND	Module Ground.			1	
49	Tx7n	CH7 Transmitter Data Inverted.	CML-I	Input from Host	3	
50	Tx7p	CH7 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
51	GND	Module Ground.			1	
52	Tx5n	CH5 Transmitter Data Inverted.	CML-I	Input from Host	3	
53	Tx5p	CH5 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
54	GND	Module Ground.			1	
55	Tx3n	CH3 Transmitter Data Inverted.	CML-I	Input from Host	3	
56	Tx3p	CH3 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
57	GND	Module Ground.			1	
58	Tx1n	CH1 Transmitter Data Inverted.	CML-I	Input from Host	3	
59	Tx1p	CH1 Transmitter Data Non-Inverted.	CML-I	Input from Host	3	
60	GND	Module Ground.			1	

Notes:

1. Open-drain with pull-up resistor on the host.
2. LPWn/PRSn is a dual function signal that allows the host to signal low-power mode and allows the module to indicate that the module is present.
3. INT/RSTn is a dual function signal that allows the module to raise an interrupt to the host and allows the host to reset the module.

Pin-Out Details

Top Side (viewed from top)

60	GND	
59	TX1p	
58	TX1n	
57	GND	
56	TX3p	
55	TX3n	
54	GND	
53	TX5p	
52	TX5n	
51	GND	
50	TX7p	
49	TX7n	
48	GND	
47	SDA	
46	VCC	
45	VCC	
44	INT/RSTn	
43	GND	
42	RX8n	
41	RX8p	
40	GND	
39	RX6n	
38	RX6p	
37	GND	
36	RX4n	
35	RX4p	
34	GND	
33	RX2n	
32	RX2p	
31	GND	

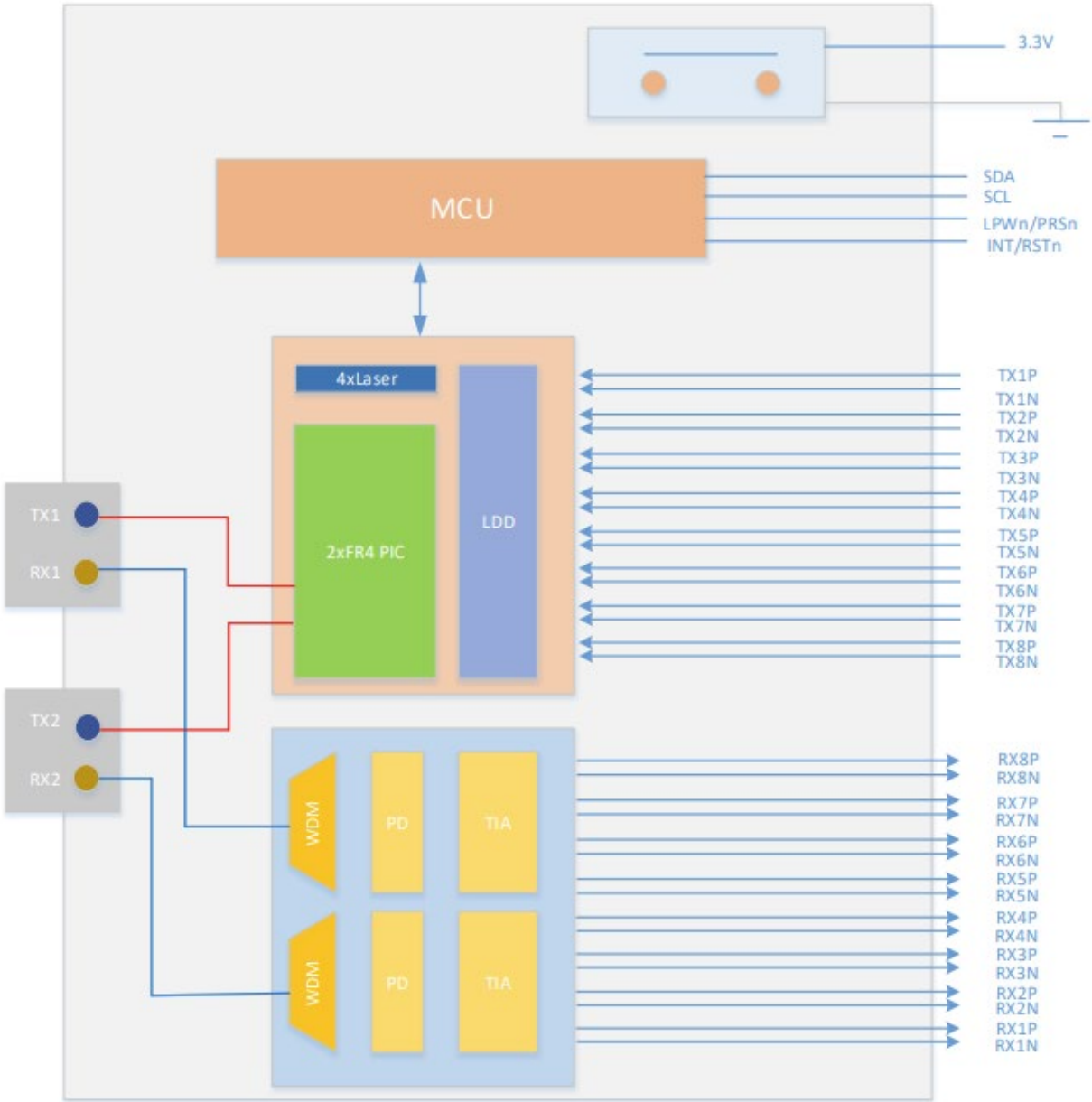
----- Module Card Edge -----

Bottom Side (viewed from bottom)

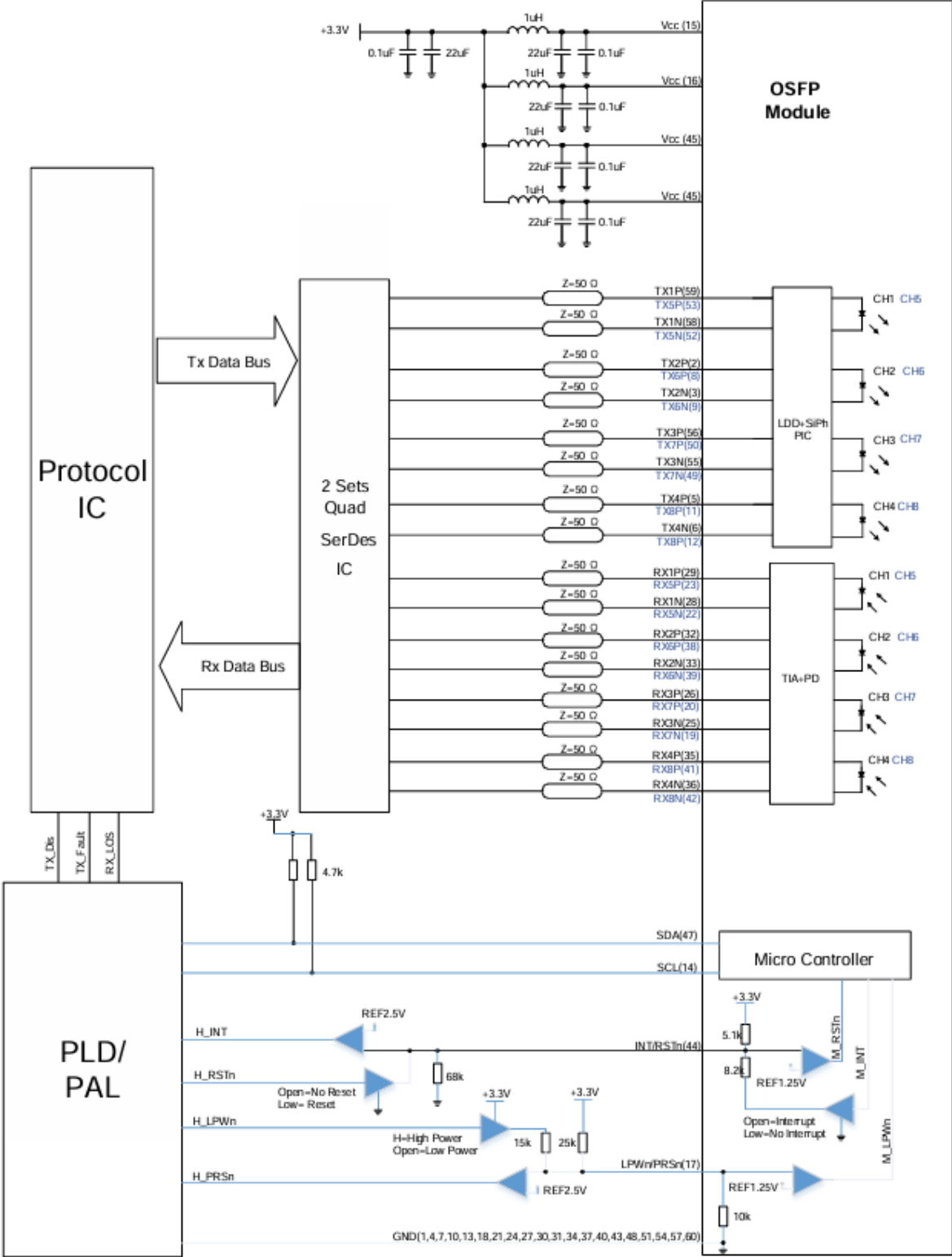
	GND	1
	TX2p	2
	TX2n	3
	GND	4
	TX4p	5
	TX4n	6
	GND	7
	TX6p	8
	TX6n	9
	GND	10
	TX8p	11
	TX8n	12
	GND	13
	SCL	14
	VCC	15
	VCC	16
	LPWn/PRSn	17
	GND	18
	RX7n	19
	RX7p	20
	GND	21
	RX5n	22
	RX5p	23
	GND	24
	RX3n	25
	RX3p	26
	GND	27
	RX1n	28
	RX1p	29
	GND	30

Block Diagram

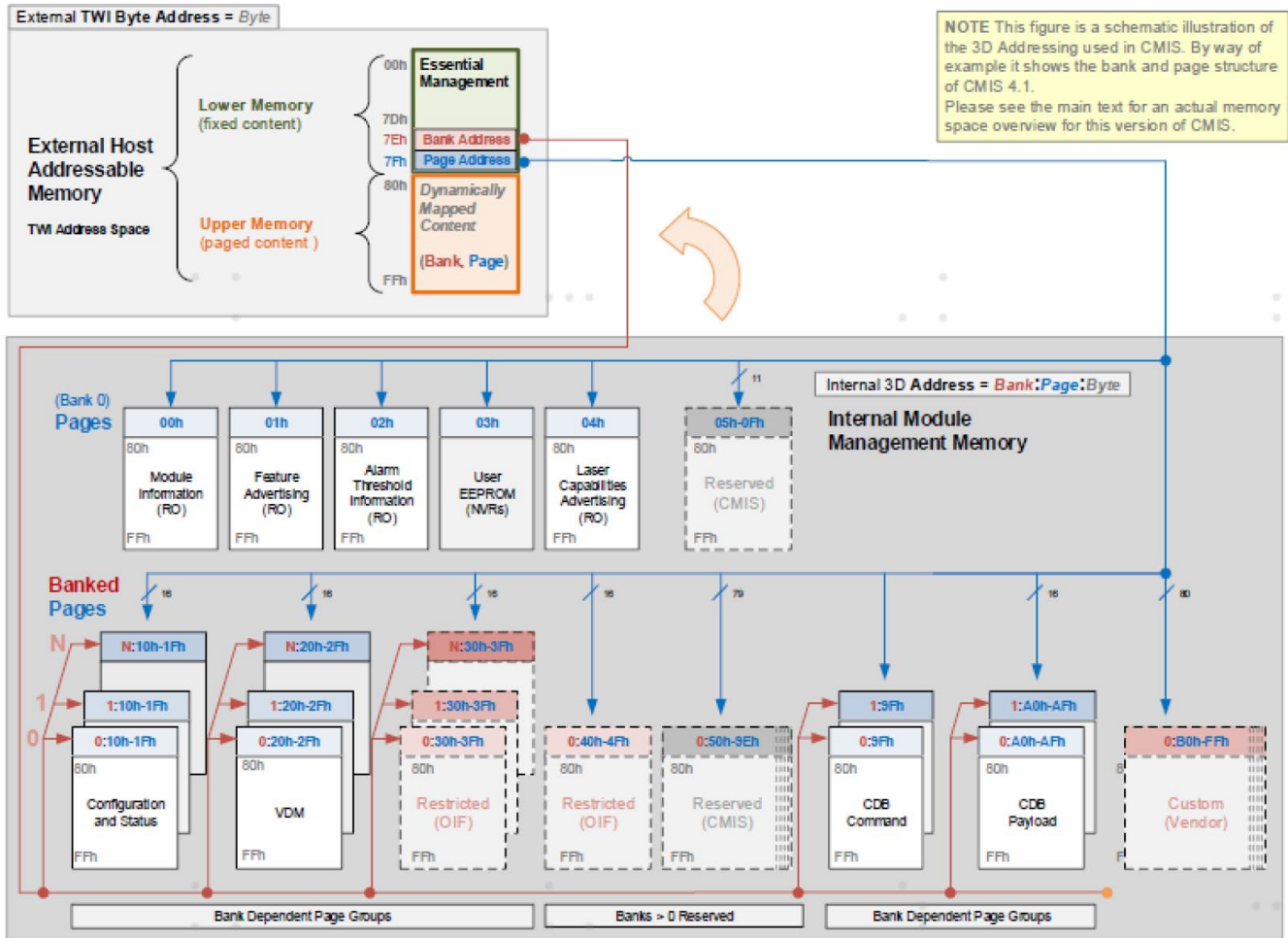
Dual Duplex LC



Host Board and Module Board Diagram



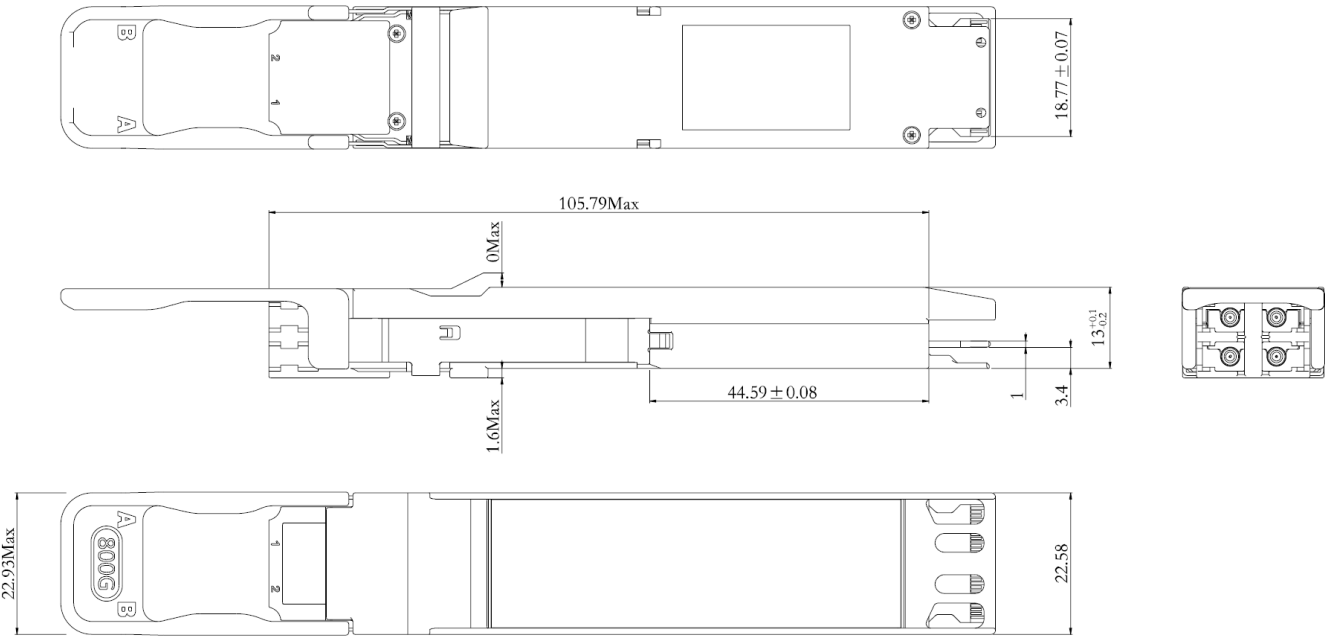
2-Wire Serial Memory Map



Notes:

1. For detail definition of the registers, please refer to Common Management Interface Specifications for 8/16x Pluggable Transceivers, R5.2.

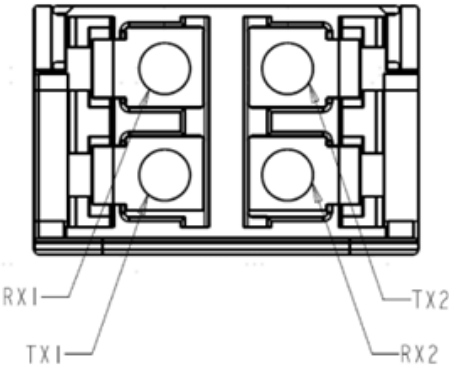
Mechanical Specifications



Notes:

- 1. Tolerance: $\pm 0.1 \text{ mm}$.
- 2. Others according with OSFP MSA or Customer Spec.
- 3. Light Port according with fiber connector spec.

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.

