S28130102R0F000

MSA and 25GBase-LR SFP28 Transceiver Dual Rate 10/25G (SMF, 1310nm, 10km, LC, DOM)

Product Description

This MSA Compliant SFP28 transceiver provides 10/25GBase-LR throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC 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. 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-8402 and SFF-8472 Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI

Applications:

- 25GBase Ethernet
- Access and Enterprise

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.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4.0	V	
Storage Temperature	TS	-40		85	°C	
Operating Case Temperature	Tc	0	25	70	°C	
Relative Humidity	RH	5		95	%	
Data Rate			24.33 25.78		Gbps	
Bit Error Rate	BER			$5x10^{-5}$		1
Supported Link Length on 9/125um SMF, 25.78GB/s	L		10		km	2

Notes:

1. Tested with PRBS 2^{31}-1 test pattern for 25.78GBps operation.
2. Distances are based on FC-PI-6 Rev 3.1 and IEEE 802.3 standards with FEC.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage		Vcc	3.135	3.3	3.465	V	
Module Supply Current		Icc			450	mA	
Power Dissipation		P_D			1500	mW	
Data Rate		BR		25.78			
Transmitter							
Input Differential Impedance		ZIN		100		Ω	
Differential Data Input Swing		Vin,pp	180		700	mVp-p	
TX Fault	**Transmitter Fault**	VOH	2.0		Host_Vcc	V	
	Normal Operation	VOL	0		0.8	V	
TX Disable	**Transmitter Disable**	VIH	2.0		Host_Vcc	V	T
	Transmitter Enable	VIL	0		0.8	V	
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	15			ps	2
RX_LOS	**Loss of Signal (LOS)**	VOH	2.0		Host_Vcc	V	3
	Normal Operation	VOL	0		0.8	V	3

Notes:

3. Internally AC coupled but requires an external 100Ω differential load termination.
4. 20-80%
5. LOS is an open collector output. Should be pulled up with 4.7KΩ on the host board.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power	Po	-5		+2	dBm	1
Extinction Ratio	ER	3.5			dB	
Center Wavelength Range	λc	1295	1310	1325	nm	
Transmitter Dispersion Penalty	TDP			2.7	dB	
Spectral Width	Δλ			1	nm	2
Optical Rise/Fall Time @25.78GBps	Tr/Tf	15			ps	3
Optical Return Loss Tolerance	ORLT			12	dB	
Pout @TX_Disable Asserted	Poff			-30	dBm	
Receiver						
Center Wavelength	λc	1260	1310	1370	nm	
Receiver OMA Sensitivity	ROMA			-12	dBm	4
Receiver Overload (Pavg)	P_{MAX}	2			dBm	
Optical Return Loss	ORLT	26			dB	
LOS De-Assert	LOSD			-16	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	

Notes:

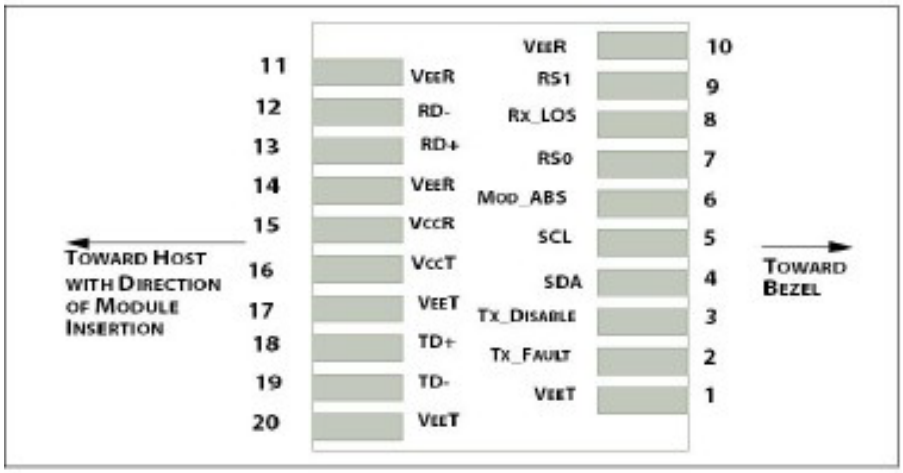
1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulation.
2. 20dB spectral width.
3. Unfiltered, 20-80%.
4. Measured with PRBS 2^{31}-1 at $5x10^{-5}$ BER.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground.	1
2	TX_Fault	Transmitter Fault. LVTTL-O. “High” indicated a fault condition.	2
3	TX_Disable	Transmitter Disable. LVTTL-I. “High” or “open” disables the transmitter.	3
4	SDA	2-Wire Serial Interface Data. LVCMOS-I/O. MOD-DEF2.	4
5	SCL	2-Wire serial interface Clock. LVCMOS-I/O. MOD-DEF1.	4
6	MOD_ABS	Module Absent (Output). Connected to VeeT or VeeR in the module.	5
7	RS0	NA.	6
8	RX_LOS	Receiver Loss of Signal. LVTTL-O.	2
9	RS1	NA.	6
10	VeeR	Receiver Ground.	1
11	VeeR	Receiver Ground.	1
12	RD-	Inverse Received Data out. CML-O.	
13	RD+	Received Data out. CML-O.	
14	VeeR	Receiver Ground.	
15	VccR	+3.3V Receiver Power.	
16	VccT	+3.3V Transmitter Power.	
17	VeeT	Transmitter Ground.	1
18	TD+	Transmitter Data In. CML-I.	
19	TD-	Inverse Transmitter Data In. CML-I.	
20	VeeT	Transmitter Ground.	1

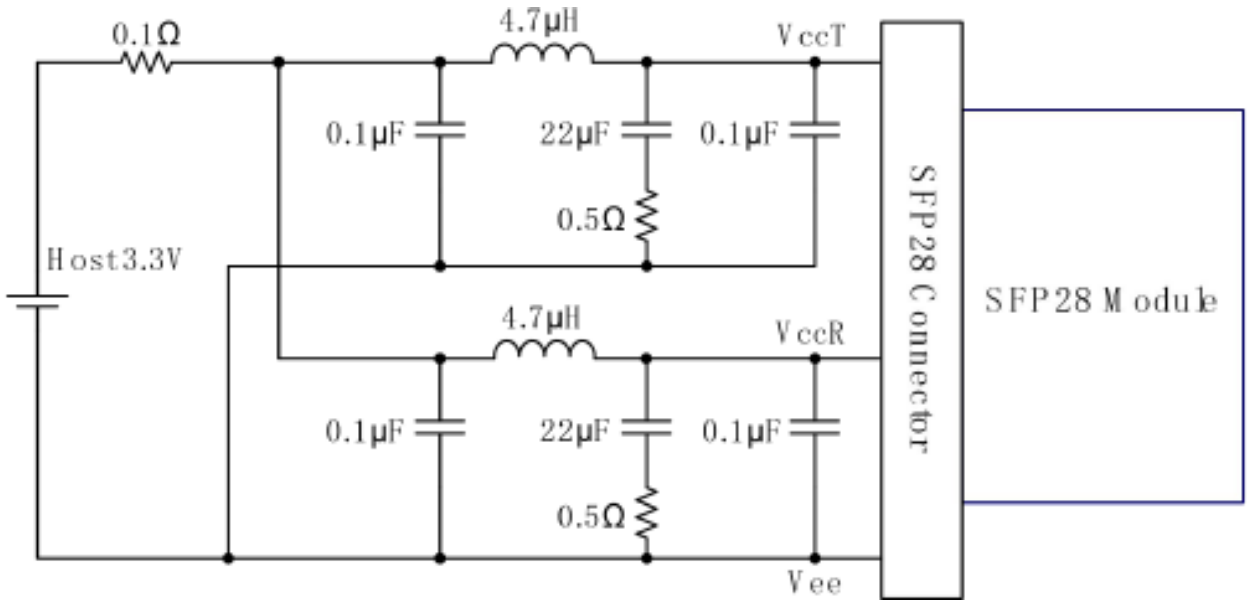
Notes:

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 4.7KΩ to 10KΩ pull-up resistor to Host_Vcc.
3. This input is internally biased high with a 4.7KΩ to 10KΩ pull-up resistor to VccT.
4. 2-Wire Serial Interface Clock and Data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to Host_Vcc.
6. Rate select can also be set through the 2-wire bus in accordance with SFF-8472 v. 12.1. Rx Rate Select is set at Bit 3, Byte 110, and Address A2h, and Tx Rate Select is set at Bit 3, Byte 118, Address A2h.
   Note: Writing a “1” selects maximum bandwidth operation. Rate select is the logic OR of the input state of Rate Select Pin and 2-wire bus.



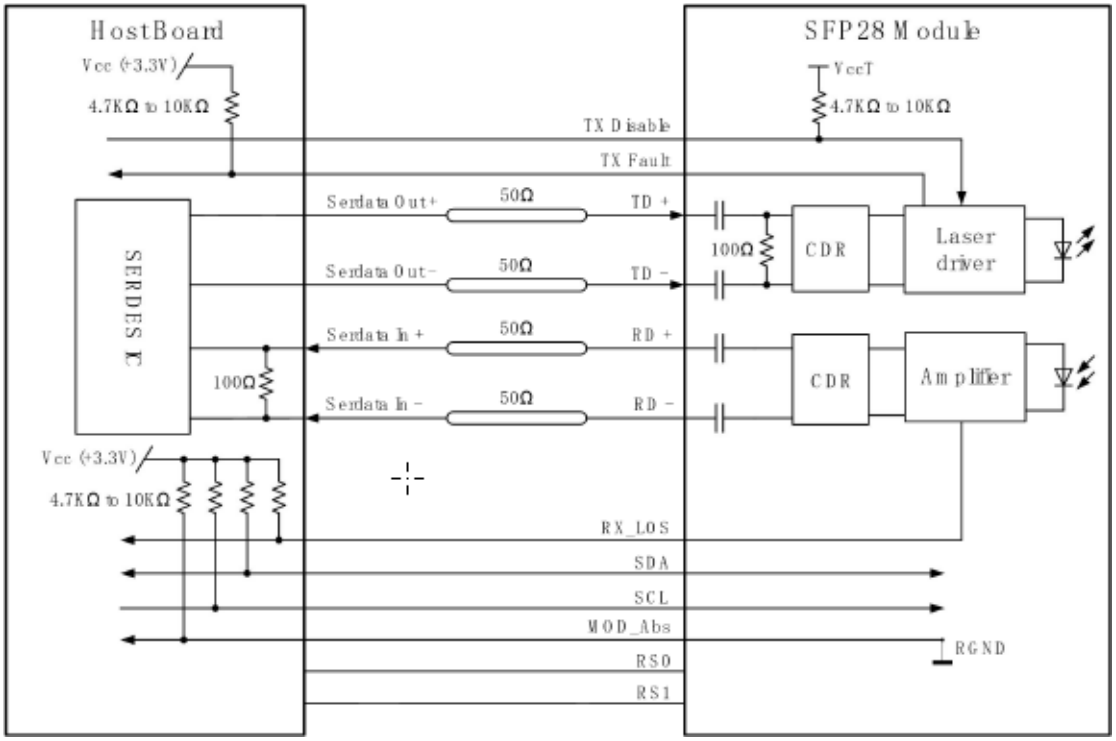
Host PCB SFP28 pad assignment

Recommended Host Board

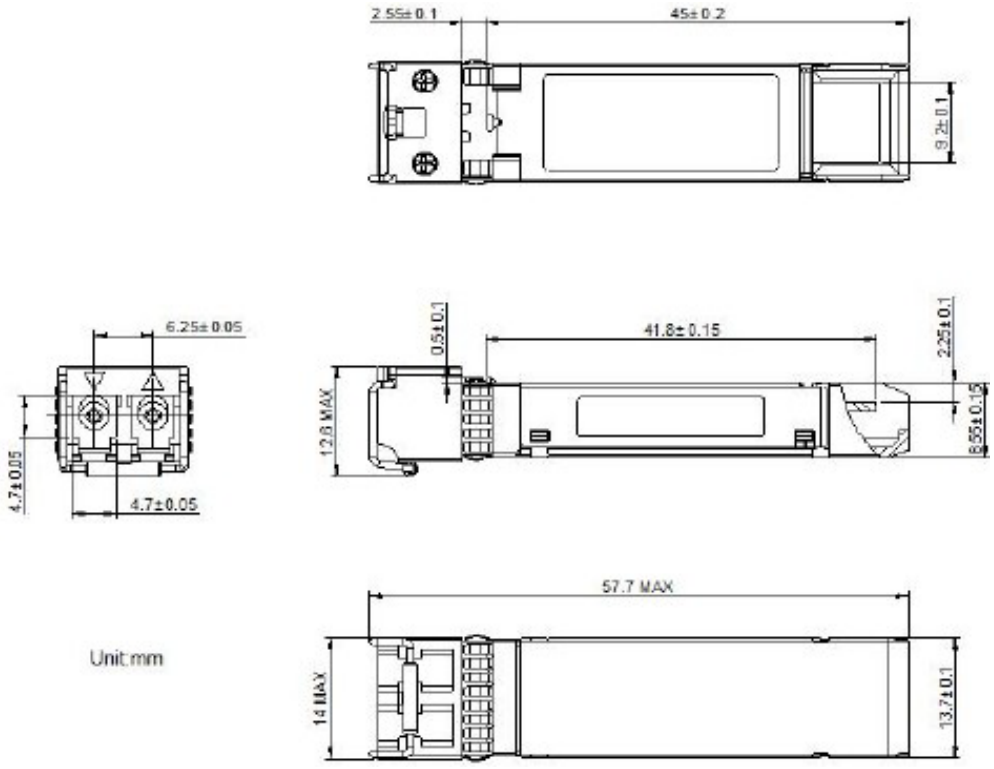


Recommended Host Board Power Supply Filter Network

Recommended Application Interface Block Diagram



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.