



S28130102R2FAAX

Cisco® SFP-10/25G-LR-I Compatible 10/25GBase-LR-S SFP28 Transceiver (SMF, 1310nm, 10km, LC, DOM, -40 to 85C)

Product Description

This Cisco® SFP-10/25G-LR-I Compatible SFP28 transceiver provides 25GBase-LR throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is also capable of withstanding rugged environments and can operate at temperatures between -40 to 85C. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. 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:

- PIN photodiode receiver with limiting amplifier
- Up to 10 km transmission length (LR)
- Compliant to SFP28 SFF standards
- 1310nm un-cooled, direct modulation laser
- Positive power supply lines: 3.3 V
- Data rate of up to 25.781Gbps
- Hot-Pluggable
- LC-Duplex Optical Receptacle
- RoHS Compliant and Lead-Free
- Operating Temperature: -40 to 85 Celsius



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	V _{cc}	-0.5		4.0	V	
Storage Temperature	T _S	-40		85	°C	
Operating Case Temperature	T _c	-40	25	85	°C	
Relative Humidity	RH	5		95	%	
Data Rate			24.33 25.78		Gbps	
Bit Error Rate	BER			5×10 ⁻⁵		1
Supported Link Length on 9/125um SMF, 25.78GB/s	L		10		km	2

Notes:

1. Tested with PRBS 2³¹-1 test pattern for 25.78GBps operation.
2. Distances are based on FC-P1-6 Rev 3.1 and IEEE 802.3 standards with FEC.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage		V _{cc}	3.135	3.3	3.465	V	
Module Supply Current		I _{cc}			450	mA	
Power Dissipation		P _D			1500	mW	
Data Rate		BR		25.78			
Transmitter							
Input Differential Impedance		Z _{IN}		100		Ω	
Differential Data Input Swing		V _{in,pp}	180		700	mVp-p	
TX Fault	Transmitter Fault	V _{OH}	2.0		Host_V _{cc}	V	
	Normal Operation	V _{OL}	0		0.8	V	
TX Disable	Transmitter Disable	V _{IH}	2.0		Host_V _{cc}	V	T
	Transmitter Enable	V _{IL}	0		0.8	V	
Receiver							
Output Differential Impedance		Z _{OUT}		100		Ω	
Differential Data Output Swing		V _{OUT,pp}	300		850	mVp-p	1
Data Output Rise Time/Fall Time		T _r /T _f	15			ps	2
RX_LOS	Loss of Signal (LOS)	V _{OH}	2.0		Host_V _{cc}	V	3
	Normal Operation	V _{OL}	0		0.8	V	3

Notes:

- Internally AC coupled but requires an external 100Ω differential load termination.
- 20-80%
- 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	P _o	-5		+2	dBm	1
Extinction Ratio	ER	3.5			dB	
Center Wavelength Range	λ _c	1295	1310	1325	nm	
Transmitter Dispersion Penalty	TDP			2.7	dB	
Spectral Width	Δλ			1	nm	2
Optical Rise/Fall Time @25.78GBps	T _r /T _f	15			ps	3
Optical Return Loss Tolerance	ORLT			12	dB	
P _{out} @TX_Disable Asserted	P _{off}			-30	dBm	
Receiver						
Center Wavelength	λ _c	1260	1310	1370	nm	
Receiver OMA Sensitivity	ROMA			-12	dBm	4
Receiver Overload (P _{avg})	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:

- Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulation.
- 20dB spectral width.
- Unfiltered, 20-80%.
- Measured with PRBS 2³¹-1 at 5x10⁻⁵ BER.

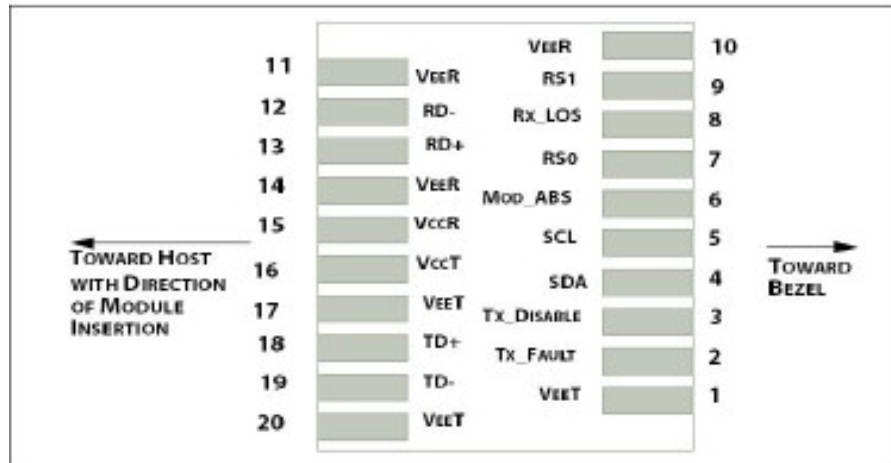
Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground.	1
2	TX_Fault	Transmitter Fault. LVTTTL-O. "High" indicated a fault condition.	2
3	TX_Disable	Transmitter Disable. LVTTTL-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. LVTTTL-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:

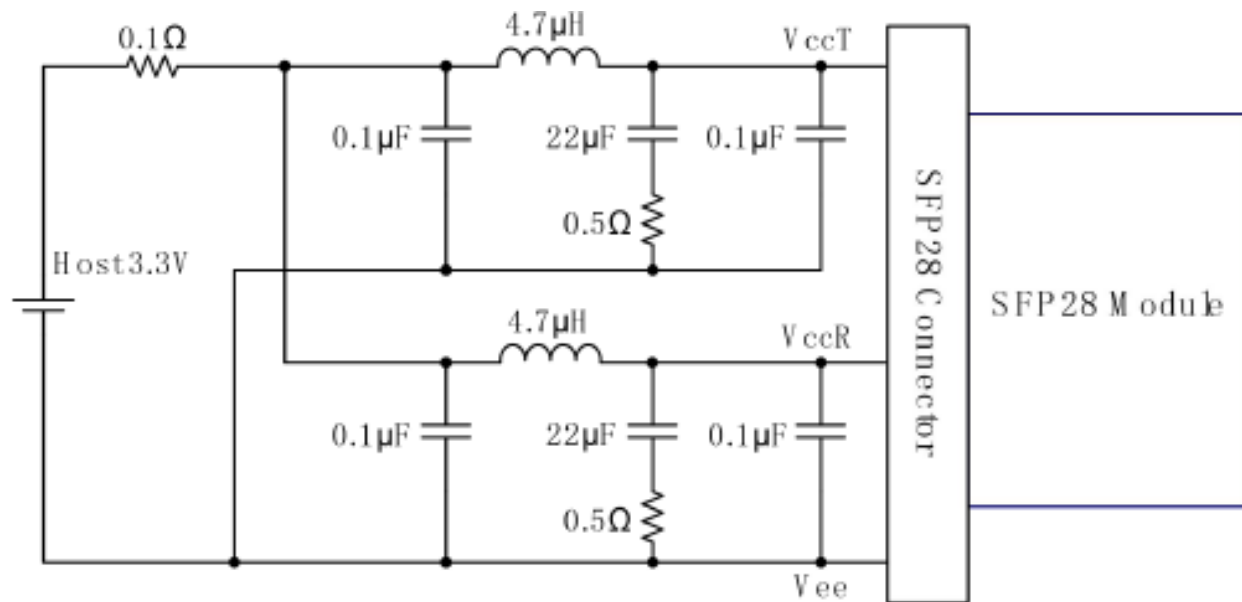
1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to Host_Vcc.
3. This input is internally biased high with a 4.7KΩ to 10KΩ pull-up resistor to VccT.
4. 2-Wire Serial Interface Clock 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.



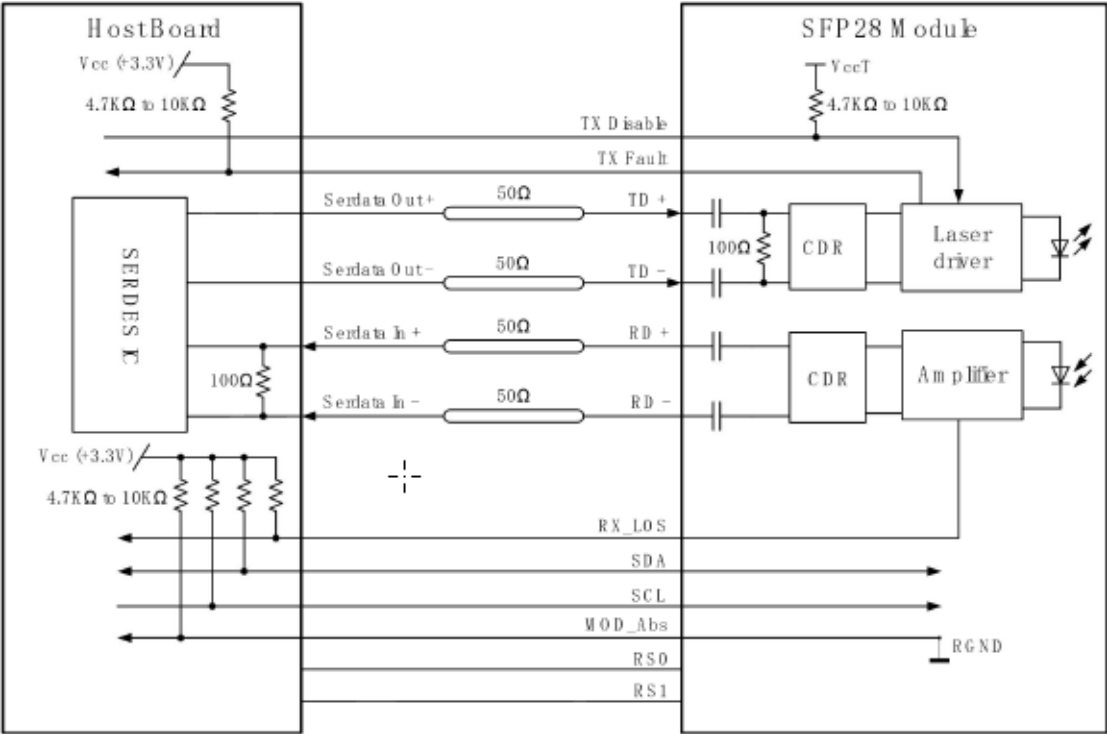
Host PCB SFP28 pad assignment

Recommended Host Board

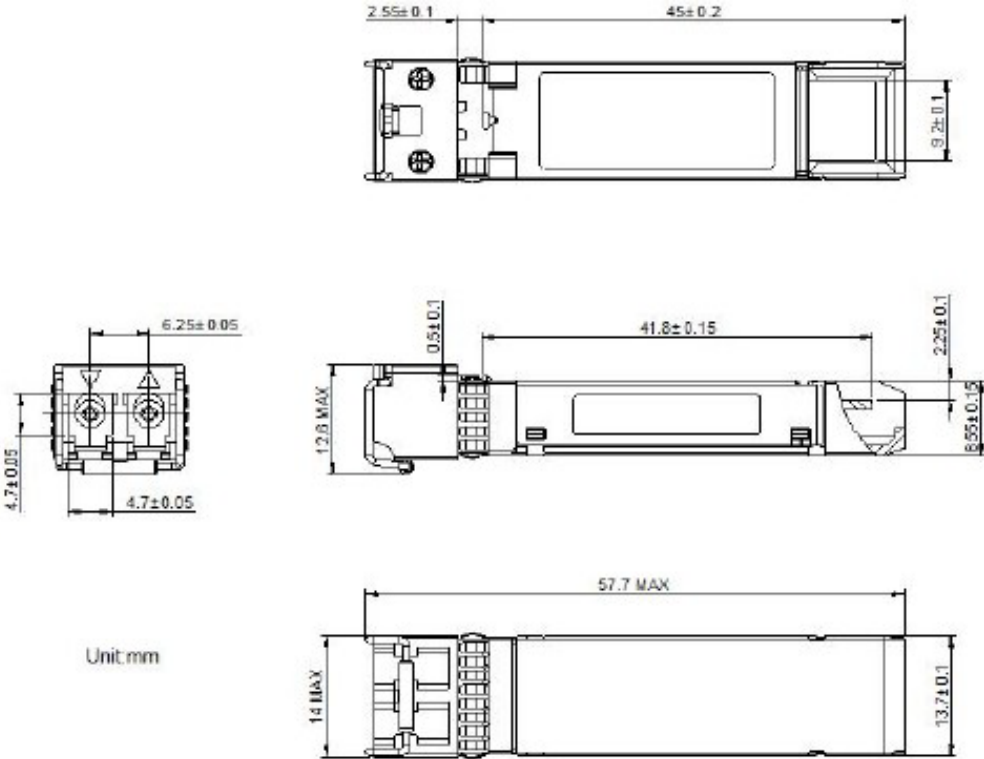


Recommended Host Board Power Supply Filter Network

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.

