



S2813002250N000

MSA 25GBase-CLR SFP28 Transceiver (SMF, 1310nm, 2km, LC, DOM, No FEC)

Product Description

This Industry Standard SFP28 transceiver provides 25GBase-CLR throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Industry Standard 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:

- Up to 25.78125Gbd Bi-Directional Data Links
- Electrical Interface Specifications Per SFF-8431
- Built-In Dual CDR with Bypass Control
- 1.5W Maximum Power Consumption with Established Link
- Class 1 Laser Safety Certified
- SFP28 MSA Package with Duplex Connector
- Up to 2km on 9/125um SMF with No FEC
- Uncooled 1310 DFB Laser
- Operating Temperature: 0 to 70 Celsius
- Power Supply Lines: 3.3V
- RoHS Compliant and Lead-Free



Applications:

- 25GBase 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.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V _{CC}	-0.5		4	V	1
Storage Temperature	T _{stg}	-40		85	°C	
Operating Case Temperature	T _c	0	25	70	°C	
Relative Humidity	RH	5		95	%	
Signaling Rate			25.78125		GBd	
Signaling Rate Variation		-100		100	ppm	

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage		V _{CC}	3.14	3.3	3.47	V	
Module Supply Current		I _{CC}			478	mA	
Power Dissipation		P _{DISS}			1500	W	
Transmitter							
Input Differential Impedance		Z _{IN}		100		Ω	
Differential Data Input Swing		V _{IN,pp}	180		700	mVp-p	
Tx_Fault	Transmitter Fault	VOH	2		Host_Vcc	V	
	Normal Operation	VOL	0		0.8	V	
Tx_Disable	Transmitter Disable	VIH	2		Host_Vcc	V	
	Transmitter Enable	VIL	0		0.8	V	
Receiver							
Output Differential Impedance		Z _{OUT}		100		Ω	
AC Common-Mode Output Voltage		V _{OUT,rms}			17.5	mV	
Differential Output Voltage		V _{OUT,pp}	300		900	mVp-p	1
Eye Width			0.57			UI	
Differential Eye Hight			228			mV	
Data Output Rise/Fall Time		Tr/Tf	12			ps	2
Rx_LOS	Loss of Signal (LOS)	VOH	2.0		Host_Vcc	V	3
	Normal Operation	VOL	0		0.8	V	3

Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.
2. 20-80%.
3. LOS is an open collector output and 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	
Optical Modulation Amplitude	OMA	-4		2.2	dB	
Center Wavelength Range	λ_C	1295	1310	1325	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Spectral Width	$\Delta\lambda$			1	nm	2
Launch Power in OMA Minus TDP		-5			dBm	
Transmitter and Dispersion Penalty	TDP			2.7	dB	
Optical Return Loss Tolerance	ORLT			20	dB	
Transmitter Reflectance				-26	dB	
POUT @Tx_Disable Asserted	Poff			-20	dBm	
Receiver						
Center Wavelength	λ_C	1260	1310	1370	nm	
Receiver Sensitivity	RxSens			-8	dBm	3
Damage Threshold		3			dBm	
Receiver Overload (Pavg)	POL	2			dBm	
Optical Return Loss	ORL	26			dB	
LOS De-Assert	LOSD			-16	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dB	
Receiver Reflectance				-26	dBm	

Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. 20dB spectral width.
3. Measured with PRBS31 at $1E^{-12}$ BER.

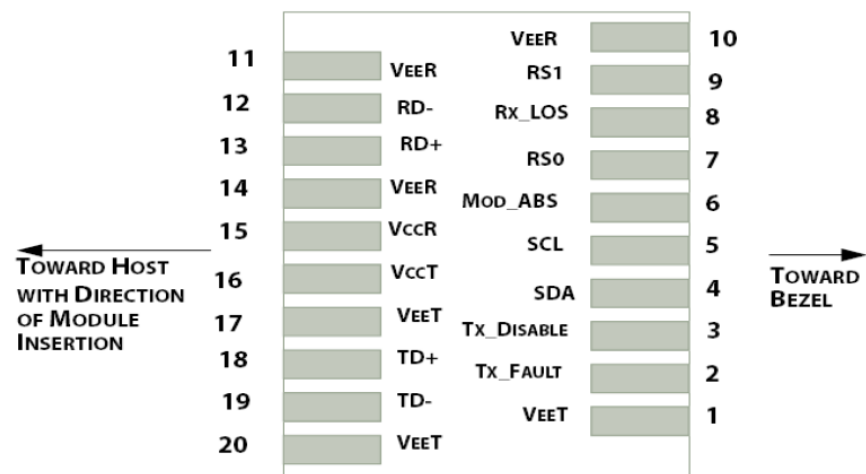
Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground.	1
2	Tx_Fault	Transmitter Fault. LVTTTL-O. "High" indicates 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 the VeeT or VeeR in the module.	5
7	RS0	Hardware Tx Rate Select Pin.	6
8	Rx_LOS	Receiver Loss of Signal. LVTTTL-O.	2
9	RS1	Hardware Rx Rate Select Pin.	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

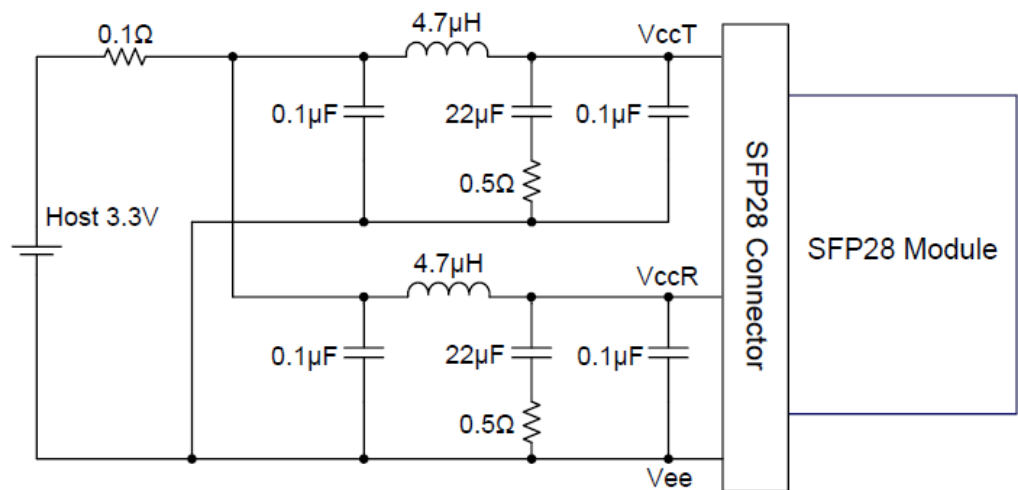
Notes:

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 the Host_Vcc.
3. This input is internally biased "high" with a 4.7kΩ to 10kΩ pull-up resistor to the 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 the 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, and Address A2h.
Note: Writing a "1" selects maximum bandwidth operation. Rate Select is the logic OR of the input state of the Rate Select Pin and 2-wire bus.

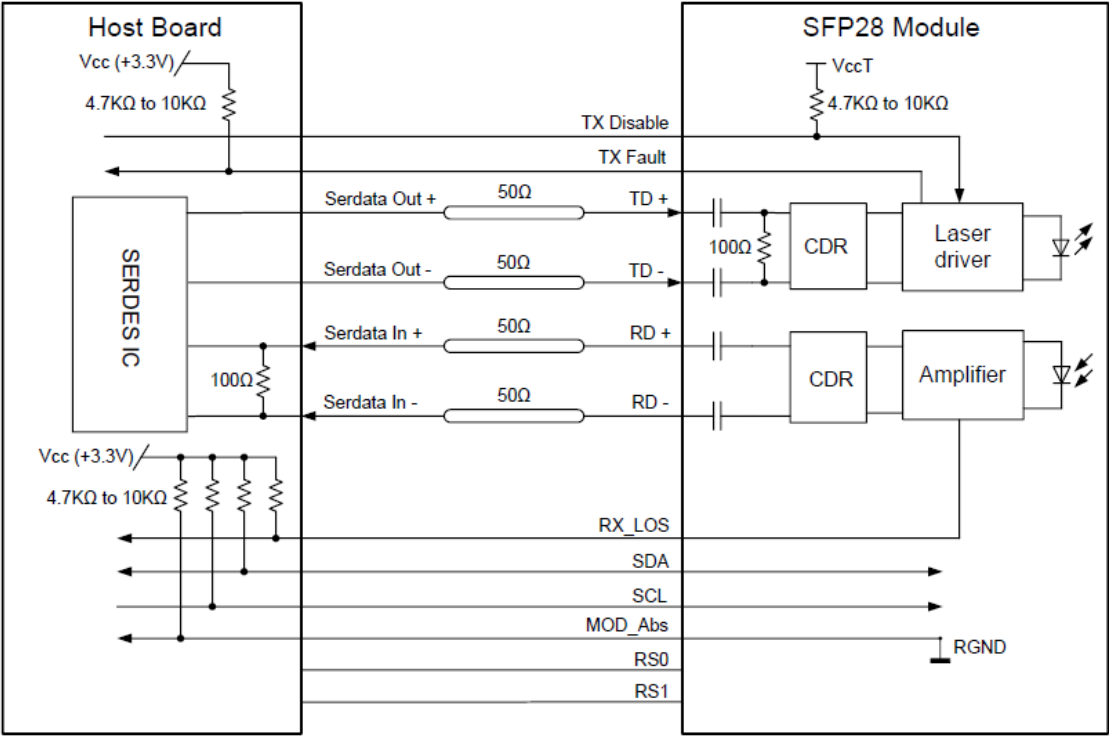
Electrical Pin-Out Details



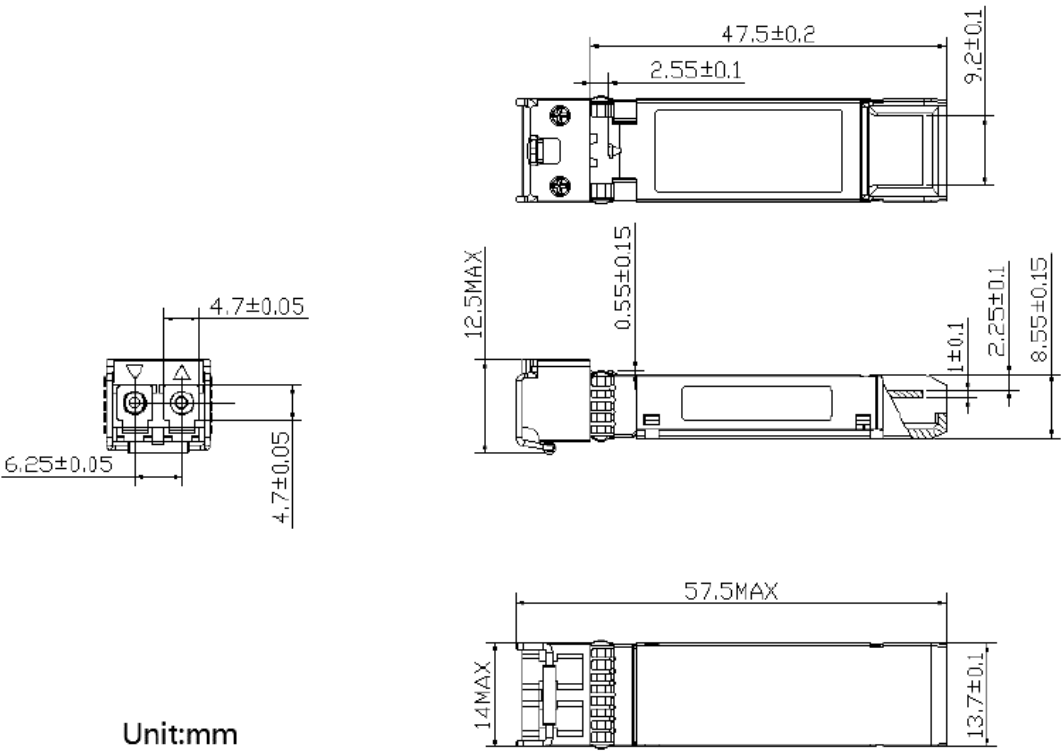
Host Board Power Supply Filter Network



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.

