FN-TRAN-SFP28-LR-OPC

Fortinet® FN-TRAN-SFP28-LR Compatible TAA 25GBase-LR SFP28 Transceiver (SMF, 1310nm, 10km, LC, DOM)

Features

- SFF-8402 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 25GBase Ethernet
- Access and Enterprise

Product Description

This Fortinet® FN-TRAN-SFP28-LR 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 can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Fortinet®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Supply Voltage	Vcc	-0.5		4.0	V	
Storage Temperature	TS	-40		85	°C	
Operating Case Temperature	Тс	0	25	70	°C	
Relative Humidity	RH	5		95	%	
Data Rate	BR		25.78		Gb/s	
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 a PRBS 231-1 test pattern for 25.78Gb/s operation.
- 2. Distances are based on FC-PI-6 Rev 3.1 and IEEE 802.3 standards.

Electrical Characteristics

Parameter		Symbol	Min	Тур	Max	Unit	Notes
Supply Voltage		Vcc	3.135	3.3	3.465	V	
Data Rate				25.78		GB/s	
Module Supply Current		Icc			450	mA	
Power Dissipation		PD			1500	mW	
Transmitter							
Input Differential Impedance		ZIN		100		Ω	
Differential Data Input Swing		VIN, P-P	180		700	mVP-P	
TX_FAULT	Transmitter Fault	VOH	2.0		VCCHOST	V	
	Normal Operation	VOL	0		0.8	V	
TX_DISABLE	Transmitter Disable	VIH	2.0		VCCHOST	V	
	Transmitter Enable	VIL	0		0.8	V	
Receiver							
Output Differential Impedance		ZO		100		Ω	
Differential Data Output Swing		VOUT, P-P	300		850	mVp-p	1
Data Output Rinse Time, Fall Time		tr, tf	15			Ps	2
Rx_LOS	Loss of Signal (LOS)	VOH	2.0		VCCHOST	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. Should be pulled up with 4.7Ω on the host board.

Optical Characteristics

Parameter	Symbol	Min	Тур	Max	Unit	Notes	
Transmitter							
Launch Optical Power	Ро	-5		2	dBm	1	
Extinction Ratio	ER	4			dB		
Center Wavelength Range	λc	1295	1310	1325	nm		
Optical Modulation Amplitude	OMA	631			uW		
Transmitter Dispersion Penalty	TDP			2.7	dB		
Spectral Width	Δλ			1	nm	2	
Optical Rise/Fall Time @25.78 Gb/s	tr/tf			15	ps	3	
Optical Return Loss Tolerance	ORLT			12	dB		
Pout @TX-Disable Asserted	POFF			-30	dBm	1	
Receiver							
Center Wavelength	λc	1260	1310	1370	nm		
Receiver OMA Sensitivity	RxSENS			-11.4	dBm	4	
Receiver Overload (P avg)	POL	2			dBm		
Optical Return Loss	ORL	26			dB		
LOS De-Assert	LOSD			-13	dBm		
LOS Assert	LOSA	-30			dBm		
LOS Hysteresis		0.5			dB		

Notes:

- 1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
- 2. 20dB spectral width.
- 3. Unfiltered, 20-80%.
- 4. Measured with PRBS 2³¹-1 at 5×10⁻⁵ BER

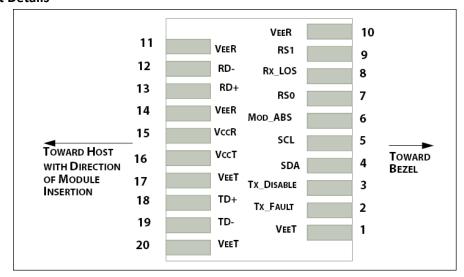
Pin Descriptions

Pin	Symbol	Name/Descriptions	Notes
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault (LVTTL-O) - High indicates a fault condition	2
3	TX_Disable	Transmitter Disable (LVTTL-I) – High or open disables the transmitter	3
4	SDA	Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2)	4
5	SCL	Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1)	4
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module	5
7	RSO		6
8	RX_LOS	Receiver Loss of Signal (LVTTL-O)	2
9	RS1		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	Receiver Power - +3.3V	
16	VccT	Transmitter Power - +3.3 V	
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

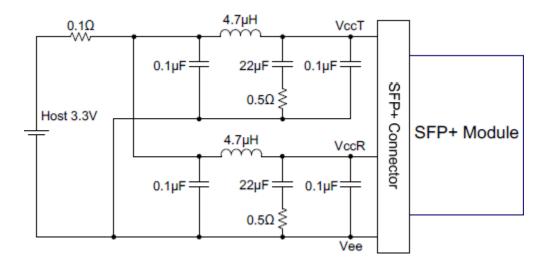
Notes:

- 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 $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccHost.
- 3. This input is internally biased high with a $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccT.
- 4. Two-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 $4.7K\Omega$ to $10K\Omega$ pull-up resistor to VccHost.
- 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, Address A2h. 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.

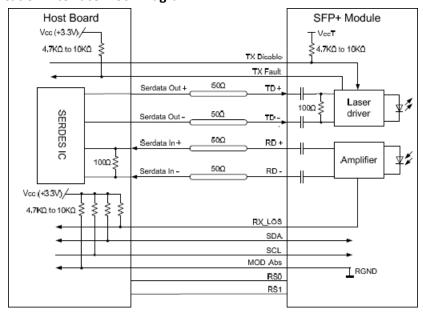
Electrical Pin-Out Details



Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram



Mechanical Specifications

