

SFP-10GBASE-ZR-100-I-CN2-OPC

Ciena® Compatible TAA 10GBase-ZR SFP+ Transceiver (SMF, 1550nm, 100km, LC, DOM, -40 to 85C)

Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 10GBase-ZR Ethernet
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Ciena® compatible SFP+ transceiver provides 10GBase-ZR throughput up to 100km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It is capable of withstanding rugged environments and can operate at temperatures between -40 and 85C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Ciena®. 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.

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	V _{CC}	-0.5		4.0	V
Storage Temperature	T _S	-40		85	°C
Operating Case Temperature	T _C	-40		85	°C
Operating Humidity	RH	5		95	%
Receiver Power	R _{MAX}			-7.0	dBm
Data Rate	DR		10.3125		Gbps

Electrical Characteristics (TOP=25°C, V_{CC}=3.3Volts)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		V _{CC}	3.135	3.3	3.465	V	
Power Dissipation		P _{DISS}			1500	mW	
Transmitter							
Differential data input swing		V _{in,p-p}	180		700	mVp-p	
Input differential impedance		Z _{in}		100		Ω	
TX_Fault	Transmitter Fault	V _{OH}	2.0		V _{CC_HOST}	V	
	Normal Operation	V _{OL}	0		0.8	V	
TX_Disable	Transmitter Disable	V _{IH}	2.0		V _{CC_HOST}	V	
	Transmitter Enable	V _{IL}	0		0.8	V	
Receiver							
Differential data output swing		V _{out, pp}	300		850	mV	1
Output differential impedance		Z _o		100		Ω	
Data Output Rise Time, Fall Time		t _r , t _f	28				2
RX_LOS	Loss of Signal (LOS)	V _{OH}	2.0		V _{CC_HOST}	V	3
	Normal Operation	V _{OL}	0		0.8	V	3

Notes:

1. Internally AC coupled, but requires a external 100Ω differential load termination.

2. 20–80%.
3. LOS is an open collector output. Should be pulled up with 4.7K Ω on the host board.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power	P _o	1		+4.0	dBm	1
Optical Extinction Ratio	ER	9			dB	2
Optical Wavelength	Tλ	1530	1550	1565	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Transmitter and Dispersion Penalty	TDP			3.0	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Optical Return Loss Tolerance	ORLT			21	dB	
Pout @TX-Disable Asserted	P _{off}			-30	dBm	1
Eye Diagram	IEEE Std 802.3-2005 10Gb Ethernet 10GBASE-ZR compatible					
Receiver						
Receiver Sensitivity (average)	S			-26	dBm	3
Receiver overload	P _{ol}	-7.0			dBm	3
Receiver wavelength	Rλ	1530		1565	nm	
Optical Return Loss	ORL	26			dB	
LOS De-Assert	LOS _D			-27	dBm	
LOS Assert	LOS _A	-38			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. The optical power is launched into 9/125 μ m SMF.
2. Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.
3. Measured with PRBS 2³¹-1 test pattern, 10.3125Gb/s, BER<10⁻¹².
4. Comply with IEEE 802.3-2005.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTT-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0. Not used	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not used	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resistor in the range 4.7K Ω to 10K Ω . Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx_Disable is an input contact with a 4.7K Ω to 10K Ω pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc_Host with a resistor in the range from 4.7K Ω to 10K Ω . Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



Pin-out of connector Block on Host board

Recommended Circuit Schematic



Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



EEPROM Information

EEPROM memory map specific data field description is as below:

