160-9203-900-C

Ciena® 160-9203-900 Compatible TAA OTU2/OC192/10GBase-LR Mult-Rate SFP+ Transceiver (SMF, 1310nm, 10km, LC, DOM)

Features:

- Operating Data Rate up to 10.31Gbps
- 1310nm DFB-LD Transmitter
- Single 3.3V Power Supply and TTL Logic Interface
- Hot-Pluggable Duplex LC Connector Interface
- Power Dissipation:
- Operating Temperature 0 to 70 Celsius
- Compliant with MSA SFP+ Specification SFF-8431
- Compliant with IEEE802.3ae 10GBASE-LR/LW
- RoHS Compliant and Lead-Free

Applications:

- 10GBase-LR at 10.31Gbps
- 10GBase-LW at 9.95Gbps
- 8x/10x Fibre Channel
- Access, Datacenter and Enterprise
- Mobile Fronthaul CPRI/OBSAI

Product Description

This Ciena® 160-9203-900 compatible SFP+ transceiver provides 10GBase-LR throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Ciena® 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. It is built to meet or exceed the specifications of Ciena®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

TAA COMPLIANT

Rev. 080423

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage		-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Relative Humidity	RH			95	%
Baud Rate	10GBASE-LR		10.31		Gbps
	10GBASE-LW		9.95		Gbps

Notes:

1. Exceeding any one of these values may destroy the device immediately.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.15	3.30	3.45	V	
Power Supply Current		Icc			300	mA	
Transmitter							
LVPECL Differential Inputs		VIN	150		1200	mVp-p	1
Input AC Common-Mode Voltage			0		25	mV	RMS
Input Differential Impedance		ZIN	85	100	115	Ω	2
Differential Input S-Parameter		SDD11			-10	dB	
Differential to Common-Mode Conversion		SCD11			-10	dB	
Tx_Disable Assert Time		t_off		10		us	
Tx_Disable Negate Time		t_on		1		ms	
Tx_Disable	**High**		2		Vcc	V	
	Low		0		0.8	V	
Tx_Fault	**High**		2		Vcc+0.3	V	3
	Low		0		0.8	V	4
Receiver							
CML Differential Outputs		VOUT	350		700	mVp-p	1
Output AC Common-Mode Voltage			0		15	mV	RMS
Output Differential Impedance		ZOUT	90	100	110	Ω	
Differential Output S-Parameter		SD22			-10	dB	
Rx_LOS	**LOS**	VOH	2		Vcc+0.3		
	Normal	VOL	0		0.8		

MOD_DEF (0.2)	VOH	2			V	With Serial ID
	VOL	0		0.5	V	With Serial ID

Notes:

1. AC Coupled. LVPECL Logic. Internally AC Coupled.
2. RIN>100kΩ @DC.
3. Io=400uA. Host_Vcc.
4. Io=-4.0mA.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
9μm Core Diameter SMF	L		10		km	
Data Rate		0.6	10.31		Gbps	
Transmitter						
Center Wavelength	λC	1270	1310	1355	nm	
Spectral Width (RMS)	Δλ			1	nm	
Average Output Power	POUT	-8.2		0.5	dBm	1
Extinction Ratio	ER	3.5			dB	
Average Power of Off Transmitter	Poff			-30	dBm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter Dispersion Penalty	TDP			3.2	dB	
Tx_Disable Time to Start Reset	t_reset	10			us	
Time to Initialize (Includes Reset of Tx_Fault)	t_init			300	ms	
Tx_Fault from Fault to Assertion	t_fault			100	us	
Total Jitter	TJ			0.28	UI (p-p)	
Data-Dependent Jitter	DDJ			0.1	UI (p-p)	
Uncorrelated Jitter	UJ			0.023	RMS	
Receiver						
Center Wavelength	λC	1260		1600	nm	
Receiver Sensitivity	Pmin			-14.4	dBm	2
Receiver Overload	Pmax	0.5			dBm	
Return Loss	ORL			-12		
LOS De-Assert	LOSD			-16	dBm	
LOS Assert	LOSA	-28			dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Output is coupled into a 9/125um SMF. The -4.7dBm is reference IEEE 802.3ae, the typical value is -1dBm.
2. Minimum average optical power measured at the BER less than 1E-12, back to back. The measure pattern is PRBS 231-1.

Pin Descriptions

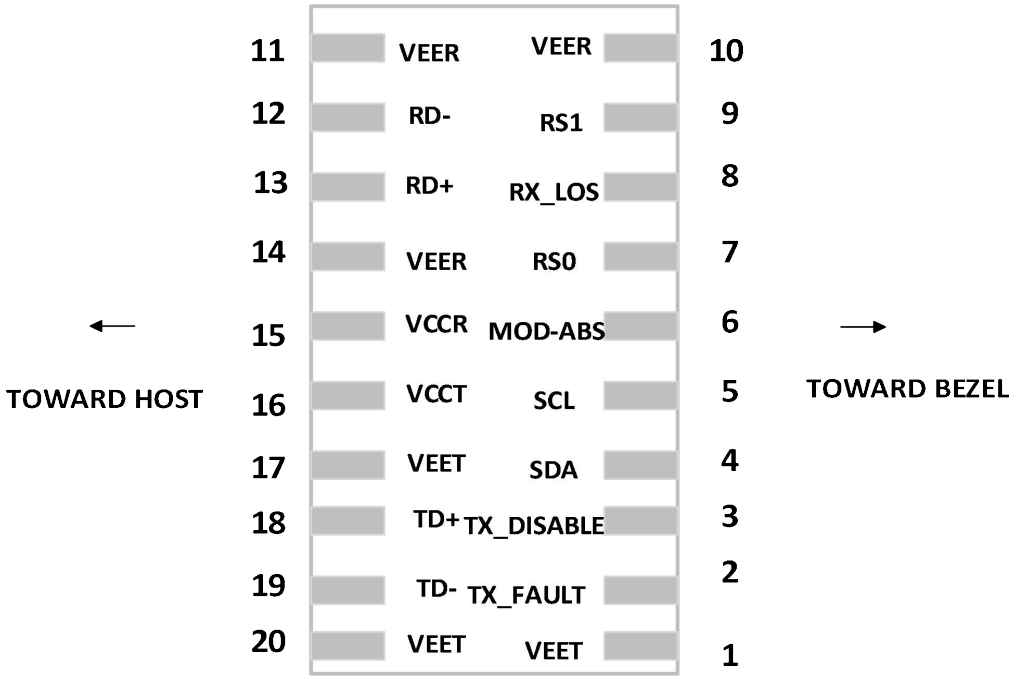
Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. LVTTL-O.	2
3	Tx_Disable	Transmitter Disable. Laser output disabled on "high" or "open." LVTT-I.	3
4	SDA	2-Wire Serial Interface Data (Same as MOD-DEF2 in INF-8074i). LVTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTL-I.	
6	MOD_ABS	Module Absent. Connect to the VeeT or VeeR in the module.	4
7	RS0	Rate Select 0. Not Used.	5
8	LOS	Loss of Signal Indication. "Logic 0" indicates normal operation. LVTTL-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 Host_Vcc with resistor in the range 4.7kΩ to 10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contact has voltage exceeding module VccT/R+0.5V.
3. Tx_Disable is an input contact with a 4.7kΩ to 10kΩ pull-up resistor to the VccT inside the module.
4. MOD_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contact up to Host_Vcc with a resistor in the range from 4.7kΩ to 10kΩ. MOD_ABS is asserted “high” when the SFP+

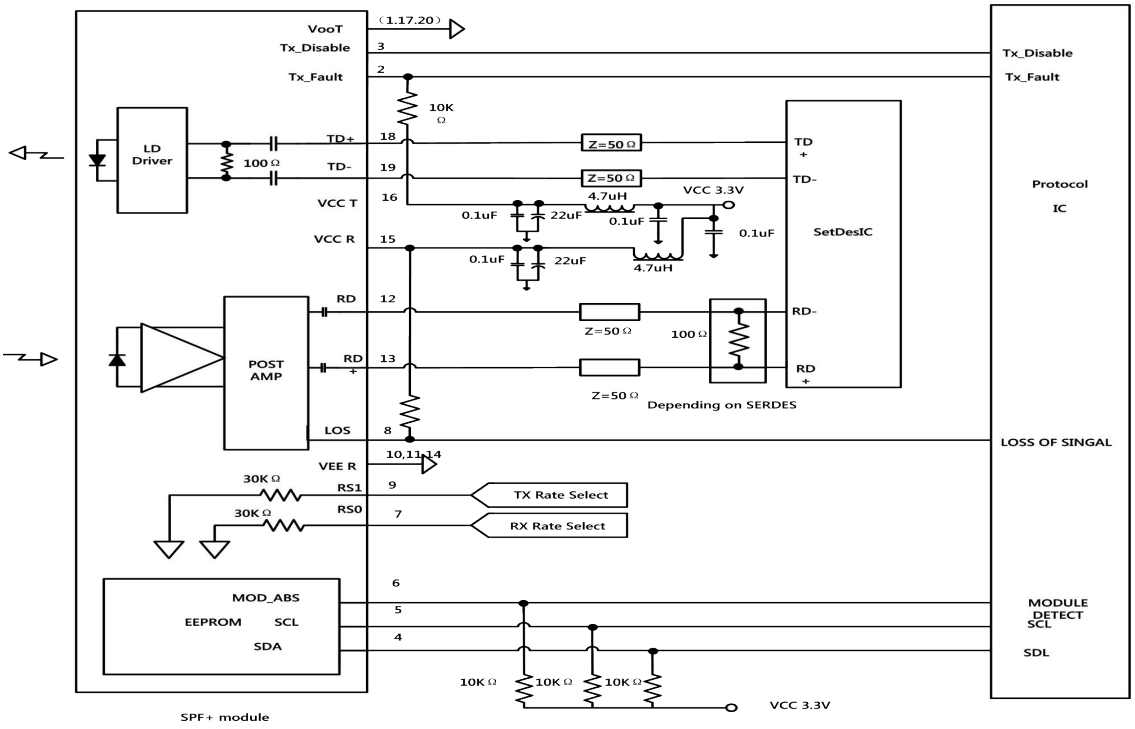
module is physically absent from a host slot.

5. Internally pulled down per SFF-8431.



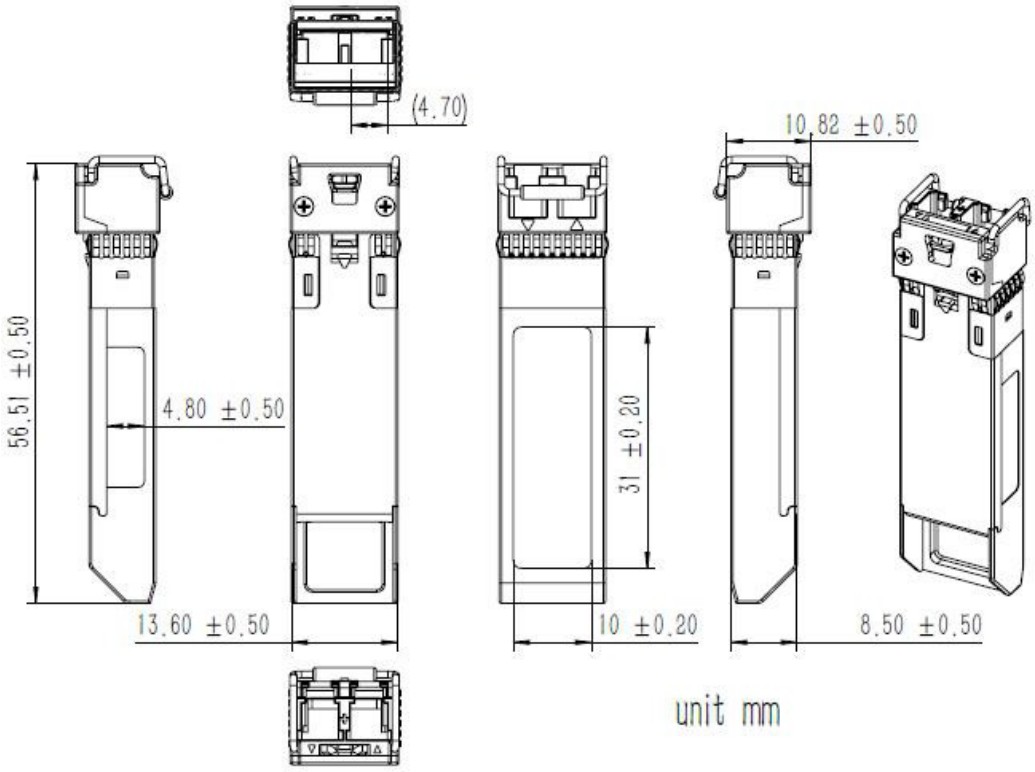
Pin-Out of Connector Block on the Host Board

Recommended Circuit Schematic



Mechanical Specifications

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



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

Contact Information

ProLabs US

Email: sales@prolabs.com
Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com
Telephone: +44 1285 719 600