

SFP-1000BASE-EX55-C

MSA and TAA 1000Base-EX SFP Transceiver (SMF, 1550nm, 40km, LC, DOM)

Features:

- INF-8074 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:

- 1000Base Ethernet
- Access and Enterprise

Product Description

This MSA compliant SFP transceiver provides 1000Base-EX throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure 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.

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.")



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	Vcc	-0.5		4.0	V
Storage Temperature	TS	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Humidity	RH	5		95	%
Data Rate (Gigabit Ethernet)			2.48		Gbps
Data rate (Fibre Channel)			1.063		Gbps
50/125µm MMF	Lmax1			40	km

Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.13	3.30	3.47	V	
Power Supply Current		Icc			250	mA	
Transmitter							
Input differential impedance		Rin		100		Ω	1
Single ended data input swing		Vin, pp	250		1200	mV	
TX Disable	High		Vcc-1.3		Vcc	V	
	Low		Vee		Vee+0.8	V	
TX Fault	High		Vcc-0.5		Vcc	V	
	Low		Vee		Vee+0.5	V	
Receiver							
Single ended data output swing		Vout, pp	300	400	800	mV	2
Data output rise time		tr			175	ps	3
Data output fall time		tf			175	ps	3
LOS-High			Vcc-0.5		Vcc	V	
LOS-Low			Vee		Vee+0.5	V	

Notes:

1. AC coupled.
2. Into 100 ohm differential termination.
3. 20%-80%

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P _o	-5		0	dBm	1
Optical Wavelength	λ	1530	1550	1570	nm	
Spectral Width	σ			0.85	nm	
Optical Rise/Fall Time	t _r /t _f			260	ps	2
Total Jitter	TJ			200	ps	
Optical Extinction Ratio	ER	10			dB	
Receiver						
RX Sensitivity @1.25 Gbs	RXSENS			-25	dBm	3,4
Maximum Receiver Power	RXMAX	0			dBm	
Optical Center Wavelength	λ _C	1270		1600	nm	
LOS De-Assert	LOS _D			-26	dBm	
LOS Assert	LOS _A	-40			dBm	
LOS Hysteresis		0.5		5	dB	

Notes:

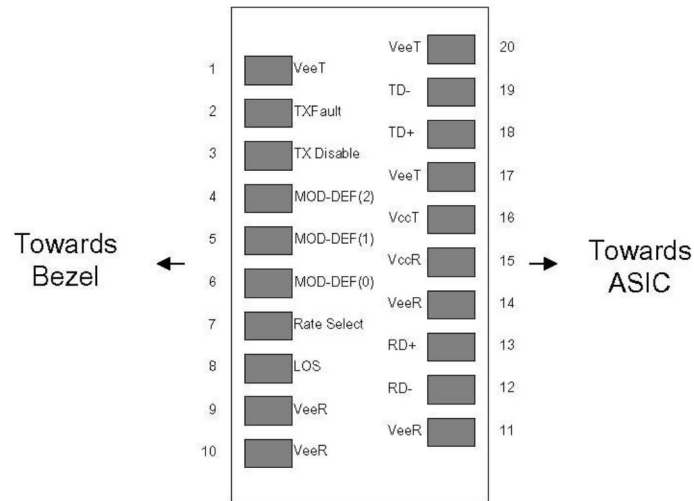
1. Class 1 Laser Safety.
2. Unfiltered, 20%-80%. Complies with OC-3 eye masks when filtered.
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2⁷-1 at 10⁻¹⁰ BER.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1
2	TX Fault	Transmitter Fault.	
3	TX Disable	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF (2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required.	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VeeR	Receiver Ground (Common with Transmitter Ground)	1
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.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
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.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground)	1

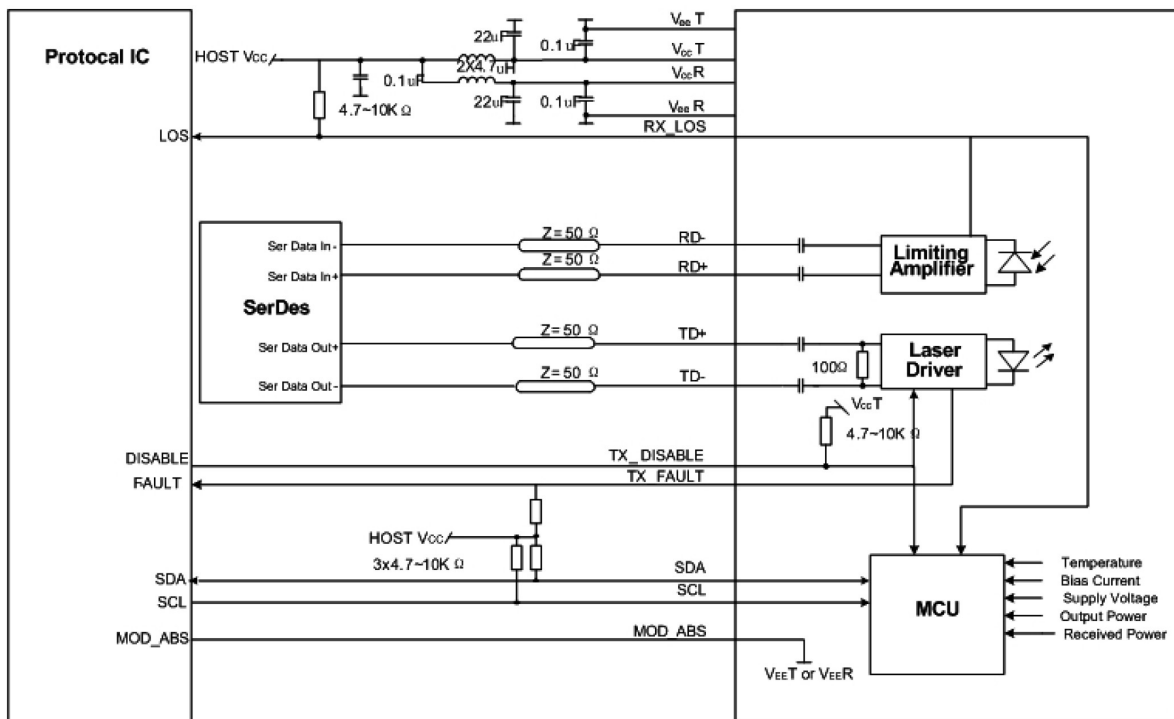
Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable <0.8V.
3. Should be pulled up with 4.7k-10kohms on host board to a voltage between 2.0 V and 3.6V MOD_DEF(0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k-10kohms on a host board to a voltage between 2.0V and 3.6V. Logic 0 indicated normal operation; Logic 1 indicates loss if signal.



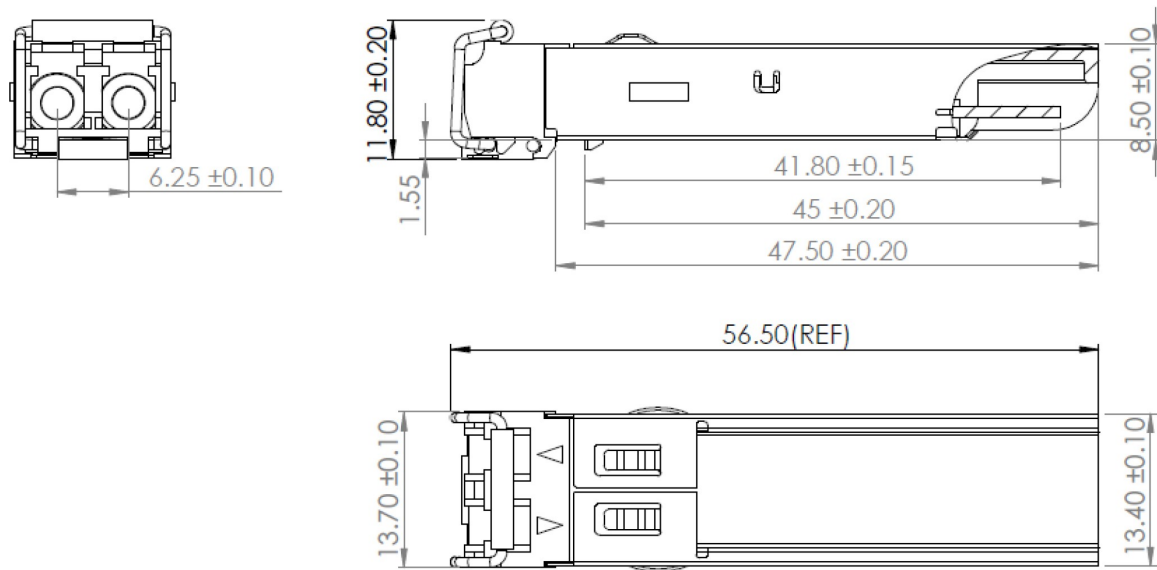
Pin-out of connector Block on Host board

Recommended Circuit Schematic



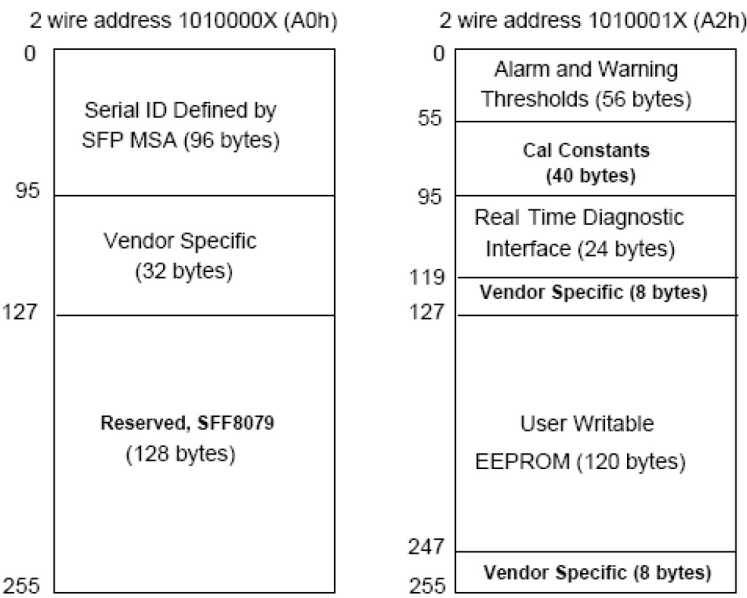
Mechanical Specifications

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:



Digital Diagnostic Monitoring Interface

Parameter	Range	Accuracy	Calibration
Temperature	0°C to 70°C (C)	±3°C	Internal
Voltage	2.97V to 3.63V	±3%	Internal
Bias Current	0mA to 100mA	±10%	Internal
TX Power	-5dBm to 0dBm	±3dB	Internal
RX Power	-34.5dBm to 0dBm	±3dB	Internal

About ProLabs

Our extensive experience comes as standard. For over 20 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 more than 100 optical switching and transport platforms.

A 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 1.6T 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.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. 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.



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