



1G SFP SX Optical Transceiver Datasheet

Overview

The T1 Nexus T1-SFP-1G-SX is a high performance, cost effective module which have a Duplex LC optics interface.

Standard AC coupled CML for high speed signal and LVTTTL control and monitor signals.

The receiver section uses a PIN receiver and the transmitter uses 850 nm VCSEL laser, up to 8dB link budget ensure this module for 1000Base Ethernet 550m application.

Product Features

- Up to 1.25Gb/s Data Links
- Hot-Pluggable
- 850nm VCSEL laser transmitter
- Duplex LC connector
- RoHS compliant and Lead Free
- Up to 550m on 50/125µm MMF
- Single +3.3V Power Supply
- Monitoring Interface Compliant with SFF-8472
- Low power dissipation <1W

Applications

- 1.25 Gb/s 1000Base-SX Ethernet
- 1×Fiber Channel
- Other Optical Link

Ordering Information

Part Number	Description
T1-SFP-1G-SX	SFP GE 850nm MMF optical transceiver with full real-time digital diagnostic monitoring

For more information:

T1Nexus

Address: 4701 Patrick Henry Drive, Bldg. 16, Santa Clara, CA 95054

Toll-free phone number: 1-877-T1Nexus (1-877-816-3987)

Email: sales@t1nexus.com

Regulatory Compliance

Feature	Standard	Performance
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022:2010, Class B	Compatible with standards
Electromagnetic susceptibility (EMS)	EN 55024:2010	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class I laser product

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Storage Temperature	TS	-40		85	°C	
Operating Case Temperature	TOP	0		70	°C	
Max Power Supply Voltage	V _{CC}	-0.3		3.6	V	
Relative Humidity (non-condensation)	RH	0		85	%	
Input Voltage	V _{in}	-0.3		V _{CC} +0.3	V	
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Data Rate	DR		1.25		Gb/s	
Link Distance with MMF	D			550	m	

Optical Characteristic – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks	
Center Wavelength	λ_C	840	850	860	nm		
RMS Spectral Width	λ_{rms}			0.85	nm		
Average Launch Power	PAVG	-9		-3	dBm		
Rise/Fall Time	T _r /T _f			260	ps		
Extinction Ratio	ER	9			dB		
Transmitter Eye Mask		Compliant with IEEE 802.3 standard					

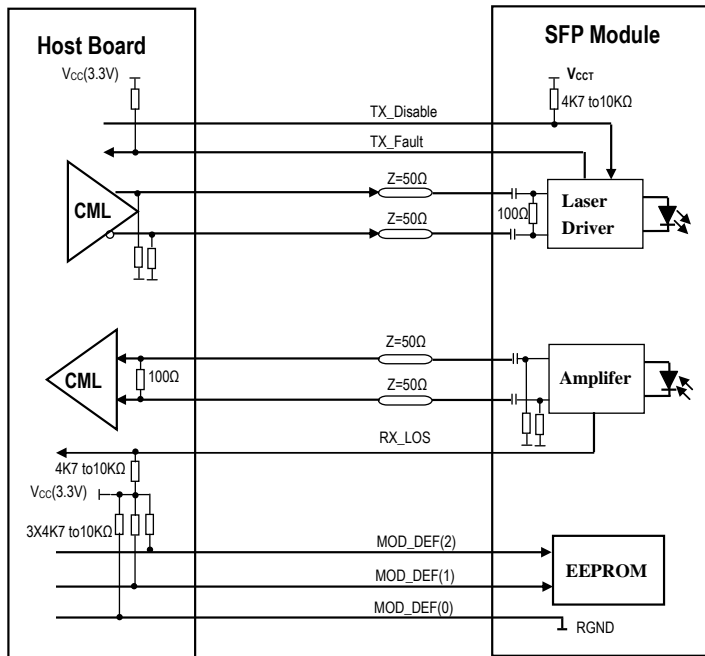
Optical Characteristics – Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Center Wavelength	λ_C	770		860	nm	
Damage Threshold	THd	0			dBm	
Receiver Sensitivity	SEN			-17	dBm	
Signal Loss Assert Threshold	LOSA	-35			dBm	
Signal Loss Deassert Threshold	LOSD			-18	dBm	
LOS Hysteresis	LOSH	0.5			dB	

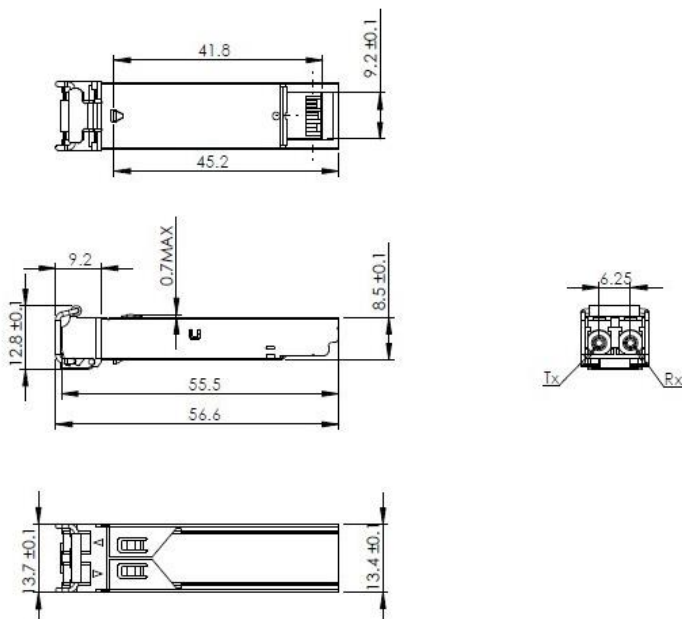
Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential input impedance	Z_{in}	90	100	110	ohm	
Differential Output impedance	Z_{out}	90	100	110	ohm	
Single ended input voltage amplitude	ΔV_{in}	200		1200	mVp-p	
Single ended output voltage amplitude	ΔV_{out}	250		1000	mVp-p	

Recommended Circuit



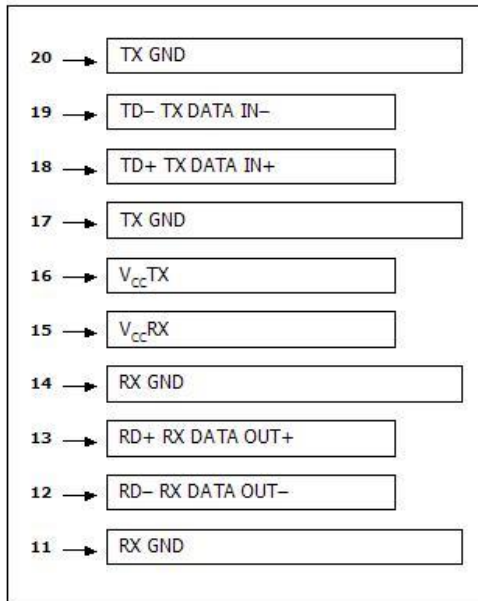
Mechanical Dimensions



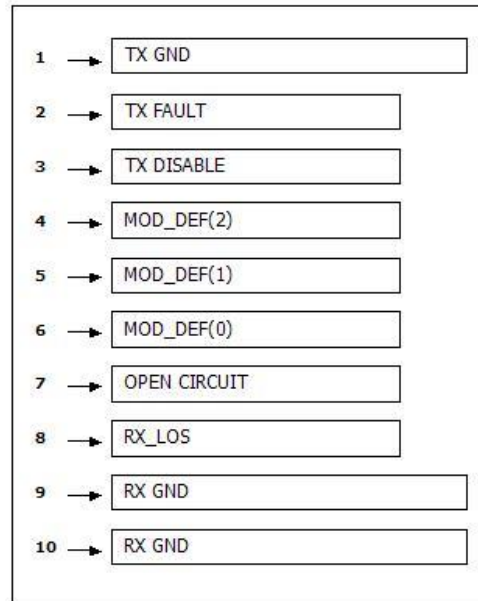
ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED

UNIT: mm

Electrical Pad Layout



Top of Board



Bottom of Board

Pin Assignment

PIN #	Symbol	Description	Remarks
1	VeeT	Transmitter Ground	1
2	TX Fault	Transmitter Fault Indication	
3	TX Disable	Transmitter Disable	2
4	MOD-DEF2	Module Definition	3
5	MOD-DEF1	Module Definition 1	3
6	MOD-DEF0	Module Definition 0	3
7	Rate Select	Not Connected	4
8	LOS	Loss of Signal	5
9	VeeR	Receiver Ground	1
10	VeeR	Receiver Ground	1

11	VeeR	Receiver Ground	1
12	RD-	Inv. Received Data Out	6
13	RD+	Received Data Out	6
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power	1
16	VccT	Transmitter Power	
17	VeeT	Transmitter Ground	
18	TD+	Transmit Data In	6
19	TD-	Inv. Transmit In	6
20	VeeT	Transmitter Ground	

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
4. Rate select is not used.
5. LOS is open collector output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
6. AC Coupled.