Nexolight

Datasheet

NXSF-8512-M5D

SFP 1000BASE-SX 850nm 550m Multimode

Features

- SFP Form Factor
- 1,25 Gb/s bitrate
- Up to 550 m over Multimode
- LC connector
- 850 nm, VCSEL laser, PIN photodiode
- Up to 1W power consumption
- +0/+70°C temperature range
- Built in digital diagnostic monitoring

Applications

- 1000Base-SX Ethernet
- Access and Enterprise
- 1x Fibre Channel

Optical specifications

Optical budget : 9 dB

Transmitter & Receiver optical Specifications

Parameter	Min	Max	Unit
Tx Power	-9	-4	dBm
Rx Sensitivity	-18	0	dBm

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	TS	-40		85	℃
Case Operating Temperature	Tc	0		70	℃
Operating Humidity	RH	5		95	%
Data Rate (Gigabit Ethernet)			1.25		Gbps
Data Rate (Fibre Channel)			1.063		Gbps
50/125μm MMF	L			550	m

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

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	
TX Disable-Low		Vee		Vee+0.8	V	
TX Fault-High		Vcc-0.5		Vcc	V	
TX Fault-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						
Average Output Power	PO	-9		-4	dBm	1
Optical Wavelength	λ	830	850	860	nm	
Spectral Width	σ			0.85	nm	
Optical Rise/Fall Time	tr/tf			260	ps	2
Total Jitter	TJ			200	ps	
Optical Extinction Ratio	ER	9			dB	
Receiver						
Receiver Sensitivity	RSENS			-18	dBm	3,4
Maximum Received Power	RX_{MAX}	0			dBm	
Centre Wavelength	λC	770		860	nm	
LOS De-Assert	LOSD			-26	dBm	
LOS Assert	LOSA	-40			dBm	
LOS Hysteresis		0.5		5	dB	

Notes:

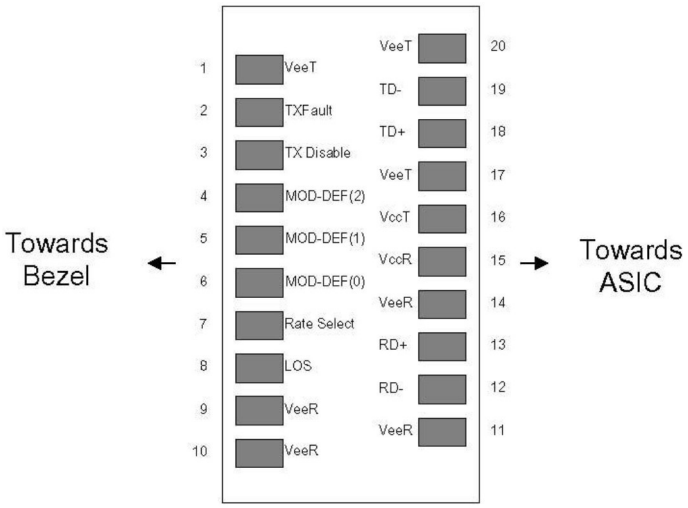
1. Class 1 Laser Safety.
2. Unfiltered, 20%-80%. Complies with GE and 1x FC eye masks when filtered.
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2^7-1 at 10^{-10} BER.

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

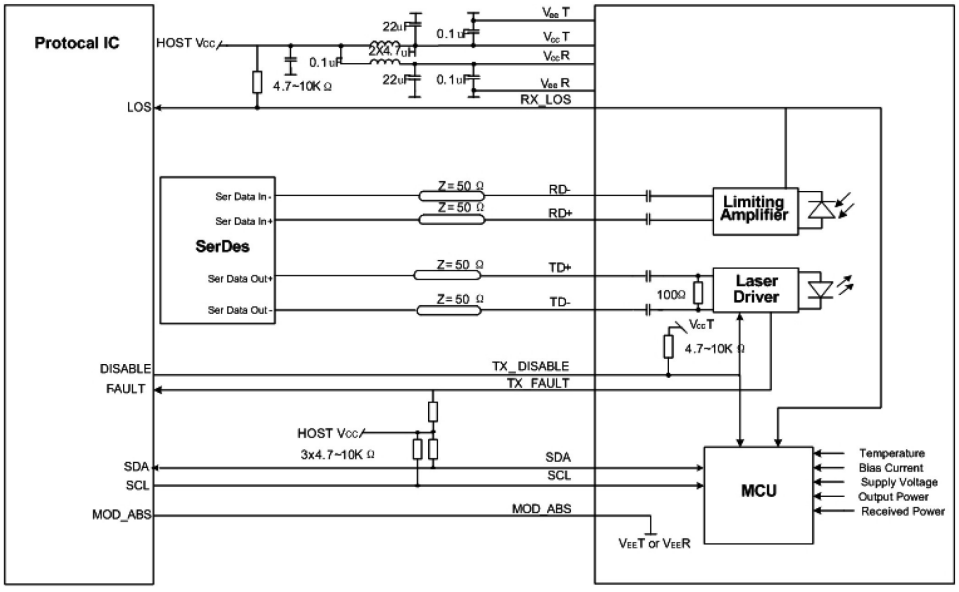
Notes:

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 2.0V 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 host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



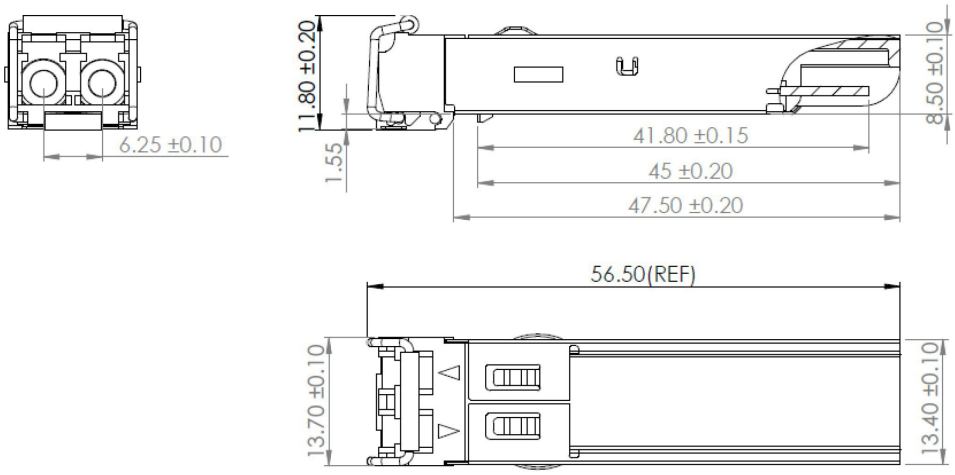
Pin-out of connector Block on Host board

Recommend 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: