# SFP-1G-FX

1000Base
1310nm
2km reach

Datasheet | product specifications

ESD threshold 1kV for SFI pins and 2kV for all other electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114A (HBM). However, normal ESD precautions are still required during the handling of this module.

Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

## Features

- Duplex LC Connector
- Up to 1.25Gb/s Data Links
- 1310nm FP Multi-Mode
- 3.3V power supply
- Case Operating Temperature:
  - Commercial: 0°C to 70 °C
  - Industrial: -40°C to 85 °C

## Applications

- Gigabit Ethernet
- 1x Fiber Channel
- Switch to Switch Interface
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links


Product may differ from the picture

## Compliances

- Compliant with RoHS
- Compliant with IEC60825-1
- Compliant with IEEE802.3
- Compliant with Bellcore TA-NWT-0009

## Overview

| Part Number | Input Power | Sensitivity | Reach | Temp. |
|---|---|---|---|---|
| SFP-1G-FX | -9.5 to -3 dBm | -20 dBm | 2km | 0°C to 70°C |
| SFP-1G-FX-I | -9.5 to -3 dBm | -20 dBm | 2km | -40°C to 85°C |

## Ordering Information

| Part Number | Product Description |
|---|---|
| SFP-1G-FX | 1000Base MMF SFP 1310nm 2km 0°C to 70°C LC Duplex DDM |
| SFP-1G-FX-I | 1000Base MMF SFP 1310nm 2km -40°C to 85°C LC Duplex DDM |

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# PIN Description

| PIN | Symbol | Name - Description | Notes |
|---|---|---|---|
| 1 | VEET | Transmitter Ground (Common with Receiver Ground) | |
| 2 | TFAULT | Transmitter Fault. Not Supported. | 1 |
| 3 | TDIS | Trnsmitter Disable. Laser output disabled on high or open. | 2 |
| 4 | MOD_DEF(2) | Module Definition 2. Data line for Serial ID. | 1 |
| 5 | MOD_DEF(1) | Module Definition 1. Clock line for Serial ID. | 1 |
| 6 | MOD_DEF(0) | Module Definition 0. Grounded within the module. | 1 |
| 7 | Rate Select | No Connection Required | |
| 8 | LOS | Loss of Signal Indication. Logic 0 indicates normal operation. | 3 |
| 9 | VEER | Receiver Ground | |
| 10 | VEER | Receiver Ground | |
| 11 | VEER | Receiver Ground | 4 |
| 12 | RD- | Receiver Inverted Data Out. AC Coupled | 4 |
| 13 | RD+ | Receiver Non-Inverted Data Out. AC Coupled | |
| 14 | VEER | Receiver Ground | |
| 15 | VCCR | Receiver Power Supply | |
| 16 | VCCT | Transmitter Power Supply | |
| 17 | VEET | Transmitter Ground | |
| 18 | TD+ | Transmitter Non-Inverted Data In. AC Coupled | 5 |
| 19 | TD- | Transmitter Inverted Data In. AC Coupled | 5 |
| 20 | VEET | Transmitter Ground | |

Notes:
1. Open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ resister on the host board if intended for use. Pull up voltage should be between 2.0V to 3.6V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the ouput is pulled to <0.8V.
2. Laser output disabled on TX_Disable >2.0V or open, enabled on TX_Disable <0.8V.
3. LOS is open collector output. Should be pulled up with 4.7kΩ to 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
4. RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
5. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

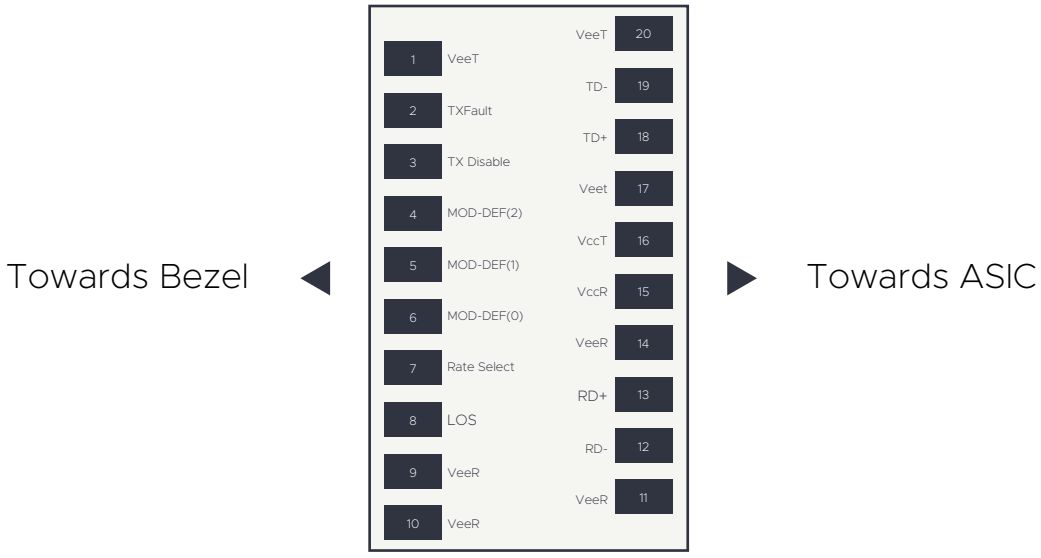


Figure 1: Diagram of host board connector block pin numbers and names

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## Absolute Maximum Ratings

| Parameters | Symbols | Min | Typ | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Storage Temperature | Ts | -40 | - | 85 | °C | |
| Relative Humidity | RH | 5 | - | 85 | % | 1 |
| Operating Case Temperature (com.) | Tc | 0 | - | 70 | °C | |
| Operating Case Temperature (ind.) | Tc | -40 | - | 85 | °C | |

Notes:
1. Non-condensing.

## Recommended Operation Conditions

| Parameters | Symbols | Min | Typ | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Data Rate Per Lane | - | - | 1250 | - | Mbps | |
| Link Distance | D | - | - | 20 | km | |
| Power Supply Voltage | Vcc | 3.14 | 3.3 | 3.47 | V | |

## Optical Characteristics

| Parameters | Symbols | Min | Typ | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| Center Wavelength | λC | 1296 | 1310 | 1330 | nm | |
| Spectral Width | Irms | - | - | 4 | dBm | |
| Average Launch Power | PAVG | -9.5 | - | -3 | mA | |
| Supply Current | Icc | - | 90 | 150 | mA | |
| Extinction Rate | ER | 9 | - | - | dB | |
| **Receiver** | | | | | | |
| Optical Input Wavelength | λC | 1100 | - | 1600 | nm | |
| Optical Input Power | Pin | -3 | - | - | dBm | |
| Supply Current | Icc | - | 80 | 110 | mA | |
| Receiver Sensitivity | SEN | - | - | -20 | dBm | |
| LOS Assert | LOSA | - | - | -21 | dBm | |
| LOS De-Assert | LOSD | -30 | - | - | dBm | |
| LOS Hysteresis | LOSH | - | -2 | - | dB | |

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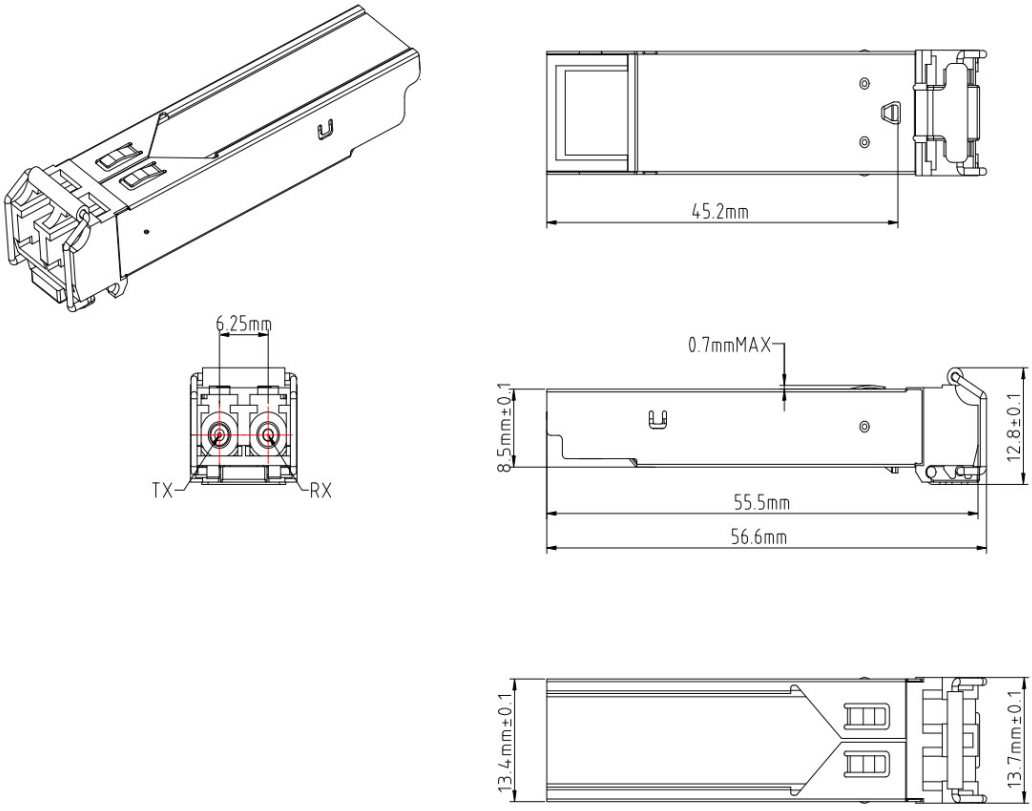
# Mechanical Dimensions




# Revision History

| Revision | Doc. # | Date | Author | Description |
|---|---|---|---|---|
| Version 1.0 | DT000117 | 10/16/2023 | SHN | Initial Document |
| | | | | |

Note: Nexgen A/S reserves the right to change this document without notice.