

SFP-10G-LR-I

10GBase SFP+
1310nm
10km Reach

+45 (0)32 72 66 76



info@nexgen.eu



www.nexgen.eu



Features

- Supports 10Gb/s Data Rate
- Up to 10km transmission on SMF
- 1310nm DFB laser and PIN receiver
- Hot-pluggable SFP+ footprint
- SFI high speed electrical interface
- Built-in digital diagnostic functions
- Single +3.3V power supply
- Power consumption less than 1.0 W
- Commercial Operating Case Temperature: 0°C to 70°C
- Industrial Operating Case Temperature: -40°C to 85°C
- RoHS Compliant



Applications

- 10GBASE-LR/LW 10G Ethernet
- Other optical links

| Part number | Product description |
|--------------|--|
| SFP-10G-LR-I | 10GBase SMF SFP+ 1310nm 10km -40°C to 85°C LC Duplex DDM |

PIN Description

| PIN | Symbol | Name - Description | Notes |
|-----|-------------|--|-------|
| 1 | VEET | Transmitter Ground (Common with Receiver Ground) | |
| 2 | TFAULT | Transmitter Fault. Not supported. | 1 |
| 3 | TDIS | Transmitter 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 (Common with Transmitter Ground) | |
| 10 | VEER | Receiver Ground (Common with Transmitter Ground) | |
| 11 | VEER | Receiver Ground (Common with Transmitter Ground) | |
| 12 | RD- | Receiver Inverted DATA out. AC Coupled | 4 |
| 13 | RD+ | Receiver Non-inverted DATA out. AC Coupled | 4 |
| 14 | VEER | Receiver Ground (Common with Transmitter Ground) | |
| 15 | VCCR | Receiver Power Supply | |
| 16 | VCCT | Transmitter Power Supply | |
| 17 | VEET | Transmitter Ground (Common with Receiver Ground) | |
| 18 | TD+ | Transmitter Non-Inverted DATA in. AC Coupled. | 5 |
| 19 | TD- | Transmitter Inverted DATA in. AC Coupled. | 5 |
| 20 | VEET | Transmitter Ground (Common with Receiver Ground) | |

Notes:

1. Open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ resistor 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 output 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

Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|------------------------|-----------------|------|-----|------|------|-------|
| Maximum Supply Voltage | V _{cc} | -0.5 | - | +4.0 | V | |
| Storage Temperature | T _s | -40 | - | +85 | °C | |
| Relative Humidity | RH | 5 | - | 95 | % | 1 |

Notes:

1. Non-condensing.

Recommend Operation Conditions

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|-----------------------------------|-----------------|------|-----|------|------|-------|
| Power Supply Voltage | V _{cc} | 3.13 | 3.3 | 3.47 | V | |
| Power Supply Current | I _{cc} | - | - | 300 | mA | |
| Power Dissipation | P _o | - | - | 1.0 | W | |
| Case Operating Temperature (com.) | T _{op} | 0 | - | +70 | °C | |
| Case Operating Temperature (ind.) | T _{op} | -40 | - | +85 | °C | |

Electrical Characteristics

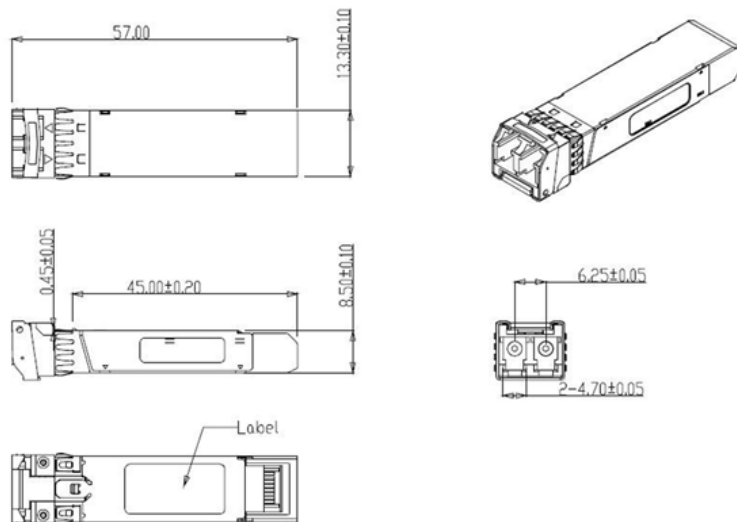
| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|-------------------------------|--------------------|-----|-----|-----|------|-------|
| Transmitter | | | | | | |
| Steady State Current | I _{cc} | - | - | 300 | mA | |
| Input Differential Impedance | Z _{in} | 80 | 100 | 120 | Ω | |
| Differential Input Voltage | V _{ppin} | 300 | - | 850 | mV | |
| Receiver | | | | | | |
| Output Differential Impedance | Z _{out} | 90 | 100 | 120 | Ω | |
| Differential Output Voltage | V _{ppout} | 300 | - | 850 | mV | |

Optical Characteristics

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|-------------------------------------|-----------------|------|---------|-------|------|-------|
| Transmitter | | | | | | |
| Optical Center Wavelength | λ_C | 1290 | 1310 | 1330 | nm | |
| Average Output Power | P_o | -8.2 | - | 0.5 | dBm | |
| Optical Extinction Ratio | ER | 3.5 | - | - | dB | |
| RMS Spectral Width (-20dB) | $\Delta\lambda$ | - | - | 1 | nm | |
| Data Rate | - | - | 10.3125 | - | Gb/s | |
| Transmitter Dipersion Penalty | TDP | - | - | 3.2 | dB | |
| Side Mode Suppression Ratio | SMSR | 30 | - | - | dB | |
| Receiver | | | | | | |
| Optical Center Wavelength | λ_C | 1260 | - | 1620 | nm | |
| Receiver Sensitivity | P_{min} | - | - | -14.4 | dBm | |
| Stressed Receiver Sensitivity (OMA) | P_{mins} | - | - | -12.6 | dBm | |
| Receiver Overload | P_{max} | -0.5 | - | - | dBm | |
| LOS De-Assert | LOSD | - | - | -16 | dBm | |
| LOS Assert | LOSA | -28 | - | - | dBm | |
| LOS Hysteresis | LOSH | 0.5 | - | - | dB | |

Notes:
Sensitivity is measured at 10.3125 Gbps with BER=<10⁻¹²

Mechanical Dimensions



Revision history

| Revision | Date | Author | Description |
|----------|------------|--------|------------------|
| V1.1 | 05-03-2020 | JGN | Initial Document |

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