



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.



## Features

- Operating case temperature: 0°C to 70°C
- Supports 10.3125Gbps Data rate
- Single 3.3V power supply
- Cost-effective copper solution
- Lowest total system power solution
- Lowest total system EMI solution
- Optimized design for Signal Integrity

## Applications

- Suitable for Ethernet for 2x40/100GBASE-SR4 usage
- Suitable for HPC Interconnects usage
- Suitable for Proprietary Interconnections usage



Product may differ from the picture

## Compliances

- Compliant with RoHS
- Compliant with SFF-8431
- Compliant with SFF-8432
- Compliant with SFF-8472

## Overview

| Part Number       | Data Rate   | Cable Length | AWG | Temperature |
|-------------------|-------------|--------------|-----|-------------|
| SFP-10G-ADAC-0.5M | 10.3125Gbps | 0.5m         | 30  | 0°C to 70°C |
| SFP-10G-ADAC-1M   | 10.3125Gbps | 1m           | 30  | 0°C to 70°C |
| SFP-10G-ADAC-1.5M | 10.3125Gbps | 1.5m         | 30  | 0°C to 70°C |
| SFP-10G-ADAC-2M   | 10.3125Gbps | 2m           | 30  | 0°C to 70°C |
| SFP-10G-ADAC-2.5M | 10.3125Gbps | 2.5m         | 30  | 0°C to 70°C |
| SFP-10G-ADAC-3M   | 10.3125Gbps | 3m           | 30  | 0°C to 70°C |
| SFP-10G-ADAC-4M   | 10.3125Gbps | 4m           | 30  | 0°C to 70°C |
| SFP-10G-ADAC-5M   | 10.3125Gbps | 5m           | 24  | 0°C to 70°C |
| SFP-10G-ADAC-6M   | 10.3125Gbps | 6m           | 24  | 0°C to 70°C |
| SFP-10G-ADAC-7M   | 10.3125Gbps | 7m           | 24  | 0°C to 70°C |
| SFP-10G-ADAC-8M   | 10.3125Gbps | 8m           | 24  | 0°C to 70°C |
| SFP-10G-ADAC-9M   | 10.3125Gbps | 9m           | 24  | 0°C to 70°C |
| SFP-10G-ADAC-10M  | 10.3125Gbps | 10m          | 24  | 0°C to 70°C |



## PIN Description

| PIN | Symbol      | Name - Description   | Notes |
|-----|-------------|--|-------|
| 1   | VEET        | Transmitter Ground (Common with Receiver Ground)               |       |
| 2   | TFAULT      | Transmitter Fault. Not Supported.                              | 1     |
| 3   | TDIS        | Trnsmmitter 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:

- 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.
- Laser output disabled on TX\_Disable >2.0V or open, enabled on TX\_Disable <0.8V.
- 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.
- 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.
- 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



## Ordering Information

| Part Number       | Product Description                  |
|-------------------|--------------------------------------|
| SFP-10G-ADAC-0.5M | 10GBase SFP+ to SFP+ Active DAC 0.5m |
| SFP-10G-ADAC-1M   | 10GBase SFP+ to SFP+ Active DAC 1m   |
| SFP-10G-ADAC-1.5M | 10GBase SFP+ to SFP+ Active DAC 1.5m |
| SFP-10G-ADAC-2M   | 10GBase SFP+ to SFP+ Active DAC 2m   |
| SFP-10G-ADAC-2.5M | 10GBase SFP+ to SFP+ Active DAC 2.5m |
| SFP-10G-ADAC-3M   | 10GBase SFP+ to SFP+ Active DAC 3m   |
| SFP-10G-ADAC-4M   | 10GBase SFP+ to SFP+ Active DAC 4m   |
| SFP-10G-ADAC-5M   | 10GBase SFP+ to SFP+ Active DAC 5m   |
| SFP-10G-ADAC-6M   | 10GBase SFP+ to SFP+ Active DAC 6m   |
| SFP-10G-ADAC-7M   | 10GBase SFP+ to SFP+ Active DAC 7m   |
| SFP-10G-ADAC-8M   | 10GBase SFP+ to SFP+ Active DAC 8m   |
| SFP-10G-ADAC-9M   | 10GBase SFP+ to SFP+ Active DAC 9m   |
| SFP-10G-ADAC-10M  | 10GBase SFP+ to SFP+ Active DAC 10m  |

## Recommended Operating Conditions

| Parameters                 | Symbols | Min   | Typ     | Max   | Unit | Notes            |
|----------------------------|---------|-------|---------|-------|------|------------------|
| Storage Temperature        | TS      | -40   | -       | 85    | °C   |                  |
| Operating Case Temperature | TOP     | 0     | -       | 70    | °C   |                  |
| Data Rate per Lane         | -       | -     | 10.3125 | -     | Gbps | rate per channel |
| Power Supply Voltage       | Vcc     | 3.135 | 3.3     | 3.465 | V    |                  |

## Electrical Characteristics

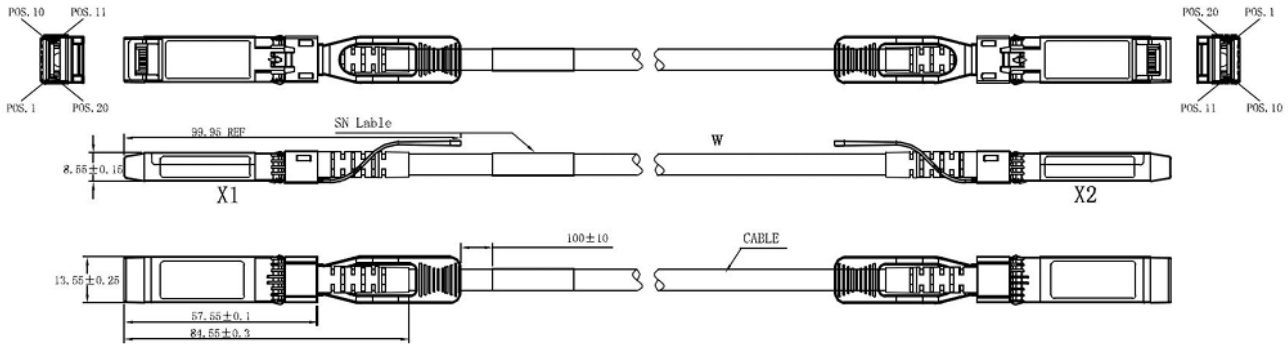
| Parameters                                    | Symbol | Min  | Typ | Max    | Unit | Notes       |
|---|--------|------|-----|--------|------|-------------|
| Differential Impedance                        | Zd     | 90   | 100 | 110    | Ohm  | -           |
| VMA loss                                      | L      | -    | -   | 4.4    | dB   | -           |
| Differential Return Loss                      | SDDXX  | -    | -   | Note 1 | dB   | 0.01~4.1GHz |
|   |        | -    | -   | Note 2 |      | 4.1~11.1GHz |
| Common-mode to common mode output return loss | SCCXX  | -    | -   | Note 3 | dB   | 0.01~2.5GHz |
|   |        | -    | -   | -3     |      | 2.5~11.1GHz |
| Difference Waveform Distortion Penalty        | dWDPC  | -    | -   | 6.75   | dB   | -           |
| VMA Lossto Cross talk Ratio                   | VCR    | 32.5 | -   | -      | dB   | -           |

### Notes:

- $< -12 + 2 * \sqrt{f}$  with f in GHz
- $< -6.3 + 13 * \log_{10}(f/5.5)$  with f in GHz
- $< -7 + 1.6 * f$  with f in GHz



## Mechanical Dimensions



## Regulatory Compliance

| Feature  | Test Method   | Performance   |
|--|---|---|
| Electrostatic Discharge (ESD) to the Electrical Pins | MIL-STD-883C Method 3015.7                                    | Class 1(>2000 Volts)  |
| Electromagnetic Interference(EMI)                    | FCC Class B<br>CENELEC EN55022 Class B<br>CISPR22 ITE Class B | Compliant with Standards  |
| RF Immunity(RFI)                                     | IEC61000-4-3  | Typically Show no Measurable Effect from a 10V/m Field Swept from 80 to 1000MHz |
| RoHS Compliance                                      | RoHS Directive 2011/65/EU and it's Amendment Directives 6/6   | RoHS6/6compliant  |

## Revision History

| Revision    | Doc. #   | Date       | Author | Description      |
|-------------|----------|------------|--------|------------------|
| Version 1.0 | DT000406 | 25/02/2025 | GS     | Initial Document |

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