# SV-CFP2-100G-LR4F

100GBase aggregating 4 x duplex LWDM (1295.6 nm, 1300.1 nm, 1304.6 nm, and 1309.1nm) wavelengths SM (LC) with DDM, distance up to 10km,supporting OTU-4

## Features

- Compliant with 100GBASE-LR4
- Support line rates from 103.125 Gbps to 111.81 Gbps
- Integrated LAN WDM TOSA / ROSA for up to 10 km reach over SMF
- Digital Diagnostics Monitoring Interface
- Duplex LC optical receptacle
- No external reference clock
- Single 3.3 V power supply
- Case operating temperature range:0°C to 70°C
- Power dissipation < 6W
- Compliant to IEEE 802.3ba
- Compliant to CFP MSA CFP2 Hardware Specification
- Compliant to CFP MSA CFP2 Management Interface Specification

## Applications

- Data Center &100G Ethernet
- ITU-T OTU4

## Ordering Information

| Part number | Description |
|---|---|
| **SV-CFP2-100G-LR4F** | Starview CFP2 100Gbps module 100GBase aggregating 4 x duplex LWDM (1295.6 nm, 1300.1 nm, 1304.6 nm, and 1309.1nm) wavelengths SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 10km,with Forward Error Correction (FEC) supporting 100GE and OTU-4 |

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Storage Temperature | Ts | -40 | - | 85 | ºC | |
| Relative Humidity | RH | 5 | - | 95 | % | |
| Power Supply Voltage | VCC | -0.3 | - | 4 | V | |
| Signal Input Voltage | | Vcc-0.3 | - | Vcc+0.3 | V | |
| Receive Input Optical Power (Damage threshold) | Pdmg | | | 5.0 | dBm | |

## Low Speed Electrical Characteristics

| Parameter | Symbol | Min | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Supply currents and voltages | | | | | | |
| Voltage | Vcc | 3.2 | 3.3 | 3.4 | V | With Respect to GND |
| Supply current | Icc | | | 1.8 | A | |
| Power dissipation | Pwr | | | 6.0 | W | |
| Power dissipation (low power mode) | Plp | | | 2.0 | W | |
| Low speed control and sense signals, 3.3 V LVCMOS | | | | | | |
| Outputs low voltage | VOL | | | 0.2 | V | IOH=100 µA |
| Output high voltage | VOH | Vcc-0.2 | | | V | IOH=-100 µA |
| Input low voltage | VIL | -0.3 | | 0.8 | V | |
| Input high voltage | VIH | 2 | | Vcc3+ 0.3 | V | |
| Input leakage current | IIN | -10 | | 10 | µA | |
| Low speed control and sense signals, 1.2 V LVCMOS | | | | | | |
| Outputs low voltage | VOL | -0.3 | | 0.2 | V | |
| Output high voltage | VOH | 1.0 | | 1.5 | V | |
| Output low current | IOL | 4 | | | mA | |
| Output high current | IOH | | | -4 | mA | |
| Input low voltage | VIL | -0.3 | | 0.36 | V | |
| Input high voltage | VIH | 0.84 | | 1.5 | V | |
| Input leakage current | IIN | -100 | | 100 | µA | |
| Input capacitance | C | | | 10 | pF | |
| MDC clock rate | | 0.1 | | 4 | MHz | |

## High Speed Electrical Specifications

| Parameter | Symbol | Min | Max | Unit | Notes |
|---|---|---|---|---|---|
| Transmitter electrical input from host | | | | | |
| Differential voltage pk-pk | | 100 | 1200 | mV | |
| Common mode noise (rms) | | | 17.5 | mV | |
| Differential termination mismatch | | | 10 | % | |
| Transition time | | 10 | | ps | 20/80% |
| Common mode voltage | | -0.3 | 2.8 | V | |
| Eye width | EW15 | 0.46 | | UI | At $10^{-15}$ probability |
| Eye height | EH15 | 100 | | mV | At $10^{-15}$ probability |
| Receiver electrical output to host | | | | | |
| Differential voltage pk-pk | | 100 | 1200 | mV | |
| Common mode noise (rms) | | | 17.5 | mV | |
| Differential termination mismatch | | | 10 | % | |
| Transition time | | 9.5 | | ps | 20/80% |
| Vertical eye closure | VEC | | 6.5 | dB | |
| Eye width | EW15 | 0.57 | | UI | At $10^{-15}$ probability |
| Eye height | EH15 | 240 | mV | | At $10^{-15}$ probability |

## Optical Transmitter Characteristics

| Parameter | Symbol | Min | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Signaling rate, each lane | | | 25.78125 | | GBd | |
| Lane wavelength（range） | | 1294.53 | 1295.56 | 1296.59 | nm | |
| | | 1299.02 | 1300.05 | 1301.09 | nm | |
| | | 1303.54 | 1304.58 | 1305.63 | nm | |
| | | 1308.09 | 1309.14 | 1310.19 | nm | |
| Rate tolerance | | -100 | | 100 | ppm | From nominal rate |
| Side-mode suppression ratio | SMSR | 30 | | | dB | |
| Total launch power | | | | 10.5 | dBm | |

| | | | | | |
|---|---|---|---|---|---|
| Average launch power, each lane | Pavg | -4.3 | | 4.5 | dBm |
| Extinction Ratio | ER | 4 | 9 | | dB |
| Optical modulation amplitude, each lane (OMA) | OMA | -1.3 | | 4.5 | dBm |
| Difference in launch power between any two lanes (OMA) | | | | 5 | dB |
| Transmitter and Dispersion Penalty, each lane | TDP | | | 2.2 | dB |
| OMA minus TDP, each lane | OMA-TDP | -2.3 | | | dBm |
| Average launch power of OFF transmitter, each lane | | | | -30 | dBm |
| Relative Intensity Noise | $RIN_{20}OMA$ | | | -130 | dB/Hz |
| Transmitter reflectance | | | | -12 | dB |
| Transmitter eye mask {X1, X2, X3, Y1, Y2, Y3} | | | {0.25, 0.4, 0.45, 0.25, 0.28, 0.4} | | |

## Optical Receiver Characteristics

| Parameter | Symbol | Min | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Signaling rate, each lane | | | 25.78125 | | GBd | |
| Rate tolerance | | -100 | | 100 | ppm | From normal rate |
| Average receive power, each lane | Pavg | -10.6 | | 4.5 | dBm | |
| Receive power, each lane (OMA) | | | | 4.5 | dBm | |
| Difference in launch power between any two lanes (OMA) | | | | 5.5 | dB | |
| Receiver Sensitivity (OMA), each lane | Rsen | | | -8.6 | dBm | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Stressed Receiver Sensitivity (OMA), each lane | SRS | | -6.8 | dBm | |
| Stressed receiver sensitivity test conditions | | | | | |
| Vertical eye closure penalty, each lane | VECP | 1.8 | | dB | |
| Stressed sys J2 jitter, each lane | J2 | 0.3 | | UI | 2 |
| Stressed sys J9 jitter, each lane | J9 | 0.47 | | UI | 2 |
| Receiver reflectance | | | -26 | dB | |
| LOS Assert | Plos_on | -30 | | dBm | |
| LOS Deassert | Plos_off | | -12 | dBm | |
| LOS Hysteresis | | 0.5 | 4 | dB | |

1. Receiver sensitivity (OMA), each lane, is informative.
2. Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.