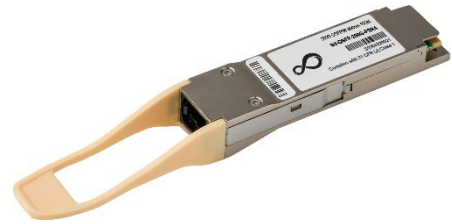


## SV-QSFP-200G-PSR4

Starview QSFP56 200G-SR8 aggregating 4 x 50Gbps 850nm MM (MPO-12) with DDM, distance up to 100m



### Features

- QSFP56 MSA compliant
- 4 parallel lanes on 850nm center wavelength
- Compliant to IEEE 802.3bs Specification
- Up to 100m transmission on multi-mode fiber (MMF) OM3 with FEC
- Operating case temperature: 0 to 70°C
- 4x53.125Gb/s electrical interface (200GAUI-4)
- Data Rate 53.125Gbps (PAM4) per channel.
- Maximum power consumption 5W
- MPO-12 APC connector
- RoHS compliant

### Applications

- Data Center Interconnect
- 200G Ethernet
- Infiniband interconnects
- Enterprise networking

### Ordering Information

| Part number              | Description   |
|--------------------------|---|
| <b>SV-QSFP-200G-PSR4</b> | Starview QSFP56 200Gbps module 200G-SR8 aggregating 4 x 50Gbps 850nm MM (MPO-12) with Digital Diagnostic Monitoring (DDM), distance up to 100m on 50/125um MM OM4 |

## Absolute Maximum Ratings

| Parameter                            | Symbol | Min  | Max | Units | Notes |
|--------------------------------------|--------|------|-----|-------|-------|
| Storage Temperature                  | TS     | -40  | 85  | degC  |       |
| Operating Case Temperature           | TOP    | 0    | 70  | degC  |       |
| Power Supply Voltage                 | VCC    | -0.5 | 3.6 | V     |       |
| Relative Humidity (non-condensation) | RH     | 0    | 85  | %     |       |

## Recommended Operating Conditions

| Parameter                  | Symbol | Min   | Typical | Max                  | Units | Notes |
|----------------------------|--------|-------|---------|----------------------|-------|-------|
| Operating Case Temperature | TOP    | 0     |         | 70                   | degC  |       |
| Power Supply Voltage       | VCC    | 3.135 | 3.3     | 3.465                | V     |       |
| Data Rate, each Lane       |        |       | 26.5625 |                      | GBd   | PAM4  |
| Data Rate Accuracy         |        | -100  |         | 100                  | ppm   |       |
| Pre-FEC Bit Error Ratio    |        |       |         | 2.4x10 <sup>-4</sup> |       |       |
| Post-FEC Bit Error Ratio   |        |       |         | 1x10 <sup>-12</sup>  |       | 1     |
| Link Distance with OM3     | D      | 0.5   |         | 100                  | m     | 2     |

Notes:

1. FEC provided by host system.
2. FEC required on host system to support maximum distance.

## Electrical Characteristics

| Parameter                                  | Test Point      | Min | Typical                          | Max  | Units | Notes |
|--|-----------------|-----|----------------------------------|------|-------|-------|
| Power Consumption                          |                 |     |                                  | 5    | W     |       |
| Supply Current                             | I <sub>cc</sub> |     |                                  | 1.52 | A     |       |
| Transmitter (each Lane)                    |                 |     |                                  |      |       |       |
| Signaling Rate, each Lane                  | TP1             |     | 26.5625 ± 100 ppm                |      | GBd   |       |
| Differential pk-pk Input Voltage Tolerance | TP1a            | 900 |                                  |      | mVpp  | 1     |
| Differential Termination Mismatch          | TP1             |     |                                  | 10   | %     |       |
| Differential Input Return Loss             | TP1             |     | IEEE 802.3-2015 Equation (83E-5) |      | dB    |       |

|  |      |                                     |                   |       |  |      |
|--|------|-------------------------------------|-------------------|-------|--|------|
| Differential to Common Mode Input Return Loss      | TP1  | IEEE 802.3-2015<br>Equation (83E-6) |                   |       |  | dB   |
| Module Stressed Input Test                         | TP1a | See IEEE 802.3bs 120E.3.4.1         |                   |       |  | 2    |
| Single-ended Voltage Tolerance Range (Min)         | TP1a |                                     | -0.4 to 3.3       |       |  | V    |
| DC Common Mode Input Voltage                       | TP1  |                                     | -350              | 2850  |  | mV 3 |
| Receiver (each Lane)                               |      |                                     |                   |       |  |      |
| Signaling Rate, each lane                          | TP4  |                                     | 26.5625 ± 100 ppm |       |  | GBd  |
| Differential Peak-to-Peak Output Voltage           | TP4  |                                     |                   | 900   |  | mVpp |
| Common Mode vOLTAGE                                |      |                                     | -350              | 2850  |  | mV   |
| AC Common Mode Output Voltage, RMS                 | TP4  |                                     |                   | 17.5  |  | mV   |
| Differential Termination Mismatch                  | TP4  |                                     |                   | 10    |  | %    |
| Differential Output Return Loss                    | TP4  | IEEE 802.3-2015<br>Equation (83E-2) |                   |       |  |      |
| Common to Differential Mode Conversion Return Loss | TP4  | IEEE 802.3-2015<br>Equation (83E-3) |                   |       |  |      |
| Transition Time, 20% to 80%                        | TP4  |                                     | 9.5               |       |  | ps   |
| Near-end Eye Symmetry Mask Width (ESMW)            | TP4  |                                     |                   | 0.265 |  | UI   |
| Near-end Eye Height, Differential                  | TP4  |                                     | 70                |       |  | mV   |
| Far-end Eye Symmetry Mask Width (ESMW)             | TP4  |                                     |                   | 0.2   |  | UI   |
| Far-end Eye Height, Differential                   | TP4  |                                     | 30                |       |  | mV   |
| Far-end Pre-cursor ISI Ratio                       | TP4  |                                     | -4.5              | 2.5   |  | %    |
| Common Mode Output Voltage (Vcm)                   | TP4  |                                     | -350              | 2850  |  | mV 3 |

1. With the exception to IEEE 802.3bs 120E.3.1.2 that the pattern is PRBS31Q or scrambled idle.
2. Meets BER specified in IEEE 802.3bs 120E.1.1.
3. DC common mode voltage generated by the host. Specification includes effects of ground offset voltage.

## Optical Characteristics

| Parameter   | Symbol                | Min                   | Typical   | Max        | Units | Notes     |
|---|-----------------------|-----------------------|---|------------|-------|-----------|
| <b>Transmitter</b>  |                       |                       |   |            |       |           |
| Center Wavelength   | $\lambda_C$           | 840                   | 850   | 860        | nm    |           |
| Data Rate, each Lane  |                       | 26.5625 $\pm$ 100 ppm |   |            | GBd   |           |
| Modulation Format   |                       | PAM4                  |   |            |       |           |
| RMS Spectral Width  | $\Delta\lambda_{rms}$ |                       |   | 0.6        | nm    | Modulated |
| Average Launch Power, each Lane                                       | PAVG                  | -6.5                  |   | 4          | dBm   | 1         |
| Outer Optical Modulation Amplitude (OMA <sub>outer</sub> ), each Lane | POMA                  | -4.5                  |   | 3          | dBm   | 2         |
| Launch Power in OMA <sub>outer</sub> minus TDECQ, each Lane           |                       | -5.9                  |   |            | dB    |           |
| Transmitter and Dispersion Eye Clouser for PAM4, each Lane            | TDECQ                 |                       |   | 4.5        | dB    |           |
| Extinction Ratio  | ER                    | 3                     |   |            | dB    |           |
| Optical Return Loss Tolerance   | TOL                   |                       |   | 12         | dB    |           |
| Average Launch Power of OFF Transmitter, each Lane                    | P <sub>off</sub>      |                       |   | -30        | dBm   |           |
| Encircled Flux  |                       |                       | $\geq 86\%$ at 19 $\mu\text{m}$<br>$\leq 30\%$ at 4.5 $\mu\text{m}$ |            |       |           |
| <b>Receiver</b>   |                       |                       |   |            |       |           |
| Center Wavelength   | $\lambda_C$           | 840                   | 850   | 860        | nm    |           |
| Data Rate, each Lane  |                       | 26.5625 $\pm$ 100 ppm |   |            | GBd   |           |
| Modulation Format   |                       | PAM4                  |   |            |       |           |
| Damage Threshold, each Lane   | TH <sub>d</sub>       | 5                     |   |            | dBm   | 3         |
| Average Receive Power, each Lane                                      |                       | -8.4                  |   | 4          | dBm   | 4         |
| Receive Power (OMA <sub>outer</sub> ), each Lane                      |                       |                       |   | 3          | dBm   |           |
| Receiver Sensitivity (OMA <sub>outer</sub> ), each Lane               | SEN                   |                       |   | Equation 1 | dBm   | 7         |
| Stressed Receiver Sensitivity (OMA <sub>outer</sub> ), each Lane      | SRS                   |                       |   | -3.4       | dBm   | 5         |
| Receiver Reflectance  | RR                    |                       |   | -12        | dB    |           |

|  |      |     |     |     |
|--|------|-----|-----|-----|
| LOS Assert   | LOSA | -30 |     | dBm |
| LOS De-assert  | LOSD |     | -12 | dBm |
| LOS Hysteresis   | LOSH | 0.5 |     | dB  |
| Stressed Conditions for Stress Receiver Sensitivity (Note 7) |      |     |     |     |
| Stressed Eye Closure for PAM4 (SECQ), Lane under Test        |      |     | 4.5 | dB  |
| SECQ – $10\log_{10}(C_{eq})f$ (max), lane under test         |      |     | 4.5 | dB  |
| OMA <sub>outer</sub> of each Aggressor Lane                  |      |     | 3   | dBm |

Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Even if the TDECQ < 1 dB, the OMA<sub>outer</sub> (min) must exceed the minimum value specified here.
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
4. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. Measured with conformance test signal at receiver input for the BER of  $2.4 \times 10^{-4}$ .
6. These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.
7. Receiver sensitivity