

SV-QSFP-400G-ZR

Starview QSFP56-DD Single rate
400Gbps DCO module single channel
tunable coherent 400G-ZR



Features

- Support Flex-grid channel spacing DWDM in C-band
- Support Client-side Interfaces: 400GAUI-8
- Support Line-side DP-16QAM with CFEC
- Standard QSFP-DD type 2A form factor
- 76pin QSFP-DD MSA compliant connector
- Compliant to CMIS 4.0
- Compliant to OIF Implementation Agreement for Coherent CMIS, Rev 01.1
- RoHS compliant

Applications

- Data Center Interconnect
- 400G Ethernet

Ordering Information

| Part number | Description |
|------------------------|---|
| SV-QSFP-400G-ZR | Starview QSFP56-DD Single-rate 400Gbps DCO module, Single Channel tuneable coherent DWDM C-Band 400G-ZR SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 120km, support 400GAUI-8 |

Absolute Maximum Ratings

| Parameter | Min | Max | Unit | Note |
|---------------------------------------|------|------|------|---------------|
| Storage Temperature | -40 | 85 | °C | |
| Storage Humidity (Relative) | - | 85 | % | no-Condensing |
| Case Temperature | 0 | 75 | °C | |
| Operating Humidity (Relative) | - | 85 | % | no-Condensing |
| Short term Operating Case Temperature | | 80 | °C | <24 hours |
| Power Supply Absolute Range | -0.3 | 3.63 | V | |
| RX Optical Maximum Input Power | - | 10 | dBm | |

Recommended Operating Conditions

| Parameter | Min | Max | Unit | Note |
|-------------------------------|-------|-------|------|---------------|
| Operating Case Temperature | 0 | 75 | °C | |
| Operating Humidity (Relative) | - | 85 | % | no-Condensing |
| Power Supply Operating Range | 3.135 | 3.465 | V | |
| RX Optical Input Power | - | 0 | dBm | |

Power Supply Specifications

| Parameter | Min | Typ. | Max | Unit | Note |
|------------------------------|-------|------|-------|-------|------|
| 3.3V DC Power Supply Voltage | 3.135 | 3.3 | 3.465 | V | |
| 3.3V DC Power Supply Current | | | 7 | A | |
| Power Dissipation | | | 18 | W | |
| Module Inrush Current | | | 100 | mA/us | |
| Turn-off Current | -100 | | | mA/us | |
| Power Supply Noise | | | 25 | mV | |

Low Speed Control and Sense Signals

| Parameter | Symbol | Min | Max | Unit | Condition |
|---|--------|-----------------------|-----------------------|------|---|
| SCL and SDA | VOL | 0 | 0.4 | V | IOL(max)=3 mA for fast mode, 20 mA for Fast-mode plus |
| SCL and SDA | VIL | -0.3 | V _{cc} * 0.3 | V | |
| | VIH | V _{cc} * 0.7 | V _{cc} + 0.5 | V | |
| Capacitance for SCL and SDA I/O signal | Ci | | 14 | pF | |
| Total bus capacitive load for SCL and SDA | Cb | | 100 | pF | For 400 kHz clock rate use 3.0k Ohms Pull-up resistor, max. |

| | | | | | |
|----------------------------------|-----|-----------|-----------|----|--|
| | | | 200 | pF | For 400 kHz clock rate use 1.6k Ohms Pull-up resistor, max. |
| LPMode, ResetL, ModSelL and ePPS | VIL | -0.3 | 0.8 | V | |
| | VIH | 2 | Vcc + 0.3 | V | |
| LPMode, ResetL and ModSelL | Iin | | 360 | uA | 0V<Vin<Vcc |
| ePPS | Iin | | TBD | uA | 0V<Vin<Vcc |
| IntL | VOL | 0 | 0.4 | V | IOL=2.0 mA |
| | VOH | Vcc - 0.5 | Vcc + 0.3 | V | 10k Ohms pull-up to Host Vcc |
| ModPrsL | VOL | 0 | 0.4 | V | IOL=2.0 mA |
| | VOH | | | V | ModPrsL can be implemented as a short-circuit to GND on the module |

Electrical Characteristics

| Parameter | Min | Typ. | Max | Unit | Note |
|--|-----|----------------|-----|-------|------|
| Electrical Characteristics for Transmitter | | | | | |
| Signal Rate, each Lane | | 26.5625±100ppm | | GBaud | |
| Differential Peak-Peak Input Voltage Tolerance | | | 900 | mVpp | |
| Electrical Characteristics for Receiver | | | | | |
| Signal Rate, each Lane | | 26.5625±100ppm | | GBaud | |
| Differential Peak-Peak Input Voltage Tolerance | | 750 | 900 | mVpp | |
| Transition Time, 20% to 80% | | 9.5 | | ps | |

Optical Transmitter Specifications

| Parameter | Min | Typ. | Max | Unit | Notes |
|-----------------------------------|-------|-------|-------|------|---|
| Transmitter Frequency Range | 191.3 | 193.7 | 196.1 | THz | C band 75GHz ITU-T grid. Frequency range over which the specifications hold unless noted otherwise. |
| Laser Frequency Stability | -1.8 | | 1.8 | GHz | Frequency stability relative to ITU grid. |
| Laser Frequency Accuracy | -1.8 | | 1.8 | GHz | |
| Laser Frequency Fine Tuning Range | -6.0 | | 6.0 | GHz | |
| Fine Tuning Resolution | | 100 | | MHz | |
| Channel Tuning Speed | - | | 60 | s | |
| Laser Line Width | | | 100 | kHz | |
| Transmitter Output Power Range | -10 | | -6 | dBm | |

| | | | | |
|---|------|-----|----------|---|
| Transmitter Laser Disable Time | | 180 | ms | |
| Output Power Stability | -0.5 | 0.5 | dB | Difference over temperature, time, wavelength and aging. |
| Output Power Accuracy | -2 | 2 | dB | Difference between the set value and actual value over aging. |
| Transmitter Turn-up Time from Cold Start | - | 120 | s | |
| Transmitter OSNR (Inband) | 34 | - | dB/0.1nm | |
| Transmitter Back Reflectance | - | -24 | dB | |
| Transmitter Output Power with TX Disabled | - | -20 | dBm | |
| Transmitter Polarization Dependent Power | - | 1.5 | dB | Power deference between X and Y polarization |

Optical Receiver Specifications

| Parameter | Min | Typ. | Max | Unit | Notes |
|---------------------------------------|-------|-------|-------|----------|--|
| Receiver Frequency Range | 191.3 | 193.7 | 196.1 | THz | |
| Input Power Range | -12 | | 0 | dBm | Signal power of the channel at the OSNR Penalty < 0.5dB |
| OSNR Sensitivity | | 24 | 26 | dB/0.1nm | |
| Receiver Sensitivity | | | -20 | dBm | Input power needed to achieve post FEC BER < 1E-15 when OSNR Toleranc > 26dB/0.1nm |
| Los Assert | -24 | | -20 | dBm | |
| Los Hysteresis | 1.0 | | 2.5 | dB | |
| CD Tolerance | 2400 | | | ps/nm | Tolerance to Chromatic Dispersion. |
| PMD Tolerance | 10 | | | ps | Tolerance to PMD with < 0.5 dB penalty to OSNR sensitivity. |
| Peak PDL Tolerance | 3.5 | | | dB | Tolerance to peak PDL with < 1.3 dB penalty to OSNR sensitivity when change in SOP is < =1 rad/ms. |
| Tolerance to Change in SOP | 50 | | - | rad/ms | |
| Input Power Transient Tolerance | -2 | | 2 | dB | Tolerance to change in input power with < 0.5 dB penalty to OSNR sensitivity. |
| Input Power Reading Accuracy | -2 | | 2 | dB | |
| Optical Return Loss | -20 | | | dB | Optical reflectance at Rx connector input. |
| Receiver Turn-up Time from Cold Start | - | | 120 | s | From module reset, with valid optical input signal present. |