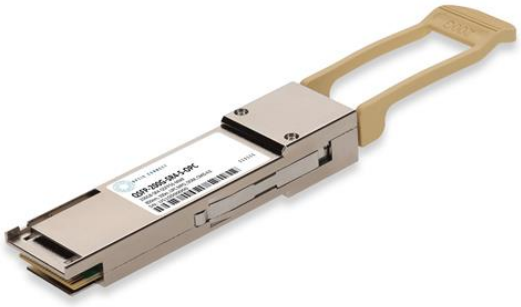
**QSFP-200G-SR4-S-OPC**

Cisco® QSFP-200G-SR4-S Compatible TAA 200GBase-SR4 QSFP56 Transceiver (MMF, 850nm, 100m, UPC MPO, DOM, CMIS 4.0)

**Features**

- 4-Channel Full-Duplex Transceiver
- Hot-Pluggable QSFP56 Form Factor
- Supports 212.5Gbps Aggregate Bit Rate
- Maximum Link Length of 100M on OM4 Multi-Mode Fiber
- 200GAUI-4 C2M Electrical Interface (4x50Gbps PAM4 Retimed)
- Power Dissipation Below 4.5W
- Single 3.3V Power Supply
- MPO-12 Connector
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



**Applications:**

- 200GBase Ethernet

**Product Description**

This Cisco® compatible QSFP56 transceiver provides 200GBase-SR4 throughput up to 100m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO-12 connector. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Cisco®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|---|
| **Maximum Supply Voltage** | | Vcc | -0.5 | | 3.6 | V | |
| **Storage Temperature** | | Tstg | -40 | | 85 | °C | |
| **Relative Humidity** | | RH | 15 | | 85 | % | 1 |
| **Operating Case Temperature** | | Tc | 0 | | 70 | °C | 2 |
| **Receiver Damage Threshold, per Lane** | | $P_{Rdmg}$ | 5 | | | dBm | |
| **Bit Rate (all wavelengths combined)** | | BR | | | 212.5 | Gbps | 3 |
| **Bit Error Ratio** | | BER | | | 2.4E-4 | | 4 |
| **Signaling Rate per Lane** | | | 26.5625 ± 100ppm | | | | |
| **Modulation Format** | | | PAM4 | | | | |
| **Maximum Supported Distances** | **OM3 MMF** | Lmax1 | | | 70 | m | |
| | **OM4 MMF** | Lmax2 | | | 100 | | |

**Notes:**

1. Non-condensing.
2. 48-Hour excursion ns, maximum.
3. Supports 200GBASE-SR4 per IEEE P802.3cd.
4. The typical BER is better than 1E-6 when Measured with a transmitter to produce SECQ up to 3dB.

## Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Module Supply Voltage** | Vcc | 3.135 | 3.3 | 3.465 | V | |
| **Module Supply Current** | Icc | | | 1.595 | A | |
| **Module Power Dissipation** | P | | | 4.5 | W | 1 |
| **Transmitter** | | | | | | |
| **Differential Peak-to-Peak Input Voltage Tolerance** | VIN,pp | 900 | | | mV | 2 |
| **Differential Termination Mismatch** | | | | 10 | % | |
| **Single-ended voltage tolerance range** | | -0.4 | | 3.3 | V | 3 |
| **DC common mode voltage** | | -350 | | 2850 | mV | |
| **Differential input return loss** | | Per equation (83E–5) IEEE802.3-2018 | | | dB | |
| **Differential to common mode input return loss** | | Per equation (83E–6) IEEE802.3-2018 | | | dB | |
| **Module stress input test** | | Per 120E.3.4.1 IEEE802.3-2018 | | | | 4 |
| **Receiver** | | | | | | |
| **AC common-mode output voltage (RMS)** | | | | 17.5 | mV | |
| **Differential peak-to-peak output voltage** | | | | 900 | mV | |
| **Near-end ESMW (Eye symmetry mask width)** | | 0.265 | | | UI | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Near-end Eye height, differential (min)** | | 70 | | | mV | |
| **Far-end ESMW (Eye symmetry mask width)** | | 0.2 | | | UI | |
| **Far-end Eye height, differential (min)** | | 30 | | | mV | |
| **Far-end pre-cursor ISI ratio** | | -4.5 | | 2.5 | % | |
| **Differential termination mismatch** | | | | 10 | % | |
| **Transition time (min, 20% to 80%)** | | 9.5 | | | ps | |
| **DC common mode voltage** | | -350 | | 2850 | mV | 4 |
| **Differential output return loss** | | Per equation 83E-2 IEEE802.3-2018 | | | | |
| **Common to differential mode conversion return loss** | | Per equation 83E-3 IEEE802.3-2018 | | | | |

**Notes:**

1. Maximum total power value is specified across the full temperature and voltage range.
2. With the exception to 120E.3.1.2 that the pattern is PRBS31Q or scrambled idle.
3. Meets specified BER.
4. DC common mode voltage generated by the host. Specification includes effects of ground offset voltage.

**Optical Characteristics**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Center Wavelength** | λ | 840 | | 860 | nm | |
| **RMS spectral width** | | | | 0.6 | nm | 1 |
| **Average launch power, per lane** | | | | 4 | dBm | |
| **Average launch power, per lane** | | -6.5 | | | dBm | |
| **Outer Optical Modulation Amplitude (OMAouter), per lane** | | -4.5 | | 3 | dBm | 2 |
| **Launch power in OMAouter minus TDECQ, per lane** | | -5.9 | | | dBm | |
| **Transmitter and dispersion eye closure for PAM4 (TDECQ), per lane** | | | | 4.5 | dB | |
| **TDECQ – 10log$_{10}$(C$_{eq}$), per lane** | | | | 4.5 | dB | 3 |
| **Average launch power of OFF transmitter, per lane** | | | | -30 | dBm | |
| **Extinction ratio** | | 3 | | | dB | |
| **Transmitter transition time, per lane** | | | | 34 | pS | |
| **RIN$_{12}$OMA** | | | | -128 | dB/Hz | |
| **Optical return loss tolerance** | | | | 12 | dB | |
| **Encircled Flux** | | ≥86% at 19μm<br>≤ 30% at 4.5μm | | | | 4 |
| **Receiver** | | | | | | |
| **Center Wavelength** | λ | 840 | | 860 | nm | |
| **Damage threshold, per lane** | | 5 | | | dBm | 5 |
| **Average receive power, per lane** | | | | 4 | dBm | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Average receive power, per lane** | | -8.4 | | | dBm | 6 |
| **Receive power (OMAouter), per lane** | | | | 3 | dBm | |
| **Receiver reflectance** | | | | -12 | dB | |
| **Receiver sensitivity (OMAouter), per lane** | | | | Equation (138–1) | dBm | 7 |
| **Stressed receiver sensitivity (OMAouter), per lane** | | | | -3.4 | dBm | 8 |
| **Conditions of stressed receiver sensitivity test** | | | | | | |
| **LOS De-Assert** | | | | -9 | dBm | |
| **LOS Assert** | | -30 | | -10 | dBm | |
| **LOS Hysteresis** | | 0.5 | | | dB | |
| **Stressed eye closure for PAM4 (SECQ), lane under test** | | 4.5 | | | dB | 9 |
| **SECQ – 10log10(*Ceq*)f, each lane (max)** | | 4.5 | | | dB | 9 |
| **OMAouter of each aggressor lane** | | 3 | | | dBm | |

**Notes:**

1. RMS spectral width is the standard deviation of the spectrum.
2. Even if the TDECQ < 1.4 dB, the OMAouter (min) must exceed this value.
3. Ceq is a coefficient defined in 121.8.5.3, which accounts for the reference equalizer noise enhancement.
4. If measured into type A1a.2 or type A1a.3, or A1a.4, 50µm fiber, in accordance with IEC 61280-1-4.
5. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level on one lane. The receiver does not have to operate correctly at this input power.
6. 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.
7. Receiver sensitivity is informative and is defined for a transmitter with a value of SECQ up to 4.5 dB (see Receiver Sensitivity Illustration below from IEEE 802.3cd clause 138).
8. Measured with conformance test signal at TP3 (see IEEE 802.3cd 138.8.10) for the BER of 2.4E-4.
9. Ceq is a coefficient defined in 121.8.5.3, which accounts for the reference equalizer noise enhancement.
10. These “Conditions of Stressed Receiver Sensitivity Test” are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

**Receiver Sensitivity**

Receiver Sensitivity is informative and is defined for a transmitter with a value of SECQ up to 4.5dB. Receiver Sensitivity should meet Equation (138-1).

$$RS = \max(-6.5, SECQ - 7.9) \text{ (dBm)} \qquad (138\text{-}1)$$

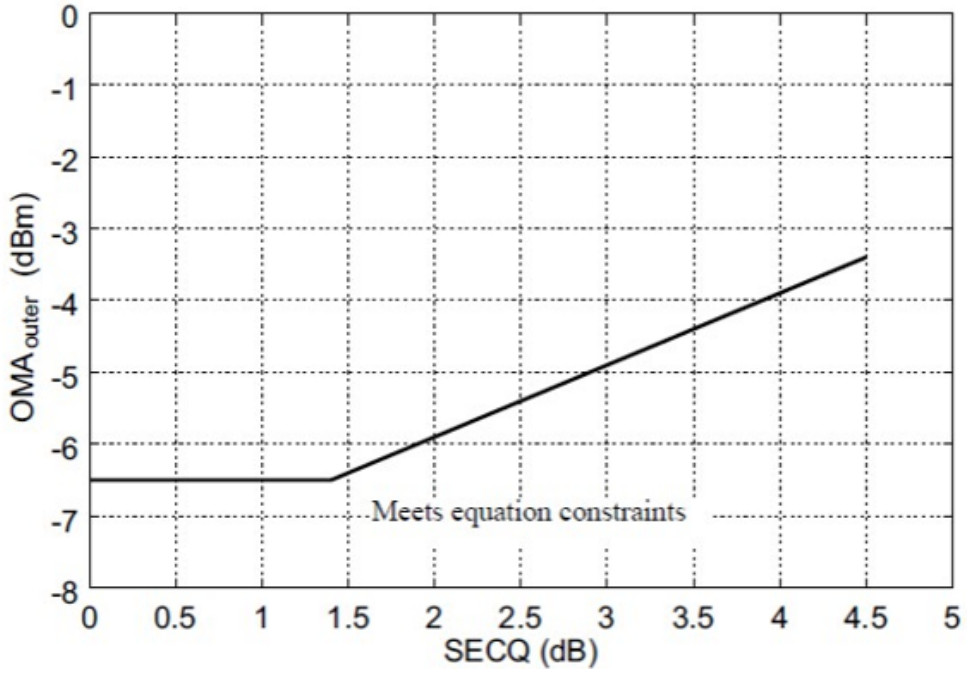
Where

*RS* is the receiver sensitivity

*SECQ* is the SECQ of the transmitter for receivers is stressed receiver sensitivity.

The normative requirement for receivers is stressed receiver sensitivity.

**Illustration of Receiver Sensitivity**



**Pin Descriptions**

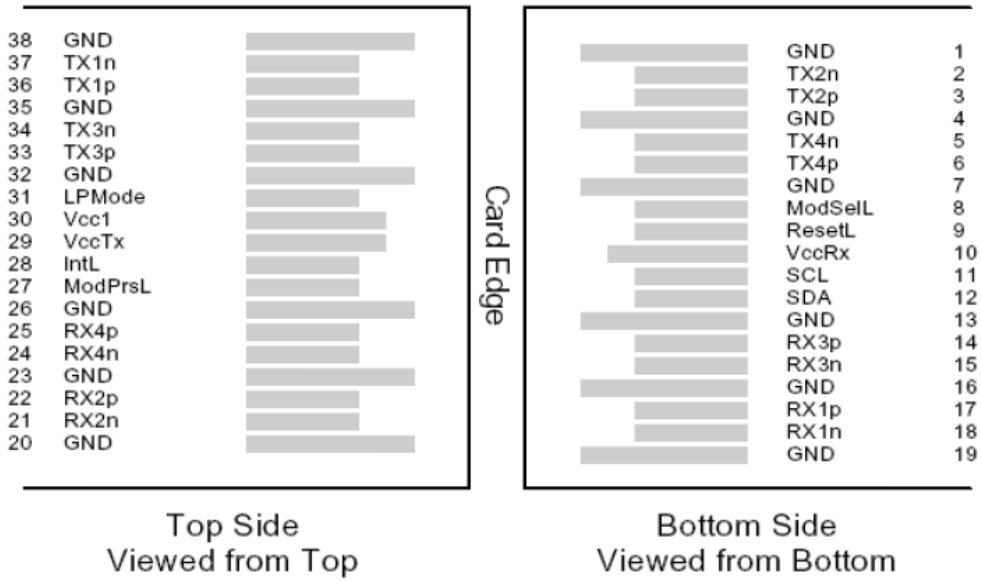
| Pin | Symbol | Description | Notes |
|---|---|---|---|
| **1** | GND | Ground. | 1 |
| **2** | Tx2- | Transmitter Inverted Data Input. | |
| **3** | Tx2+ | Transmitter Non-Inverted Data Input. | |
| **4** | GND | Ground. | 1 |
| **5** | Tx4- | Transmitter Inverted Data Input. | |
| **6** | Tx4+ | Transmitter Non-Inverted Data Input. | |
| **7** | GND | Ground. | 1 |
| **8** | ModSelL | Module Select. | |
| **9** | ResetL | Module Reset. | |
| **10** | VccRx | +3.3V Power Supply Receiver. | |
| **11** | SCL | 2-Wire Serial Interface Clock. | |
| **12** | SDA | 2-Wire Serial Interface Data. | |
| **13** | GND | Ground. | 1 |
| **14** | Rx3+ | Receiver Non-Inverted Data Output. | |
| **15** | Rx3- | Receiver Inverted Data Output. | |
| **16** | GND | Ground. | 1 |
| **17** | Rx1+ | Receiver Non-Inverted Data Output. | |
| **18** | Rx1- | Receiver Inverted Data Output. | |
| **19** | GND | Ground. | 1 |
| **20** | GND | Ground. | 1 |
| **21** | Rx2- | Receiver Inverted Data Output. | |
| **22** | Rx2+ | Receiver Non-Inverted Data Output. | |
| **23** | GND | Ground. | 1 |
| **24** | Rx4- | Receiver Inverted Data Output. | |
| **25** | Rx4+ | Receiver Non-Inverted Data Output. | |
| **26** | GND | Ground. | 1 |
| **27** | ModPrsL | Module Present. | |
| **28** | IntL | Interrupt. | |
| **29** | VccTx | +3.3V Power Supply Transmitter. | |
| **30** | Vcc1 | +3.3V Power Supply. | |
| **31** | LPMode | Low-Power Mode. | |
| **32** | GND | Ground. | 1 |
| **33** | Tx3+ | Transmitter Non-Inverted Data Input. | |
| **34** | Tx3- | Transmitter Inverted Data Input. | |
| **35** | GND | Ground. | 1 |

| | | | |
|---|---|---|---|
| **36** | Tx1+ | Transmitter Non-Inverted Data Input. | |
| **37** | Tx1- | Transmitter Inverted Data Input. | |
| **38** | GND | Ground. | 1 |

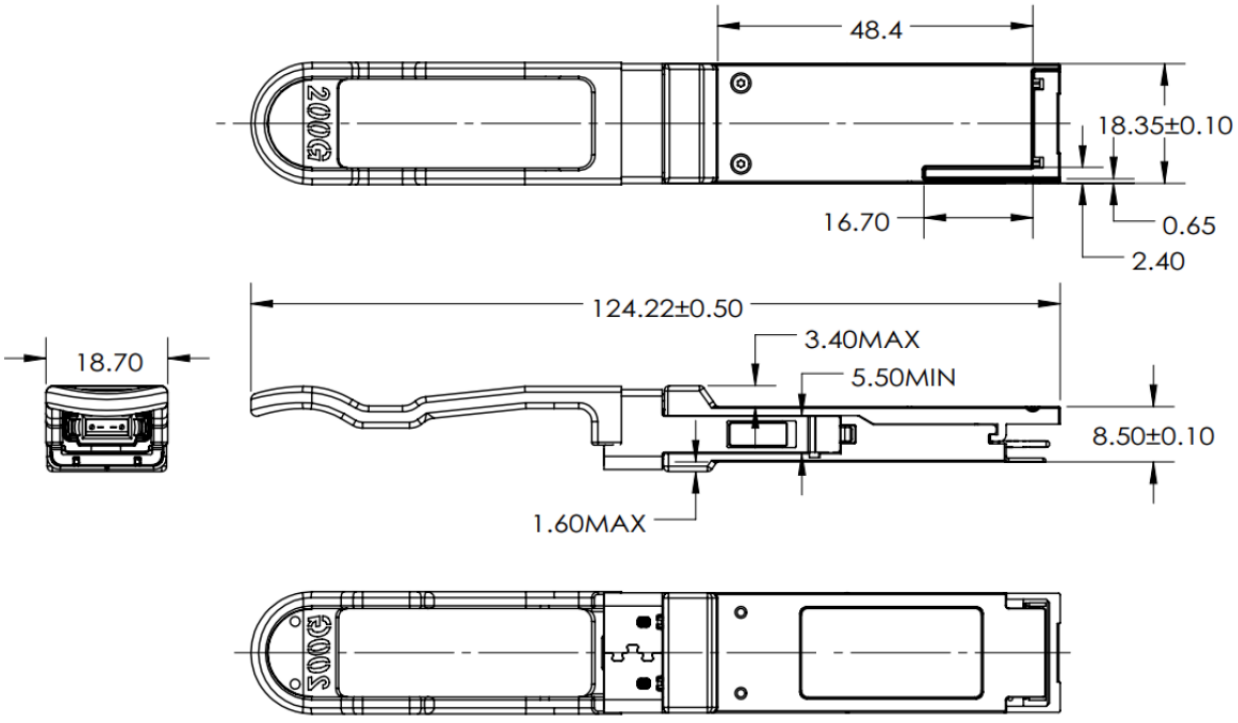
**Notes:**

1. Circuit ground is internally isolated from chassis ground.

**Pin-Out Definitions**




**Mechanical Specifications**



**OptioConnect**
**Innovation for the Future of High-Speed Networking**

**Who We Are**
OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

**What We Do**
At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

**Smarter Networks by Design**
Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

**Our Team**
Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

**Our Mission**
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**Let's Connect**
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