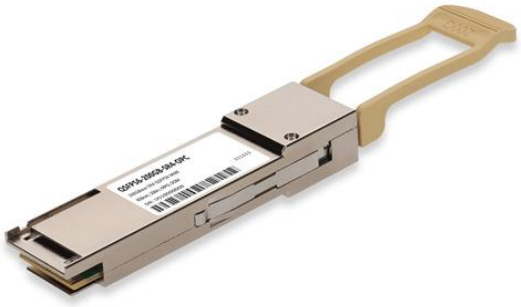
**QSFP56-200GB-SR4-OPC**

MSA and TAA 200GBase-SR4 QSFP56 Transceiver Infiniband HDR (MMF, 850nm, 100m, MPO, DOM)

**Features**

- Supports SFF-8636 management interface
- MPO Connector
- Multi-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead-Free



**Applications:**

- 200GBase
- Infiniband HDR
- Access and Enterprise

**Product Description**

This MSA compliant QSFP56 transceiver provides 200GBase-SR4 throughput up to 100m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure 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.

### Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Maximum Supply Voltage** | Vcc | 0 | | 3.63 | V | |
| **Storage Temperature** | Tstg | -40 | | 85 | °C | |
| **Relative Humidity** | RH | 5 | | 85 | % | 1 |
| **Operating Case Temperature** | Tc | 0 | | 70 | °C | |
| **Bit Error Ratio** | BER | | | 2.4E-4 | | 2 |

**Notes:**

1. Non-condensing.
2. 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 | | | 1600 | mA | |
| **Module Power Dissipation** | $P_D$ | | | 5 | W | |
| **Transmitter** | | | | | | |
| **Differential Data Input Voltage Peak-to-Peak Swing** | VIN,pp | | | 900 | mV | |
| **Receiver** | | | | | | |
| **Differential Data Output Voltage Peak-to-Peak Swing** | VOUT,pp | | | 900 | mV | |

**Optical Characteristics**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Signaling Rate Per Lane** | Rate | | 26.5625 | | GBd | |
| **Modulation Format** | MF | | PAM4 | | | |
| **Signaling Speed Accuracy** | SSA | -100 | | 100 | ppm | |
| **Center Wavelength** | λ | | 850 | | nm | |
| **RMS Spectral Width** | Δλ | | | 0.6 | nm | |
| **Optical Return Loss Tolerance** | ORLT | | | 12 | dB | |
| **Average Optical Power** | Pavg | -6.5 | | +4 | dBm | |
| **Extinction Ratio** | ER | 3 | | | dB | |
| **Optical Modulation Amplitude Per Lane** | OMA | -4.5 | | +3 | dBm | |
| **Launch Power in OMA Outer Minus TDECQ Per Lane** | | -5.9 | | | dBm | |
| **Transmitter and Dispersion Eye Closure for PAM4 (TDECQ) Per Lane** | TDECQ | | | 4.5 | dB | |
| **TDECQ – 10*log$_{10}$(Ceq) Per Lane** | | | | 4.5 | dB | |
| **Relative Intensity Noise** | RIN | | | -128 | dB/Hz | |
| **Transmitter Transition Time Per Lane** | | | | 34 | ps | |
| **Laser Off Power** | | | | -30 | dBm | |
| **Encircled Flux** | EF | | ≥86% at 19µm<br>≤ 30% at 4.5µm | | | |
| **Receiver** | | | | | | |
| **Signaling Rate Per Lane** | Rate | | 26.5625 | | GBd | |
| **Modulation Format** | MF | | PAM4 | | | |
| **Signaling Speed Accuracy** | SSA | -100 | | +100 | ppm | |
| **Center Wavelength** | λ | | 850 | | nm | |
| **Average Receive Power Per Lane** | Pavg | -8.4 | | +4 | dBm | |
| **Receive Power Per Lane OMA** | Po | | | 3 | dBm | |
| **Receiver Reflectance** | RL | | | -12 | dB | |
| **Receiver Sensitivity OMA Per Lane** | S | | | Max = (-6.5, SECQ-7.9) | dBm | 1 |
| **Damage Threshold** | THd | 5 | | | dBm | |

**Notes:**

1. Receiver sensitivity is informative and defined for a transmitter with a value of SECQ up to 4.5dB.

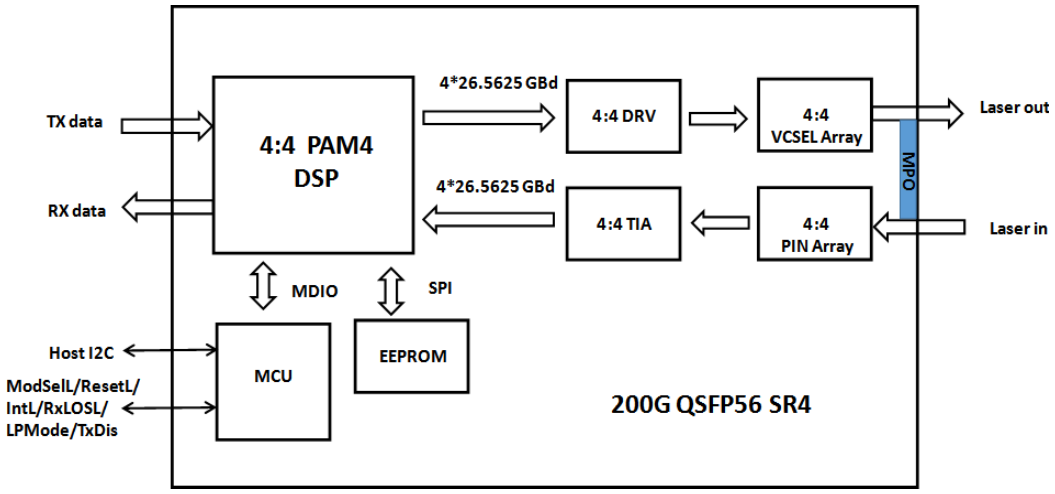
**Pin Descriptions**

| 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. | |
| **8** | ModSelL | Module Select. | |
| **9** | ResetL | Module Reset. | |
| **10** | VccRx | +3.3V Power Supply Receiver. | 2 |
| **11** | SCL | 2-Wire Serial Interface Clock. | |
| **12** | SDA | 2-Wire Serial Interface Data. | |
| **13** | GND | Ground. | |
| **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. | 1 |
| **19** | GND | Ground. | 1 |
| **20** | GND | Ground. | |
| **21** | Rx2- | Receiver Inverted Data Output. | |
| **22** | Rx2+ | Receiver Non-Inverted Data Output. | |
| **23** | GND | Ground. | |
| **24** | Rx4- | Receiver Inverted Data Output. | |
| **25** | Rx4+ | Receiver Non-Inverted Data Output. | |
| **26** | GND | Ground. | 1 |
| **27** | ModPrsL | Module Present. | |
| **28** | IntL/RxLOSL | Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636). | |
| **29** | VccTx | +3.3V Power Supply Transmitter. | 2 |
| **30** | Vcc1 | +3.3V Power Supply. | 2 |
| **31** | LPMode/TxDis | Low-Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636). | |
| **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. GND is the symbol for signal and supply (power) common for the module. All are common within the module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. VccRx, Vcc1, and VccTx are applied concurrently and may be internally connected within the module in any combination.

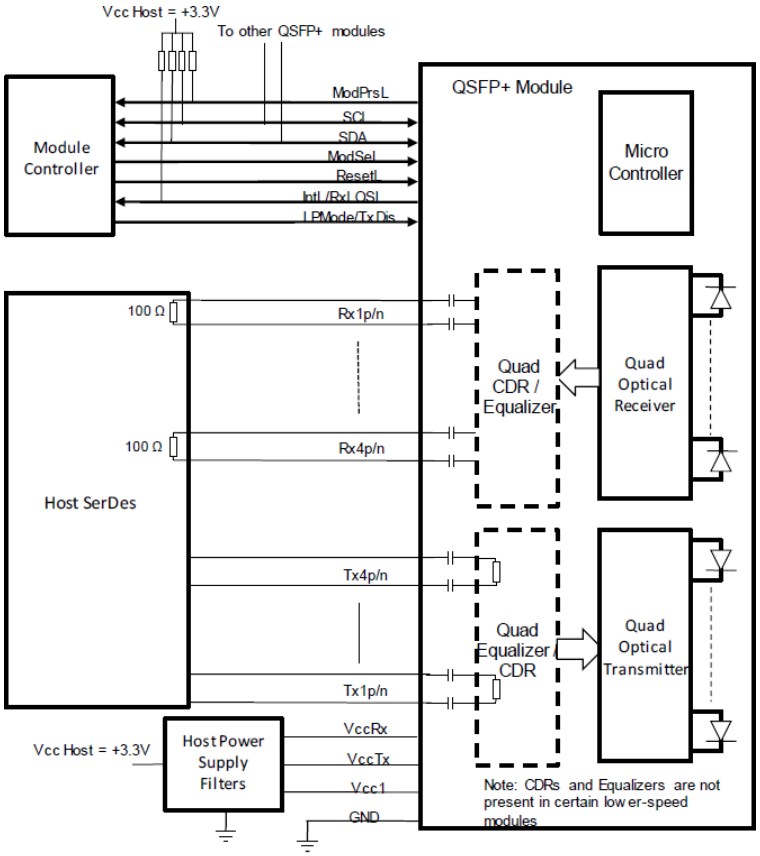
**Block Diagram of Transceiver**




*Transmitter Section:* This module converts 4-channel 53.125Gbps electrical data to 4-channel 850nm 53.125Gbps optical signals for 212Gbps optical transmission.

*Receiver Section:* Similarly, this module optically converts 4-channel 850nm 53.125Gbps optical signals to 4-channel electrical data output on the receiver side.

**Recommended Interface Circuit**




**Mechanical Specifications**

Unit is millimeter. All dimensions are ±0.1mm unless otherwise specified.