**QSFP28-100GB-BX-U-70-HW2-OPC**

Huawei® Compatible TAA 100GBase-ZR4 Lite BX QSFP28 Transceiver (SMF, 1272.55nmTx/1310.19nmRx, 70km, LC, DOM)

**Features**

- • Compliant with QSFP28 MSA
- • Hot Pluggable
- • Supports 103.1Gbps Aggregate Bit Rate
- • Up to 70km Reach for G.652 SMF
- • Single 3.3V Power Supply
- • Cooled 4x25Gbps LAN WDM Transmitter TOSA, Receiver ROSA
- • Maximum Power Consumption: 5.0W
- • Single LC Receptacle
- • Operating Temperature: 0 to 70 Celsius
- • RoHS Compliant and Lead-Free

**Applications:**

- • 100GBase Ethernet
- • Datacenter

**Product Description**

This Huawei® compatible QSFP28 transceiver provides 100GBase-BX ZR4L throughput up to 70km over single-mode fiber (SMF) using a wavelength of 1272.55nmTx/1310.19nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Huawei®. 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. 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 |
|---|---|---|---|---|---|---|
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Operating Case Temperature | Tc | 0 | | 70 | °C | |
| Relative Humidity | RH | 0 | | 90 | % | |
| Supply Voltage | Vcc | -0.5 | | 3.6 | V | |
| Power Consumption | P | | | 5.0 | W | |
| Data Rate Per Lane | Gbps | | 25.78125 | | | |
| Signaling Speed Accuracy | | -100 | | 100 | ppm | |

## Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| Power Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | |
| Power Supply Current | Icc | mA | | 1443 | mA | |
| Sustained Peak Current | Isp | mA | | 1650 | mA | |
| Instantaneous Peak Current | Iip | | | 2000 | | |
| Power Dissipation | PW | | | 5.0 | W | |
| Low Power Dissipation | $P_{DISS}$ | | | 1.5 | W | |
| **Transmitter** | | | | | | |
| Differential Voltage Pk-Pk | | | | 900 | mV | |
| Common-Mode Noise (RMS) | | | | 17.5 | mV | |
| Eye Height | | 95 | | | mV | |
| Eye Width | | 0.46 | | | UI | |
| Differential Termination Mismatch | | | | 10 | % | |
| Transition Time | | 10 | | | ps | 20-80% |
| Common-Mode Voltage | | -0.3 | | 2.8 | V | |
| **Receiver** | | | | | | |
| Differential Voltage Pk-Pk | | | | 900 | mV | |
| Common-Mode Noise (RMS) | | | | 17.5 | mV | |
| Eye Height | | 228 | | | mV | |
| Eye Width | | 0.57 | | | UI | |
| Differential Termination Mismatch | | | | 10 | % | |
| Transition Time | | 9.5 | | | ps | 20-80% |
| Vertical Eye Closure | VEC | | | 5.5 | dB | |
| **3.3V LVTTL** | | | | | | |
| Input High Voltage | VIH | 2.0 | | Vcc+0.3 | V | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Input Low Voltage** | VIL | -0.3 | | 0.8 | V | |
| **Input Leakage Current** | IIN | -10 | | +10 | uA | |
| **Output High Voltage (IOH=100uA)** | VOH | Vcc-0.5 | | Vcc+0.3 | V | |
| **Output Low Voltage (IOL=100uA)** | VOL | 0 | | 0.4 | V | |
| **3.3V LVCMOS** | | | | | | |
| **Input High Voltage** | VIH | Vcc*0.7 | | Vcc+0.5 | V | |
| **Input Low Voltage** | VIL | -0.3 | | Vcc*0.3 | V | |
| **Output High Voltage (IOH=100uA)** | VOH | Vcc-0.5 | | Vcc+0.3 | VOH | |
| **Output Low Voltage (IOL=100uA)** | VOL | 0 | | 0.4 | VOL | |
| **I/O Pin Capacitance** | Ci | | | 14 | Ci | |

## Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Center Wavelength** | λC | 1272.55 | 1273.55 | 1274.54 | nm | |
| | | 1276.89 | 1277.89 | 1278.89 | | |
| | | 1281.25 | 1282.26 | 1283.27 | | |
| | | 1285.65 | 1286.66 | 1287.68 | | |
| **Side-Mode Suppression Ratio (Minimum)** | SMSR | 30 | | | | |
| **Total Average Launch Power** | Pt | | | 13 | dBm | |
| **Average Launch Power Per Lane** | Pa | 1.0 | | 7.0 | dBm | 1 |
| **Optical Modulation Amplitude Per Lane** | OMA | 3 | | 8.8 | dBm | 2 |
| **Difference in Launch Power Between Any Two Lanes (OMA) (Maximum)** | | | | 3.6 | dB | |
| **Average Launch Power of Off Transmitter Per Lane** | Poff | | | -30 | dBm | |
| **Extinction Ratio** | ER | 6 | | | dB | |
| **Optical Return Loss Tolerance** | | | | 20 | dB | |
| **Transmitter Reflectance** | | | | 12 | dB | 3 |
| **Eye Diagram** | | | ≥10 | | | |
| **Eye Mask Margin** | | {0.25, 0.4, 0.45, 0.25, 0.28, 0.4} | | | | 4 |
| **Receiver** | | | | | | |
| **Center Wavelength** | λC | 1294.53 | 1295.56 | 1296.59 | nm | |
| | | 1299.02 | 1300.05 | 1301.09 | | |
| | | 1303.54 | 1304.58 | 1305.63 | | |
| | | 1308.09 | 1309.14 | 1310.19 | | |
| **Damage Threshold** | Pmax | 5.5 | | | dBm | 5 |

| Parameter | Symbol | Min | | | Unit | Max |
|---|---|---|---|---|---|---|
| **Average Receive Power Per Lane** | Pin | -26 | | -5 | | 6 |
| **Receive Power on OMA Per Lane** | PinOMA | | | -3.5 | dBm | |
| **Receiver Reflectance** | dB | | | -26 | | |
| **Receiver Sensitivity for Each Lane (100GbE) at BER= 5x10$^{-5}$ BER CD=[-356/66] ps/nm** | S | | | -24 | dBm | |
| **LOS Hysteresis** | | 0.5 | | 5 | dB | |

**Notes:**

1. Average launch power, per lane (minimum), 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 TDP<1dB, the OMA (minimum) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. Eye mask hit ratio is 5E[-5].
5. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
6. Average receive power, each lane (minimum), 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 (OMA), per lane (maximum) at 5x10^{-5} BER, is a normative specification.
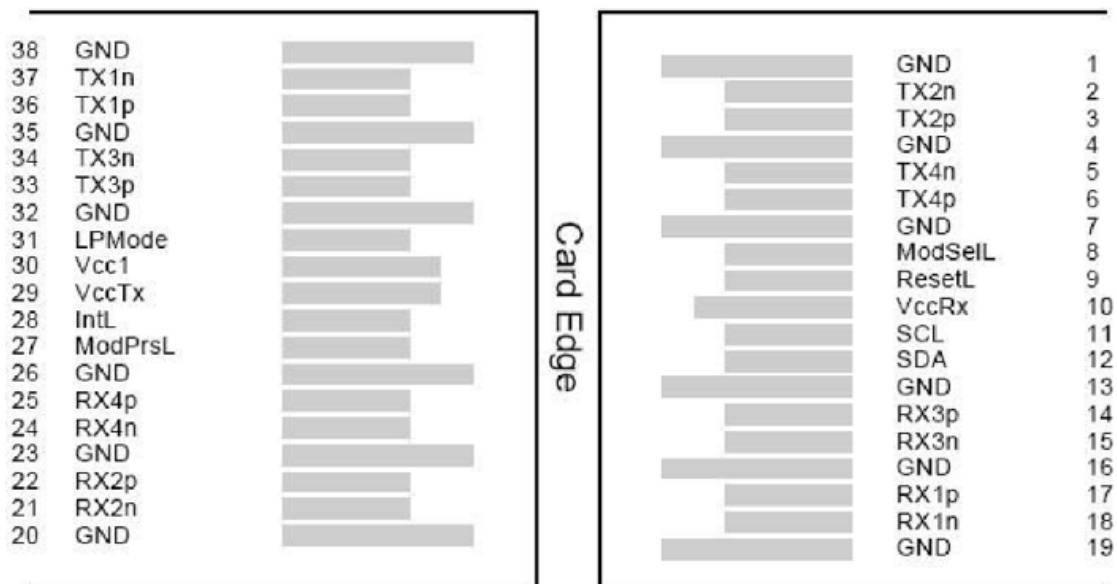
## Pin Descriptions

| Pin | Symbol | Name/Description | Notes |
|---|---|---|---|
| 1 | GND | Module Ground. | 1 |
| 2 | Tx2- | Transmitter Inverted Data Input. | |
| 3 | Tx2+ | Transmitter Non-Inverted Data Input. | |
| 4 | GND | Module Ground. | 1 |
| 5 | Tx4- | Transmitter Inverted Data Input. | |
| 6 | Tx4+ | Transmitter Non-Inverted Data Input. | |
| 7 | GND | Module Ground. | 1 |
| 8 | ModSelL | Module Select. | |
| 9 | ResetL | Module Reset. | |
| 10 | VccRx | +3.3V Receiver Power Supply. | 2 |
| 11 | SCL | 2-Wire Serial Interface Clock. | |
| 12 | SDA | 2-Wire Serial Interface Data. | |
| 13 | GND | Module Ground. | 1 |
| 14 | Rx3+ | Receiver Non-Inverted Data Output. | |
| 15 | Rx3- | Receiver Inverted Data Output. | |
| 16 | GND | Module Ground. | 1 |
| 17 | Rx1+ | Receiver Non-Inverted Data Output. | |
| 18 | Rx1- | Receiver Inverted Data Output. | |
| 19 | GND | Module Ground. | 1 |
| 20 | GND | Module Ground. | 1 |
| 21 | Rx2- | Receiver Inverted Data Output. | |
| 22 | Rx2+ | Receiver Non-Inverted Data Output. | |
| 23 | GND | Module Ground. | 1 |
| 24 | Rx4- | Receiver Inverted Data Output. | |
| 25 | Rx4+ | Receiver Non-Inverted Data Output. | |
| 26 | GND | Module Ground. | 1 |
| 27 | ModPrsL | Module Present. | |
| 28 | IntL/RxLOSL | Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636). | |
| 29 | VccTx | +3.3V Transmitter Power Supply. | 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 | Module Ground. | 1 |
| 33 | Tx3+ | Transmitter Non-Inverted Data Input. | |
| 34 | Tx3- | Transmitter Inverted Data Input. | |
| 35 | GND | Module Ground. | 1 |

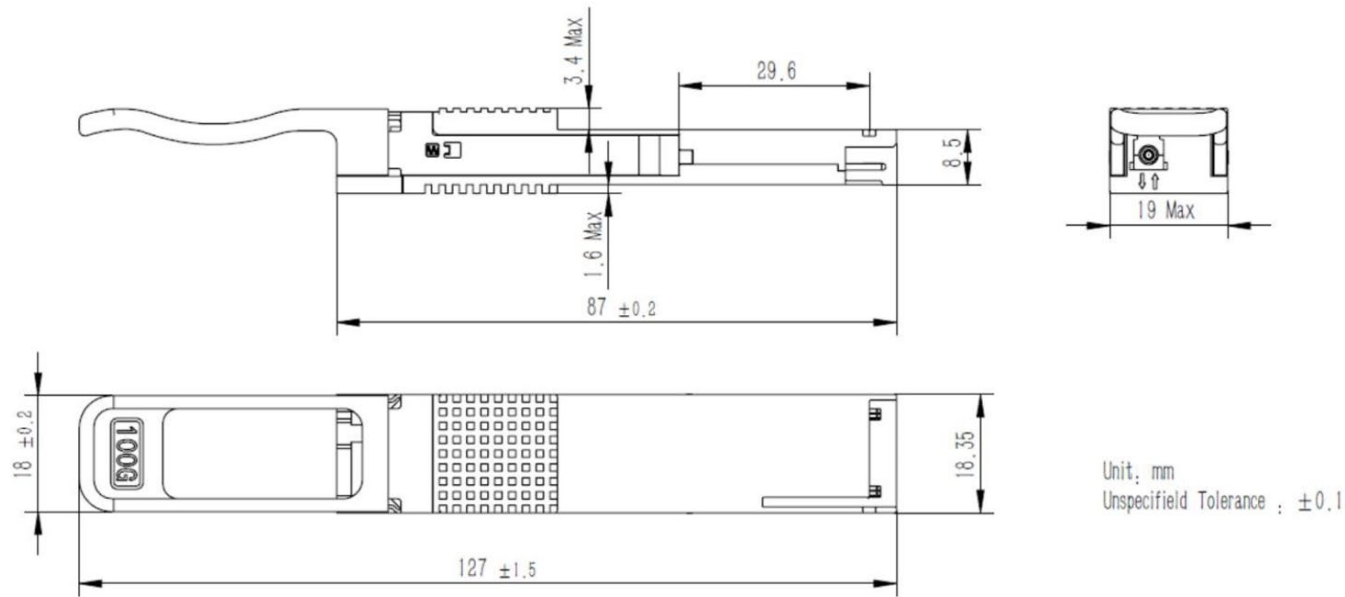| 36 | Tx1+ | Transmitter Non-Inverted Data Input. | |
|---|---|---|---|
| 37 | Tx1- | Transmitter Inverted Data Input. | |
| 38 | GND | Module Ground. | 1 |

**Notes:**

1. GND is the symbol for signal and supply (power) common for the QSFP28 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 the receiving and transmission power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the module in any combination. The connector pins are each rated for a maximum current of 1000mA.

**Electrical Pin-Out Details**



| 38 | GND |
| 37 | TX1n |
| 36 | TX1p |
| 35 | GND |
| 34 | TX3n |
| 33 | TX3p |
| 32 | GND |
| 31 | LPMode |
| 30 | Vcc1 |
| 29 | VccTx |
| 28 | IntL |
| 27 | ModPrsL |
| 26 | GND |
| 25 | RX4p |
| 24 | RX4n |
| 23 | GND |
| 22 | RX2p |
| 21 | RX2n |
| 20 | GND |

Card Edge

| GND | 1 |
| TX2n | 2 |
| TX2p | 3 |
| GND | 4 |
| TX4n | 5 |
| TX4p | 6 |
| GND | 7 |
| ModSelL | 8 |
| ResetL | 9 |
| VccRx | 10 |
| SCL | 11 |
| SDA | 12 |
| GND | 13 |
| RX3p | 14 |
| RX3n | 15 |
| GND | 16 |
| RX1p | 17 |
| RX1n | 18 |
| GND | 19 |

**Mechanical Specifications**

3.4 Max

29.6

8.5

1.6 Max

87 ±0.2

19 Max

18 ±0.2

100G

18.35

Unit: mm
Unspecifield Tolerance : ±0.1

127 ±1.5

**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:

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

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www.optioconnect.com | info@optioconnect.com