

Lightem 100Gb/s QSFP28 LR4 LAN WDM Singlemode Transceiver 10km Duplex LC LQSFP28S4L10LR4

FEATURES

- LAN WDM Mux/De-mux design
- Up to 10km links on Singlemode fiber
- Support line rates from 103.125 Gbps
- Electrically hot-pluggable
- Compliant with QSFP28 MSA
- Case operating temperature range:0°C to 70°C
- Power dissipation < 4W



APPLICATIONS

- 100G Ethernet
- Data center and LAN

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------|--------|---------|------|---------|------|------|
| Storage Temperature | Ts | -40 | - | 85 | °C | |
| Relative Humidity | RH | 5 | - | 95 | % | |
| Power Supply Voltage | VCC | -0.3 | - | 4 | V | |
| Signal Input Voltage | | Vcc-0.3 | - | Vcc+0.3 | V | |

RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------------|--------|------|----------|------|------|------------------|
| Case Operating Temperature | Tcase | 0 | | +70 | °C | Commercial grade |
| Power Supply Voltage | VCC | 3.14 | 3.3 | 3.46 | V | |
| Power Supply Current | ICC | - | | 1060 | mA | |
| Data Rate | BR | | 25.78125 | | Gbps | Each Channel |
| Transmission Distance | TD | | - | 10 | Km | MMF |

ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Min | Typ | Max | Unit | Note |
|--------------------------------------|----------------------|------|-----|------|------|------|
| Supply Voltage | Vcc | 3.14 | 3.3 | 3.46 | V | |
| Supply Current | I _{cc} | | | 600 | mA | |
| Transmitter | | | | | | |
| Industrial differential impedance | RIN | | 100 | | Ω | 1 |
| Differential data input swing | V _{in, pp} | 180 | | 1000 | mV | |
| Single ended input voltage tolerance | V _{inT} | -0.3 | | 4 | V | |
| Receiver | | | | | | |
| Differential data out swing | V _{out, pp} | 300 | | 850 | mV | 2 |

Notes:

- 1.Connected directly to TX data input pins. AC coupled thereafter
- 2.Into 100 ohms differential termination

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OPTICAL CHARACTERISTICS

| Parameter | Symbol | Min | Typ | Max | nm | Note |
|-------------------------------------|-------------|------------------------------------|---------|---------|-----|------|
| Transmitter | | | | | | |
| Wavelength Assignment | λ_0 | 1294.53 | 1295.56 | 1296.59 | nm | |
| | λ_1 | 1299.02 | 1300.05 | 1301.09 | | |
| | λ_2 | 1303.54 | 1304.58 | 1305.63 | | |
| | λ_3 | 1308.09 | 1309.14 | 1310.19 | | |
| Total Output Power | Pout | | | 10.5 | dBm | |
| Average Launch Power each lane | | -6.5 | | 4.5 | dBm | |
| Spectral Width (-20dB) | σ | | | 1 | nm | |
| Optical Extinction Ratio | ER | 3.5 | | | dB | |
| Average launch Power off each lane | Poff | | | -30 | dBm | |
| Output Eye Mask (X1,X2,X3,Y1,Y2,Y3) | | (0.25, 0.4, 0.45, 0.25, 0.28, 0.4) | | | | |
| Receiver | | | | | | |
| Rx Sensitivity per lane | RSENS | | | -8.6 | dBm | |
| Input Saturation Power (Overload) | Psat | | | 4.5 | dBm | |
| Receiver Reflectance | Rr | | | -26 | dB | |

Notes:

1.Measured with a PRBS 231-1 test pattern, @25.78Gb/s, BER<10⁻¹²

PIN DESCRIPTION

| Pin | Symbol | Symbol | NOTE |
|-----|---------|---------|------|
| 38 | GND | GND | 1 |
| 37 | TX1n | TX2n | 2 |
| 36 | TX1p | TX2p | 3 |
| 35 | GND | GND | 4 |
| 34 | TX3n | TX4n | 5 |
| 33 | TX3p | TX4p | 6 |
| 32 | GND | GND | 7 |
| 31 | LPMode | ModSelL | 8 |
| 30 | Vcc1 | ResetL | 9 |
| 29 | VccTx | VccRx | 10 |
| 28 | IntI | SCL | 11 |
| 27 | ModPrsl | SDA | 12 |
| 26 | GND | GND | 13 |
| 25 | RX4p | RX3p | 14 |
| 24 | RX4n | RX3n | 15 |
| 23 | GND | GND | 16 |
| 22 | RX4p | RX1p | 17 |
| 21 | RX4n | RX1n | 18 |
| 20 | GND | GND | 19 |

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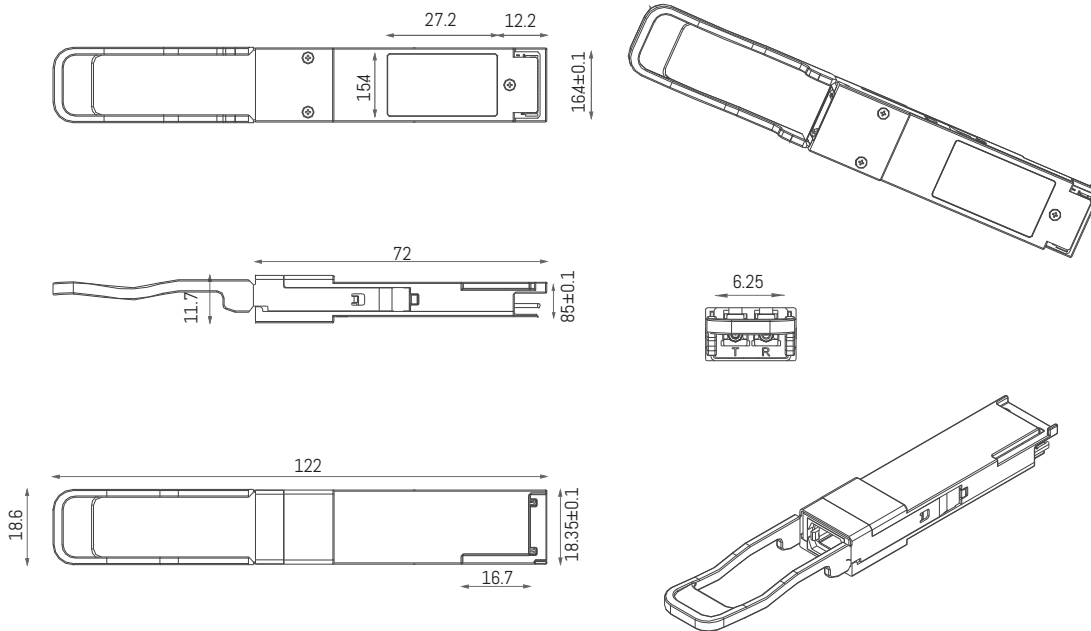
| Pin | Symbol | Name/Description | NOTE |
|-----|---------|--|------|
| 1 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 2 | Tx2n | Transmitter Inverted Data Input | |
| 3 | Tx2p | Transmitter Non-Inverted Data output | |
| 4 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 5 | Tx4n | Transmitter Inverted Data Input | |
| 6 | Tx4p | Transmitter Non-Inverted Data output | |
| 7 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 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 | Transmitter Ground (Common with Receiver Ground) | |
| 14 | Rx3p | Receiver Non-Inverted Data Output | |
| 15 | Rx3n | Receiver Inverted Data Output | |
| 16 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 17 | Rx1p | Receiver Non-Inverted Data Output | |
| 18 | Rx1n | Receiver Inverted Data Output | |
| 19 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 20 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 21 | Rx2n | Receiver Inverted Data Output | |
| 22 | Rx2p | Receiver Non-Inverted Data Output | |
| 23 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 24 | Rx4n | Receiver Inverted Data Output | 1 |
| 25 | Rx4p | Receiver Non-Inverted Data Output | |
| 26 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 27 | ModPrsl | Module Present | |
| 28 | IntL | Interrupt | |
| 29 | VccTx | 3.3V power supply transmitter | 2 |
| 30 | Vcc1 | 3.3V power supply | 2 |
| 31 | LPMODE | Low Power Mode , not connect | |
| 32 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 33 | Tx3p | Transmitter Non-Inverted Data Input | |
| 34 | Tx3n | Transmitter Inverted Data Output | |
| 35 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 36 | Tx1p | Transmitter Non-Inverted Data Input | |
| 37 | Tx1n | Transmitter Inverted Data Output | |
| 38 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |

Notes:

1. GND is the symbol for signal and supply(power) common for QSFP+ modules. All are common within the QSFP+ 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. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

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MECHANICAL DIMENSIONS



ORDERING INFORMATION

| PN | Description |
|-----------------|--|
| LQSFP28S4L10LR4 | 100Gb/s QSFP28 LR4 LAN WDM Singlemode Transceiver 10km Duplex LC |