

Technical Datasheet

EX-QSFP-8LC-AOC10M-C

Juniper® Compatible 40Gb/s QSFP+ to 4 Duplex LC Active Optical Breakout Cable, 10m

FEATURES

- Available lengths 3m to 100m
- Four-channel full duplex active optical cable with breakout from QSFP+ to four duplex LC
- Hot-pluggable QSFP+ footprint
- 4 x Duplex LC Connector
- Support 41.2Gbps aggregate bit rate
- Data rate up to 10.3Gbps per channel
- Power Dissipation <1.8W
- Single +3.3V power supply
- Commercial Operating Temperature range 0°C to 70°C
- RoHS-6 Compliant
- Compliant with QSFP+ MSA

APPLICATIONS

10G/40G Ethernet
Proprietary high speed, high density data
High performance computing, server and data storage

DESCRIPTION

ATGBICS EX-QSFP-8LC-AOC10M-C is a 40Gb/s QSFP+ to 4x 10G SFP+ hot pluggable Active Optical Cable for use in 40G-Ethernet links.

They are compliant with SFF-8679, and the mechanical QSFP+ plug is compatible with SFF-8661. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8636.

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Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|----------------------------|--------|------|---------|------|------|
| Power Supply Voltage | VCC | 0 | | 3.6 | V |
| Storage Temperature | Ts | -40 | | +85 | °C |
| Relative Humidity | RH | 5 | | 85 | % |
| Case Operating Temperature | Tc | 0 | | +70 | °C |

Transceiver Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|--------------------------------|--------|-------|---------|-------|------|------|
| Power Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V | |
| Power Dissipation | PD | | | 1.8 | W | |
| Power Supply Current | Icc | | | 600 | mA | |
| Aggregate Data Rate | | | 41.2 | | Gbps | |
| Signaling rate per lane | | | 10.3 | | Gbps | |
| Clock Rate-I2C | | | | 400 | kHz | |
| Transmitter | | | | | | |
| Input Differential impedance | ZIN | | 100 | | ohm | |
| Differential data input swing | VIN | 180 | | 900 | mV | |
| Single-ended voltage tolerance | | -0.3 | | 3.3 | V | |
| Receiver | | | | | | |
| Output Differential impedance | Zout | | 100 | | ohm | |
| Differential data Output Swing | Vout | 300 | | 850 | mV | |

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Transmitter Optical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--|--------|------|---------|------|------|
| Reference Differential Input Impedance | Zd | - | 100 | - | Ω |
| Optical Return Loss Tolerance | - | - | 12 | - | dB |
| Differential Data Input Swing | Vin_pp | 180 | - | 700 | mV |
| Differential Data Input Threshold | - | - | 50 | - | mV |

Optical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|--|-----------------------|------|---------|-------|------|------|
| Aggregate Data Rate | --- | --- | 41.2 | --- | Gbps | --- |
| Signaling rate per lane | --- | --- | 10.3 | --- | Gbps | --- |
| Transmitter | | | | | | |
| Center Wavelength | λ | 840 | 850 | 860 | nm | --- |
| RMS spectral width | $\Delta\lambda_{RMS}$ | --- | --- | 0.65 | nm | --- |
| Average Optical Power | PAVG | -8.4 | --- | 2.4 | dBm | --- |
| Laser Off Power | POFF | --- | --- | -30 | dBm | --- |
| Extinction Ratio | ER | 3 | 4 | --- | dB | --- |
| Transmitter and dispersion eye closure | TDEC | --- | --- | 3.5 | dB | --- |
| Optical Return Loss Tolerance | ORL | --- | --- | 12 | dB | --- |
| Receiver | | | | | | |
| Center Wavelength | λ | 840 | 850 | 860 | nm | --- |
| Receiver Sensitivity (OMA) | RSENSE 1 | --- | --- | -10.5 | dBm | 1 |
| Stressed Receiver Sensitivity (OMA) | SRS | --- | --- | -7.5 | dBm | --- |
| Maximum Input Power | Pmax | 3.4 | --- | --- | dBm | --- |
| Los Assert | LOSA | -30 | --- | --- | dBm | --- |
| Los Dessert | LOSD | --- | --- | -12 | dBm | --- |

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|----------------------|-------|-----|-----|-----|----|-----|
| Los Hysteresis | LOSH | 0.5 | --- | --- | dB | --- |
| Receiver Reflectance | RREFL | --- | --- | -12 | dB | --- |

Note1: Sensitivity for 10.3Gbps PRBS31 and BER better than or equal to E-12.

General Specifications

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|-----------------------------|-------------------|------|---------|-------|------|--------|
| Aggregate Data Rate | | | 41.2 | | Gbps | |
| Signaling rate per lane | | | 10.3 | | Gbps | |
| Bit Error Ratio (pre-FEC) | BER | | | 1E-12 | | PRBS31 |
| Maximum Supported Distances | | | | | | |
| Fiber Type | Bandwidth (850nm) | | | | | |
| 50um | 2000MHz*km | | | 82 | m | OM2 |
| 50um | 4700MHz*km | | | 300 | m | OM3 |
| 50um | 4700MHz*km | | | 400 | m | OM4 |

Digital Diagnostic Functions

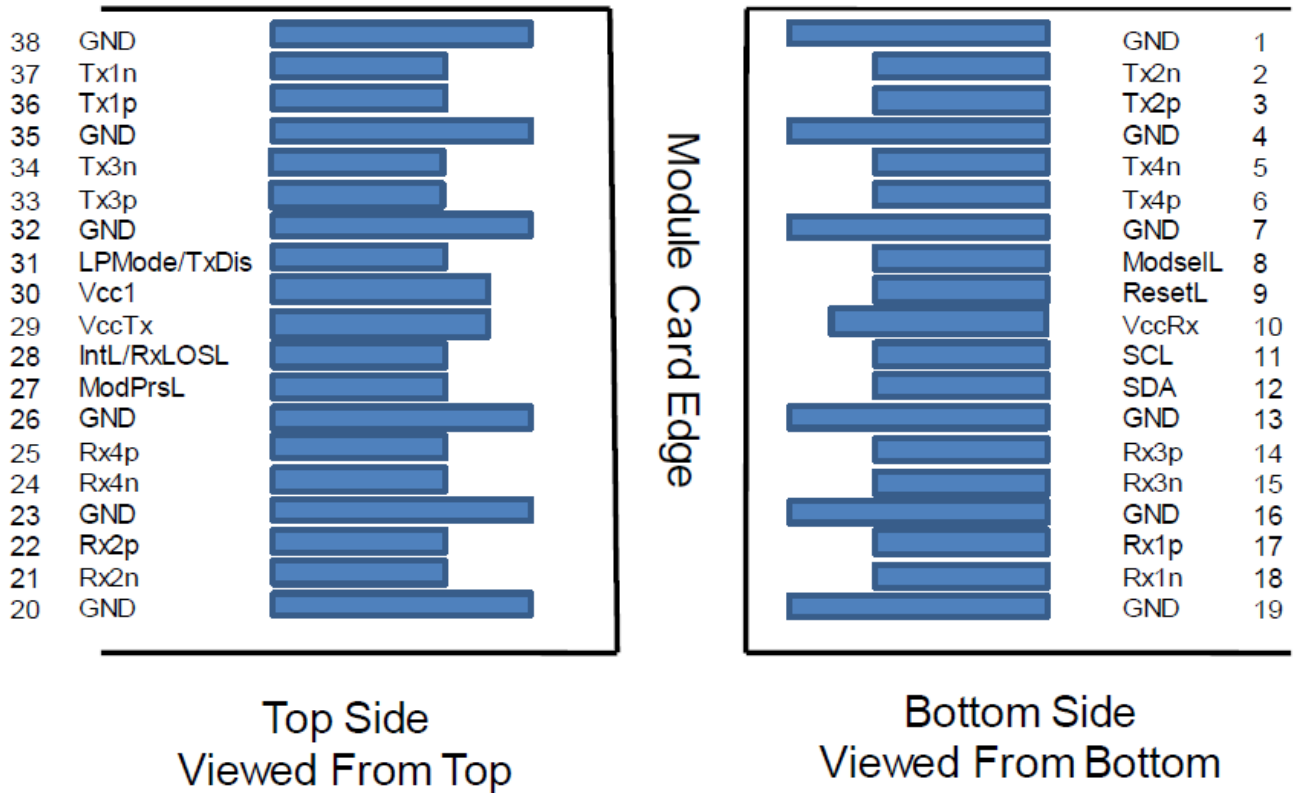
EX-QSFP-8LC-AOC10M-C transceivers can be used in host systems that require either internally or externally calibrated digital diagnostics.

| Parameter | Symbol | Min. | Typical | Max. | Unit | Note |
|---------------------------------------|--------|------|---------|------|------|------|
| Temperature monitor absolute error | --- | -3 | --- | 3 | °C | --- |
| Laser power monitor absolute error | --- | -3 | --- | 3 | dB | --- |
| RX power monitor absolute error | --- | -3 | --- | 3 | dB | --- |
| Supply voltage monitor absolute error | --- | -100 | --- | 100 | mV | --- |
| Bias current monitor | --- | -10% | --- | 10% | mA | --- |

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Pin Assignment

QSFP+ end



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Pin Description for QSFP+

| PIN | Symbol | Name / Description | Note |
|-----|---------|-------------------------------------|------|
| 1 | GND | Ground | 1 |
| 2 | Tx2n | Transmitter Inverted Data Input | |
| 3 | Tx2p | Transmitter Non-Inverted Data Input | |
| 4 | GND | Ground | 1 |
| 5 | Tx4n | Transmitter Inverted Data Input | |
| 6 | Tx4p | Transmitter Non-Inverted Data Input | |
| 7 | GND | Ground | 1 |
| 8 | ModSelL | Module Select | |
| 9 | ResetL | Module Reset | |
| 10 | Vcc Rx | 3.3V Power Supply Receiver | |
| 11 | SCL | 2-wire serial interface clock | |
| 12 | SDA | 2-wire serial interface data | |
| 13 | GND | Ground | 1 |
| 14 | Rx3p | Receiver Non-Inverted Data Output | |
| 15 | Rx3n | Receiver Inverted Data Output | |
| 16 | GND | Ground | 1 |
| 17 | Rx1p | Receiver Non-Inverted Data Output | |
| 18 | Rx1n | Receiver Inverted Data Output | |
| 19 | GND | Ground | 1 |
| 20 | GND | Ground | 1 |
| 21 | Rx2n | Receiver Inverted Data Output | |
| 22 | Rx2p | Receiver Non-Inverted Data Output | |
| 23 | GND | Ground | 1 |
| 24 | Rx4n | Receiver Inverted Data Output | |
| 25 | Rx4p | Receiver Non-Inverted Data Output | |
| 26 | GND | Ground | 1 |

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| | | | |
|----|---------|-------------------------------------|---|
| 27 | ModPrsL | Module Present | |
| 28 | IntL | Interrupt | |
| 29 | Vcc Tx | 3.3V power supply transmitter | |
| 30 | Vcc1 | 3.3V power supply | |
| 31 | LPMode | Low Power Mode | |
| 32 | GND | Ground | 1 |
| 33 | Tx3p | Transmitter Non-Inverted Data Input | |
| 34 | Tx3n | Transmitter Inverted Data Input | |
| 35 | GND | Ground | 1 |
| 36 | Tx1p | Transmitter Non-Inverted Data Input | |
| 37 | Tx1n | Transmitter Inverted Data Input | |
| 38 | GND | Ground | 1 |

Note1: Module ground pins GND are isolated from the module case.

Mechanical Dimensions

Unit: mm

