

Q28-100GP4-BXU49-40-I-AR-AO

Arista Networks® Compatible TAA 100GBase-BX ER1 PAM4 QSFP28 Transceiver Single Lambda (SMF, 1304.58nmTx/1309.14nmRx, 40km, LC, DOM)

Features

- Compliant with QSFP28 MSA
- Compliant with SFF-8636
- Hot Pluggable
- EML Class 1 Laser
- Supports Single 53.125GBd Optical Lane
- Compliant with SFF-8661
- Up to 40km on 9/125µm SMF
- APD Receiver
- Operating Temperature: -40 to 85 Celsius
- Single 3.3V Power Supply
- RoHS Compliant and Lead-Free



Applications

- Datacenter
- 100GBase Ethernet

Product Description

This Arista Networks® QSFP28 transceiver provides 100GBase-BX ER1 throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1304.58nmTx/1309.14nmRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Arista Networks® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow 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.

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

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|--------|------|-----------------|--------------------|------|-------|
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Operating Case Temperature | Tc | -40 | | 85 | °C | |
| Relative Humidity | RH | 15 | | 85 | % | |
| Supply Voltage | Vcc | -0.5 | | 3.6 | V | |
| Data Rate | DR | | 53.125 ± 100ppm | | | |
| Bit Error Rate | BER | | | 2.4E ⁻⁴ | | 1 |
| Supported Link Length on 9/125µm SMF @53.125GBd | L | | | 40 | km | 2 |

Notes:

1. Tested with a PRBS31Q test pattern for 53.125GBd operation.
2. Distance is based on FC-PI-6 Rev. 3.1 and IEEE 802.3 standards with FEC.

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-------------------------------|-------------------|------|------|------|-------|-------|
| Power Supply Voltage | Vcc | 3.13 | 3.3 | 3.47 | V | |
| Power Supply Current | Icc | | | 1435 | mA | |
| Power Dissipation | P _{DISS} | | | 4500 | mW | |
| Transmitter | | | | | | |
| Input Differential Impedance | ZIN | 90 | 100 | 110 | Ω | |
| Differential Data Input Swing | VIN,pp | 180 | | 900 | mVp-p | |
| Receiver | | | | | | |
| Output Differential Impedance | ZOUT | 90 | 100 | 110 | Ω | |
| Differential Data Input Swing | VOUT,pp | 300 | | 900 | mVp-p | |

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|-------------|-----------|---------|------------|-------|-------|
| Transmitter | | | | | | |
| Center Wavelength Range | λ_C | 1303.54 | 1304.58 | 1305.63 | nm | |
| Average Launch Optical Power | Po | 1.7 | | 7.1 | dBm | 1 |
| Launch Optical Power (OMA) | POMA | 4.7 | | 7.9 | dBm | 2 |
| | | 3.3+TDECQ | | | | 3 |
| Extinction Ratio | ER | 5 | | | dB | |
| Transmitter and Dispersion Penalty Eye Closure for PAM4 | TDECQ | | | 3.9 | dB | |
| RIN ₁₅ OMA (Maximum) | RIN | | | -136 | dB/Hz | |
| Optical Return Loss Tolerance | ORLT | | | 15 | dB | |
| POUT @Tx_Disable Asserted | Poff | | | -15 | dBm | |
| Receiver | | | | | | |
| Center Wavelength | λ_C | 1308.09 | 1309.14 | 1310.19 | nm | |
| Receiver Power (Pave) | | -16 | | -3.4 | dBm | |
| Receiver Sensitivity (OMA) | RxSENS_OMA | | | -13.8 | dBm | |
| | | | | -15.2+TECQ | dBm | 2 |
| Receiver Sensitivity (Pave) | RxSENS_Pave | | | -14 | dBm | 4 |
| | | | | -15.4+TECQ | dBm | |
| Receiver Reflectance | | | | -26 | dB | |
| LOS De-Assert | LOSD | | | -16 | dBm | |
| LOS Assert | LOSA | -24 | | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. TDECQ < 1.4dB.
3. 1.4dB ≤ TDECQ ≤ TDECQ (maximum).
4. 1.4dB ≤ TDECQ ≤ 3.9dB.
5. Measured with PRBS31Q test pattern @53.125GBd with BER<2.4E⁻⁴.

Pin Descriptions

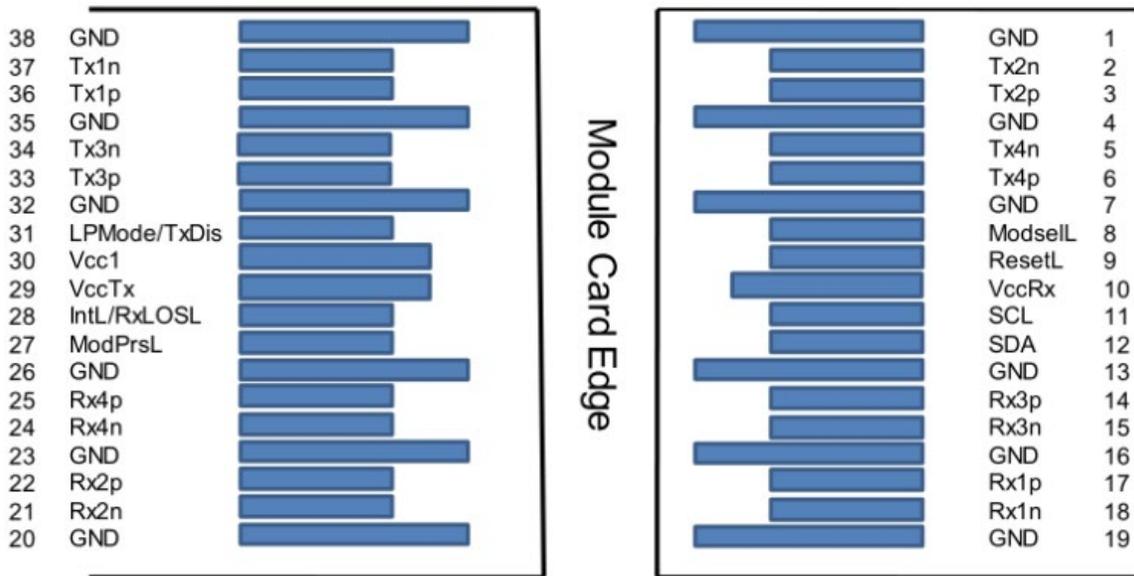
| Pin | Logic | Symbol | Name/Description | Notes |
|-----|-------|--------------|---|-------|
| 1 | | GND | Module Ground. | 1 |
| 2 | CML-I | Tx2- | Transmitter Inverted Data Input. | |
| 3 | CML-I | Tx2+ | Transmitter Non-Inverted Data Input. | |
| 4 | | GND | Module Ground. | 1 |
| 5 | CML-I | Tx4- | Transmitter Inverted Data Input. | |
| 6 | CML-I | Tx4+ | Transmitter Non-Inverted Data Input. | |
| 7 | | GND | Module Ground. | 1 |
| 8 | | ModSelL | Module Select. | 2 |
| 9 | | ResetL | Module Reset. | 2 |
| 10 | | VccRx | +3.3V Receiver Power Supply. | |
| 11 | | SCL | 2-Wire Serial Interface Clock. | 2 |
| 12 | | SDA | 2-Wire Serial Interface Data. | 2 |
| 13 | | GND | Module Ground. | 1 |
| 14 | CML-O | Rx3+ | Receiver Non-Inverted Data Output. | |
| 15 | CML-O | Rx3- | Receiver Inverted Data Output. | |
| 16 | | GND | Module Ground. | 1 |
| 17 | CML-O | Rx1+ | Receiver Non-Inverted Data Output. | |
| 18 | CML-O | Rx1- | Receiver Inverted Data Output. | |
| 19 | | GND | Module Ground. | 1 |
| 20 | | GND | Module Ground. | 1 |
| 21 | CML-O | Rx2- | Receiver Non-Inverted Data Output. | |
| 22 | CML-O | Rx2+ | Receiver Inverted Data Output. | |
| 23 | | GND | Module Ground. | 1 |
| 24 | CML-O | Rx4- | Receiver Inverted Data Output. | |
| 25 | CML-O | 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). | 2 |
| 29 | | VccTx | +3.3V Transmitter Power Supply. | |
| 30 | | Vcc1 | +3.3V Power Supply. | |
| 31 | | LPMoDe/TxDiS | Low Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636). | 2 |
| 32 | | GND | Module Ground. | 1 |
| 33 | CML-I | Tx3+ | Transmitter Non-Inverted Data Input. | |

| | | | | |
|----|-------|------|--------------------------------------|---|
| 34 | CML-I | Tx3- | Transmitter Inverted Data Input. | |
| 35 | | GND | Module Ground. | 1 |
| 36 | CML-I | Tx1+ | Transmitter Non-Inverted Data Input. | |
| 37 | CML-I | Tx1- | Transmitter Inverted Data Input. | |
| 38 | | GND | Module Ground. | 1 |

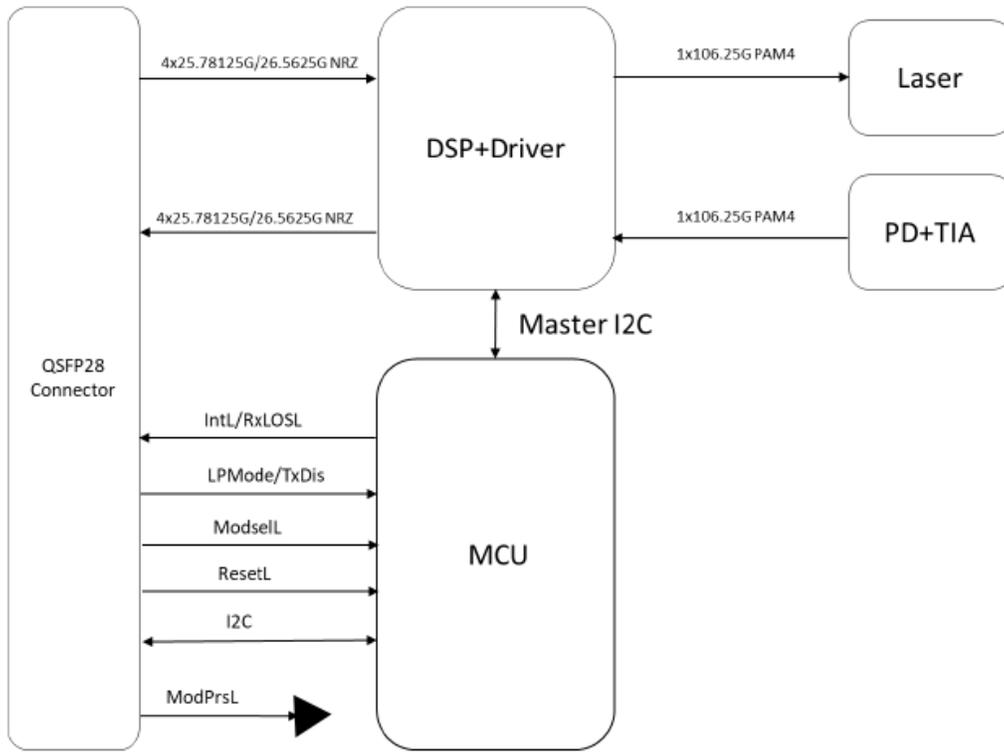
Notes:

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. Vcc contacts in SFF-8662 and SFF-8672 each have a steady state current rating of 1A.

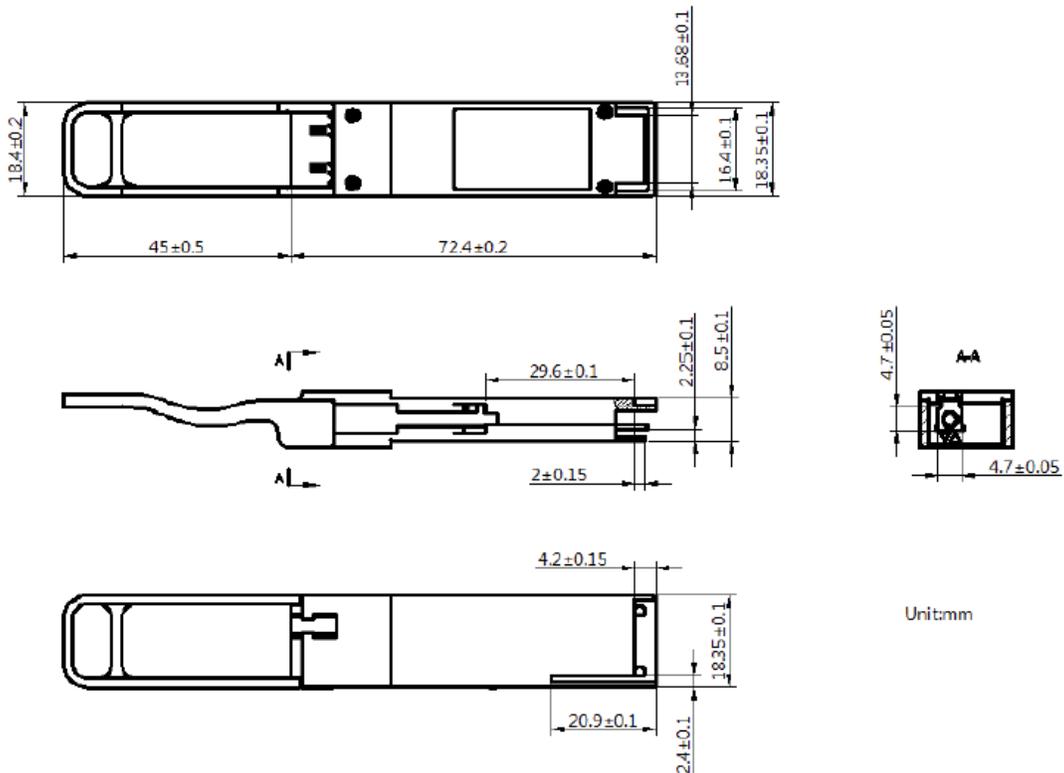
Module Pad Layout



Block Diagram of Transceiver



Mechanical Specifications



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



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