

### QSFP-100G-2DW24-AR-PRO

Arista Networks® QSFP-100G-2DW24-AR Compatible TAA Compliant 100GBase-DWDM 100GHz PAM4 QSFP28 Transceiver w/EDFA/DCM (SMF, 0 to 70C, LC)

#### Features

- SFF-8665 Compliance
- 100GHz DWDM ITU Grid
- Duplex LC Connector
- Commercial Temperature 20 to 70 Celsius
- Hot Pluggable
- Single-mode Fiber
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



#### Applications:

- 100GBase Ethernet
- Access, Metro and Enterprise

#### Product Description

This Arista Networks® QSFP-100G-2DW24-AR compatible QSFP28 transceiver provides 100GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1558.17nm 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.

Proline'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.



## Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

## Wavelength Guide (100GHz ITU-T Channel)

| Channel # | Frequency (GHz) | Wavelength (nm) | Frequency (GHz) | Wavelength (nm) |
|-----------|-----------------|-----------------|-----------------|-----------------|
|           | L0              |                 | L1              |                 |
| 16        | 191600          | 1564.68         | 191650          | 1564.27         |
| 17        | 191700          | 1563.86         | 191750          | 1563.45         |
| 18        | 191800          | 1563.05         | 191850          | 1562.64         |
| 19        | 191900          | 1562.23         | 191950          | 1561.83         |
| 20        | 192000          | 1561.42         | 192050          | 1561.01         |
| 21        | 192100          | 1560.61         | 192150          | 1560.2          |
| 22        | 192200          | 1559.79         | 192250          | 1559.39         |
| 23        | 192300          | 1558.98         | 192350          | 1558.58         |
| 24        | 192400          | 1558.17         | 192450          | 1557.77         |
| 25        | 192500          | 1557.36         | 192550          | 1556.96         |
| 26        | 192600          | 1556.56         | 192650          | 1556.15         |
| 27        | 192700          | 1555.75         | 192750          | 1555.34         |
| 28        | 192800          | 1554.94         | 192850          | 1554.54         |
| 29        | 192900          | 1554.13         | 192950          | 1553.73         |
| 30        | 193000          | 1553.33         | 193050          | 1552.93         |
| 31        | 193100          | 1552.52         | 193150          | 1552.12         |
| 32        | 193200          | 1551.72         | 193250          | 1551.32         |
| 33        | 193300          | 1550.92         | 193350          | 1550.52         |
| 34        | 193400          | 1550.12         | 193450          | 1549.72         |
| 35        | 193500          | 1549.32         | 193550          | 1548.91         |
| 36        | 193600          | 1548.52         | 193650          | 1548.11         |
| 37        | 193700          | 1547.72         | 193750          | 1547.32         |
| 38        | 193800          | 1546.92         | 193850          | 1546.52         |
| 39        | 193900          | 1546.12         | 193950          | 1545.72         |
| 40        | 194000          | 1545.32         | 194050          | 1544.92         |
| 41        | 194100          | 1544.53         | 194150          | 1544.13         |
| 42        | 194200          | 1543.73         | 194250          | 1543.33         |
| 43        | 194300          | 1542.94         | 194350          | 1542.54         |
| 44        | 194400          | 1542.14         | 194450          | 1541.75         |
| 45        | 194500          | 1541.35         | 194550          | 1540.95         |
| 46        | 194600          | 1540.56         | 194650          | 1540.16         |
| 47        | 194700          | 1539.77         | 194750          | 1539.37         |
| 48        | 194800          | 1538.98         | 194850          | 1538.58         |

|    |        |         |        |         |
|----|--------|---------|--------|---------|
| 49 | 194900 | 1538.19 | 194950 | 1537.79 |
| 50 | 195000 | 1537.4  | 195050 | 1537    |
| 51 | 195100 | 1536.61 | 195150 | 1536.22 |
| 52 | 195200 | 1535.82 | 195250 | 1535.43 |
| 53 | 195300 | 1535.04 | 195350 | 1534.64 |
| 54 | 195400 | 1534.25 | 195450 | 1533.86 |
| 55 | 195500 | 1533.47 | 195550 | 1533.07 |
| 56 | 195600 | 1532.68 | 195650 | 1532.29 |
| 57 | 195700 | 1531.9  | 195750 | 1531.51 |
| 58 | 195800 | 1531.12 | 195850 | 1530.72 |
| 59 | 195900 | 1530.33 | 195950 | 1529.94 |
| 60 | 196000 | 1529.55 | 196050 | 1529.16 |
| 61 | 196100 | 1528.77 | 196150 | 1528.38 |

### Absolute Maximum Ratings

| Parameter             | Symbol            | Min. | Typical | Max.                 | Unit |
|-----------------------|-------------------|------|---------|----------------------|------|
| Signal Input Voltage  | V <sub>in</sub>   | -0.5 |         | V <sub>cc</sub> +0.5 | V    |
| Power Supply Voltage  | V <sub>cc</sub>   | -0.5 |         | 3.6                  | °C   |
| Storage Temperature   | T <sub>S</sub>    | 5    |         | 85                   | °C   |
| Operating Temperature | T <sub>case</sub> | 20   |         | 70                   | °C   |

### Electrical Characteristics

| Parameter            | Symbol          | Min.  | Typ. | Max.  | Unit | Notes |
|----------------------|-----------------|-------|------|-------|------|-------|
| Power Supply Voltage | V <sub>cc</sub> | 3.135 | 3.3  | 3.465 | V    |       |
| Power Dissipation    | P <sub>D</sub>  |       | 4    | 5     | W    |       |

## Optical Characteristics

| Parameter                   | Symbol          | Min. | Typ.      | Max. | Unit | Notes |
|-----------------------------|-----------------|------|-----------|------|------|-------|
| <b>Transmitter</b>          |                 |      |           |      |      |       |
| Optical Wavelength          | $\lambda_C$     | 1480 | $\lambda$ | 1580 | nm   |       |
| Channel Spacing             | $\Delta f$      |      | 100       |      | GHz  |       |
| Optical Extinction Ratio    | ER              |      | 6         |      | dB   |       |
| Side-Mode Suppression Ratio | SMSR            | 30   |           |      | dB   |       |
| Spectral Width              | $\Delta\lambda$ |      | +/-25     | 1    | GHz  |       |
| Optical Transmit Power      | Pout/lane       | -11  | -10       | -8   | dBm  |       |
| <b>Receiver</b>             |                 |      |           |      |      |       |
| Optical Wavelength          | $\lambda_C$     | 1480 |           | 1580 | nm   |       |
| Receiver Max. Sensitivity   | Pmin            | -3   | -2.5      | -2   | dBm  |       |
| Damage Threshold            | Pmax            | 10   |           |      | dBm  |       |
| Optical Return Loss         | ORL             |      |           | 20   | dBm  |       |
| LOS Hysteresis              | LOSH            |      | 1.0       |      | dB   |       |
| LOS Assert                  | LOSA            | -10  |           |      | dBm  |       |
| LOS De-Assert               | LOSD            |      |           | -3   | dBm  |       |

## Electrical Pin-out Details



## Pin Descriptions

| Pin | Logic       | Symbol  | Name/Descriptions                    | Plug Sequence | Ref. |
|-----|-------------|---------|--------------------------------------|---------------|------|
| 1   |             | GND     | Ground                               | 1             | 1    |
| 2   | CML-I       | Tx2n    | Transmitter Inverted Data Input      | 3             |      |
| 3   | CML-I       | Tx2p    | Transmitter Non-Inverted Data output | 3             |      |
| 4   |             | GND     | Ground                               | 1             | 1    |
| 5   | CML-I       | Tx4n    | Transmitter Inverted Data Input      | 3             |      |
| 6   | CML-I       | Tx4p    | Transmitter Non-Inverted Data output | 3             |      |
| 7   |             | GND     | Ground                               | 1             | 1    |
| 8   | LVTTTL-I    | ModSelL | Module Select                        | 3             |      |
| 9   | LVTTTL-I    | ResetL  | Module Reset                         | 3             |      |
| 10  |             | VccRx   | +3.3V Power Supply Receiver          | 2             | 2    |
| 11  | LVCNOS- I/O | SCL     | 2-Wire Serial Interface Clock        | 3             |      |
| 12  | LVCNOS- I/O | SDA     | 2-Wire Serial Interface Data         | 3             |      |
| 13  |             | GND     | Ground                               | 1             | 1    |
| 14  | CML-O       | Rx3p    | Receiver Non-Inverted Data output    | 3             |      |
| 15  | CML-O       | Rx3n    | Receiver Inverted Data output        | 3             |      |
| 16  |             | GND     | Ground                               | 1             | 1    |
| 17  | CML-O       | Rx1p    | Receiver Non-Inverted Data output    | 3             |      |
| 18  | CML-O       | Rx1n    | Receiver Inverted Data output        | 3             |      |
| 19  |             | GND     | Ground                               | 1             | 1    |
| 20  |             | GND     | Ground                               | 1             | 1    |
| 21  | CML-O       | Rx2n    | Receiver Inverted Data output        | 3             |      |
| 22  | CML-O       | Rx2p    | Receiver Non-Inverted Data output    | 3             |      |
| 23  |             | GND     | Ground                               | 1             | 1    |
| 24  | CML-O       | Rx4n    | Receiver Inverted Data output        | 3             |      |
| 25  | CML-O       | Rx4p    | Receiver Non-Inverted Data output    | 3             |      |
| 26  |             | GND     | Ground                               | 1             | 1    |
| 27  | LVTTTL-O    | ModPrsL | Module Present                       | 3             |      |
| 28  | LVTTTL-O    | IntL    | Interrupt                            | 3             |      |
| 29  |             | VccTx   | +3.3V Power Supply Transmitter       | 2             | 2    |
| 30  |             | Vccl    | +3.3V Power Supply                   | 2             | 2    |
| 31  | LVTTTL-I    | LPMODE  | Low Power Mode                       | 3             |      |
| 32  |             | GND     | Ground                               | 1             | 1    |
| 33  | CML-I       | Tx3p    | Transmitter Non-Inverted Data input  | 3             |      |
| 34  | CML-I       | Tx3n    | Transmitter Inverted Data Input      | 3             |      |
| 35  |             | GND     | Ground                               | 1             | 1    |
| 36  | CML-I       | Tx1p    | Transmitter Non-Inverted Data input  | 3             |      |
| 37  | CML-I       | Tx1n    | Transmitter Inverted Data Input      | 3             |      |
| 38  |             | GND     | Ground                               | 1             | 1    |

**Notes:**

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 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 receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figures 3 and 4. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connector pins are each rated for a maximum current of 500Ma.

**DOM Specifications**

| Parameter                                      | Min. | Typ. | Max. | Unit |
|------------------------------------------------|------|------|------|------|
| Receive Power Monitor Accuracy                 | -2   |      | 2    | dB   |
| Transmit Power Monitor                         | -2   |      | 2    | dB   |
| Laser Bias Current Monito Accuracy             | -10  |      | 10   | %    |
| Transceiver Temperature Monitor Accuracy       | -5   |      | 5    | °C   |
| Internally Measured Transceiver Supply Voltage |      |      | 3    | %    |

## Mechanical Specifications

Measurement unit: mm



**About Us:**

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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