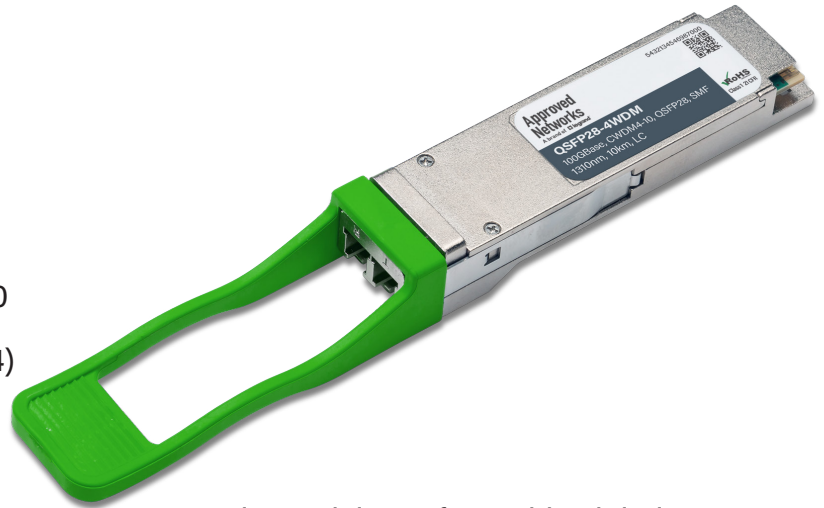


Features

- Compliant with QSFP28 Standard:
- SFF-8665 Revision 1.9, SFF-8636 Revision 2.10a
- Compliant with 4WDM-10 MSA Revision 1.0
- High speed I/O electrical interface (CAUI-4)
- Single 3.3V Supply Voltage
- Maximum power consumption 3.5W
- 0-70 °C Case Operating Temperature
- CWDM DML laser and PIN Receiver Array
- QSFP28 MSA package with duplex LC connector
- Two Wire Serial Interface with Digital Diagnostic Monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser



1. Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|-----------------------------------|-------------|------|---------|---------|------|-------|
| Storage Temperature | TS | -40 | - | 85 | °C | |
| Supply Voltage | VCC | -0.3 | - | 3.6 | V | |
| Relative Humidity | RH | 5 | - | 95 | % | 1 |
| Data Input Voltage - Differential | IVDIP-VDINI | - | - | 1.0 | V | |
| Control Input Voltage | VI | -0.3 | - | Vcc+0.5 | V | |
| Control Output Current | IO | -20 | - | 20 | mA | |

1. Non-condensing.

2. Recommended Operating Conditions

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|--|--------|-------|---------|-------|------|-------|
| Operating Case Temperature | TOPR | 0 | - | 70 | °C | |
| Power Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V | |
| Instantaneous peak current at hot plug | ICC_IP | - | - | 1400 | mA | |

| | | | | | | |
|---|--------|---------|---------|---------|------|----------------|
| Sustained peak current at hot plug | ICC_SP | - | - | 1155 | mA | |
| Maximum Power Dissipation | PD | - | - | 3.5 | W | |
| Maximum Power Dissipation, Low Power Mode | PDLP | - | - | 1.5 | W | |
| Aggregate Bit Rate | ABR | - | 103.125 | - | Gb/s | |
| Data Rate per Lane | DRL | - | 25.78 | - | Gb/s | |
| Control Input Voltage High | VIH | VCC*0.7 | - | VCC+0.3 | V | |
| Control Input Voltage Low | VIL | -0.3 | - | VCC*0.3 | V | |
| Two Wire Serial Interface Clock Rate | - | - | - | 400 | kHz | |
| Power Supply Noise | - | - | - | 66 | mVpp | 10Hz -10MHz |
| Rx Differential Data Output Load | - | - | 100 | - | ohms | |
| Operating Distance | - | 2 | - | 10000 | m | |

3. Optical Specifications

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|--|--------------|--------|---------|--------|------|-------|
| Transmitter | | | | | | |
| Wavelength L0 | $\lambda C0$ | 1264.5 | 1271 | 1277.5 | nm | |
| Wavelength L1 | $\lambda C1$ | 1284.5 | 1291 | 1297.5 | nm | |
| Wavelength L2 | $\lambda C2$ | 1304.5 | 1311 | 1317.5 | nm | |
| Wavelength L3 | $\lambda C3$ | 1324.5 | 1331 | 1337.5 | nm | |
| Total Average Optical Launch Power | POUT | - | - | 8.5 | dBm | |
| Average Launch Power Tx_Off (Each Lane) | POUT_OFF | - | - | -30 | dBm | |
| Average Optical Launch Power (Each Lane) | POUTL | -6.5 | - | 2.5 | dBm | |
| Extinction Ratio | ER | 3.5 | - | - | dB | |
| Optical Modulation Amplitude (Each Lane) | OMA | -4 | - | 2.5 | dBm | |
| Launch Power in OMA minus TDP (Each Lane) | OMA-TDP | -5 | - | - | dBm | |
| Transmitter and Dispersion Penalty (Each Lane) | TDP | - | - | 3 | dB | |
| Optical Return Loss Tolerance | ORLT | - | - | 20 | dB | |

| Transmitter Eye Mask Definition | - | {0.31, 0.4, 0.45, 0.34, 0.38, 0.4} | | | | |
|--|--------------|------------------------------------|------|--------|-----|---|
| Receiver | | | | | | |
| Wavelength L0 | $\lambda C0$ | 1264.5 | 1271 | 1277.5 | nm | |
| Wavelength L1 | $\lambda C1$ | 1284.5 | 1291 | 1297.5 | nm | |
| Wavelength L2 | $\lambda C2$ | 1304.5 | 1311 | 1317.5 | nm | |
| Wavelength L3 | $\lambda C3$ | 1324.5 | 1331 | 1337.5 | nm | |
| Average Receive Power (Each Lane) | - | -13 | - | 2.5 | dBm | |
| Receiver Sensitivity (OMA) per Lane | | | | -11.5 | dBm | 1 |
| Stressed Receiver Sensitivity in OMA (Each Lane) | - | - | - | -8.6 | dBm | |
| Stressed Receiver Sensitivity Test Conditions: | | | | | | |
| Stressed Eye J2 Jitter (Each Lane) | - | - | 0.33 | - | UI | |
| Stressed Eye J4 Jitter (Each Lane) | - | - | 0.48 | - | UI | |
| Vertical Eye Closure Penalty (Each Lane) | - | - | 2.6 | - | dB | |
| Damage Threshold For Receiver | Pdamage | 3.5 | - | - | dBm | |
| Receive Power in OMA (Each Lane), Overload | OMA | - | - | 2.5 | dBm | |
| Receiver Reflectance | RXR | - | - | -26 | dB | |

1. Measured with conformance test signal at TP3 for BER = 5×10^{-5} .

4. Electrical Specifications

High-Speed Signal: Compliant to CAUI-4 (IEEE 802.3-2018)

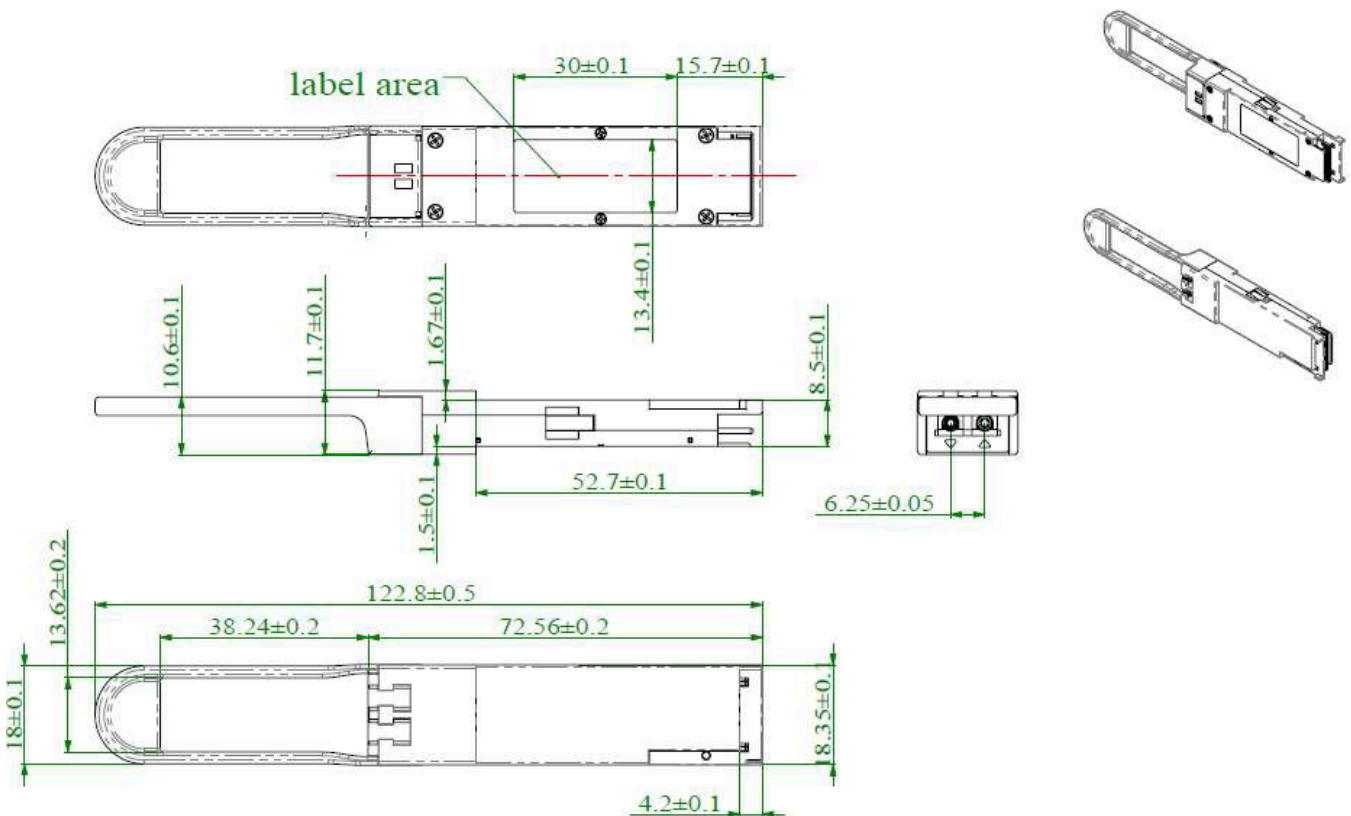
Low-Speed Signal: Compliant to SFF-8679 V1.8

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|-----------------------------------|---------|---------|---------|---------|------|-------|
| Transmitter (Module Input) | | | | | | |
| Differential Data Input Amplitude | VIN,P-P | 95 | - | 900 | mVpp | 1 |
| Differential Termination Mismatch | | - | - | 10 | % | |
| LPMode, Reset and ModSelL | VIL | -0.3 | - | Vcc*0.3 | V | |
| | VIH | VCC*0.7 | - | VCC+0.3 | V | |

| Receiver (Module Output) | | | | | | |
|------------------------------------|----------|---------|---|---------|------|----------|
| Differential Data Output Amplitude | VOUT,P-P | 250 | - | 900 | mVpp | 1 |
| Differential Termination Mismatch | | - | - | 10 | % | |
| Output Rise/Fall Time, 20%~80% | TR | 9.5 | - | - | ps | |
| ModPrsL and IntL | VOL | 0 | - | 0.4 | V | IOL=4mA |
| | VOH | VCC-0.5 | - | VCC+0.3 | V | IOL=-4mA |

1. Amplitude customization beyond these specs is dependent on validation in customer system

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

| OEM | Part Number | OEM | Part Number |
|-------------|----------------|------------------|------------------|
| MSA Generic | AN-QSFP28-4WDM | MSA Champion ONE | 100GQSFP28E-4W10 |

7. Contact Information

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Web: <http://www.approvednetworks.com>