**SFP-25GB-DW-C-15-E-OPC**

MSA and TAA 10/25GBase-DWDM SFP28 Transceiver Dual-Rate 100GHz (SMF, Tunable, 15km, LC, DOM, -20 to 85C)

**Features**

- SFF-8432 and SFF-8472 Compliant
- Duplex LC Connector
- 100GHz Channel Spacing
- Supports 24.33024G, 25.78125Gbps (with FEC); 9.8304G, 10.1376G, 10.3125Gbps
- Extended Temperature -20 to 85 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free

**Applications:**

- 25GBase
- Access, Metro and Enterprise

**Product Description**

This MSA compliant dual-rate SFP28 transceiver provides 10/25GBase-DWDM throughput up to 15km over single-mode fiber (SMF) using a tunable wavelength via an LC connector. It can operate at temperatures between -20 and 85C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows 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.

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

**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.

**DWDM Wavelength ITU Channels - 100 GHz Spacing**

| ITU Channel | Center Wavelength (nm) | Frequency (THz) | ITU Channel | Center Wavelength (nm) | Frequency (THz) |
|---|---|---|---|---|---|
| **14** | 1566.31 | 191.4 | 38 | 1546.92 | 193.8 |
| **15** | 1565.50 | 191.5 | 39 | 1546.12 | 193.9 |
| **16** | 1564.68 | 191.6 | 40 | 1545.32 | 194.0 |
| **17** | 1563.86 | 191.7 | 41 | 1544.53 | 194.1 |
| **18** | 1563.05 | 191.8 | 42 | 1543.73 | 194.2 |
| **19** | 1562.23 | 191.9 | 43 | 1542.94 | 194.3 |
| **20** | 1561.42 | 192.0 | 44 | 1542.14 | 194.4 |
| **21** | 1560.61 | 192.1 | 45 | 1541.35 | 194.5 |
| **22** | 1559.79 | 192.2 | 46 | 1540.56 | 194.6 |
| **23** | 1558.98 | 192.3 | 47 | 1539.77 | 194.7 |
| **24** | 1558.17 | 192.4 | 48 | 1538.98 | 194.8 |
| **25** | 1557.36 | 192.5 | 49 | 1538.19 | 194.9 |
| **26** | 1556.55 | 192.6 | 50 | 1537.4 | 195.0 |
| **27** | 1555.75 | 192.7 | 51 | 1536.61 | 195.1 |
| **28** | 1554.94 | 192.8 | 52 | 1535.82 | 195.2 |
| **29** | 1554.13 | 192.9 | 53 | 1535.04 | 195.3 |
| **30** | 1553.33 | 193.0 | 54 | 1534.25 | 195.4 |
| **31** | 1552.52 | 193.1 | 55 | 1533.47 | 195.5 |
| **32** | 1551.72 | 193.2 | 56 | 1532.68 | 195.6 |
| **33** | 1550.92 | 193.3 | 57 | 1531.9 | 195.7 |
| **34** | 1550.12 | 193.4 | 58 | 1531.12 | 195.8 |
| **35** | 1549.32 | 193.5 | 59 | 1530.33 | 195.9 |
| **36** | 1548.51 | 193.6 | 60 | 1529.55 | 196.0 |
| **37** | 1547.72 | 193.7 | 61 | 1528.77 | 196.1 |

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| **Maximum Supply Voltage** | Vcc | 0 | 3.3 | 3.6 | V |
| **Storage Temperature** | Tstg | -40 | | 85 | ˚C |
| **Operating Case Temperature** | Tc | -20 | | 85 | ˚C |
| **Operating Humidity** | RH | 0 | | 85 | % |
| **Data Rate** | DR | 24.33024<br>9.8304 | | 25.78125<br>10.3125 | Gbps |
| **Data Rate Accuracy** | | -100 | | 100 | ppm |
| **9/125µm G.652 SMF** | | | | 15 | km |

## Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Power Supply Voltage** | Vcc | 3.135 | 3.30 | 3.465 | V | |
| **Power Dissipation** | $P_{DISS}$ | | | 2.5 | W | 1 |
| **Power Supply Current** | Icc | | | 0.76 | A | |
| **Transmitter** | | | | | | |
| **Data Rate** | DR | 24.33024<br>9.8304 | | 25.78125<br>10.3125 | Gbps | CDR Bypass |
| **Differential Voltage pk-pk** | VIN,pp | 180 | | 900 | mV | |
| **Tx Differential Input Impendence** | ZIN | | 100 | | Ω | |
| **Transmitter Disable Voltage** | VD | 2 | | Vee+ 0.3 | V | |
| **Transmitter Enable Voltage** | VEN | 0 | | 0.8 | V | |
| **Receiver** | | | | | | |
| **Data Rate** | DR | 24.33024<br>9.8304 | | 25.78125<br>10.3125 | Gbps | CDR Bypass |
| **Differential Voltage pk-pk** | VIN,pp | 450 | 600 | 900 | mV | |
| **Rx Differential Output Impendence** | ZOUT | | 100 | | Ω | |
| **LOS Assert Voltage** | VLOSA | 2.4 | | Vcc | V | |
| **LOS De-Assert Voltage** | VLOSD | Vee | | Vee+0.4 | V | |
| **Eye Height** | EH15 | 228 | | | mV | |
| **Eye Width** | EW15 | 0.57 | | | UI | |
| **Vertical Eye Closure** | VEC | | | 5.5 | dB | |

**Notes:**

1. Power dissipation is less than 2.5W when supply voltage is 3.3V.

## Optical Characteristics

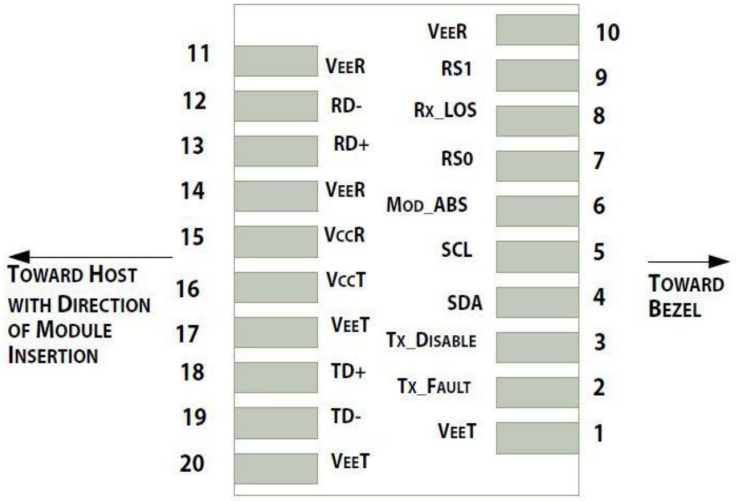
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Output Average Power** | PO | 0 | | 4 | dBm | |
| **Wavelength Range** | λC | 1528.77 | | 1566.31 | nm | |
| **Wavelength Accuracy** | | -12.5 | | 12.5 | GHz | |
| **Frequency Range** | | 191.3 | | 196.0 | THz | |
| **Channel Spacing** | | | 100 | | GHz | |
| **Extinction Ratio** | ER | 3.5 | | | dB | |
| **Side-Mode Suppression Ratio** | SMSR | 30 | | | dB | |
| **Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}** | {0.31, 0.4, 0.45, 0.34, 0.38, 0.4}<br>Hit ratio $5\times10^{-5}$ hits per sample | | | | | |
| **Receiver** | | | | | | |
| **Frequency Range** | | 191.3 | | 196.0 | THz | |
| **Saturation Power** | | -2 | | -23 | dBm | |
| **Receiver Sensitivity** | S | | | -14 ($5e^{-5}$ FEC) | dBm | |
| **Receiver Sensitivity (After 15km)** | S | | | -14 ($5e^{-5}$ FEC) | dBm | |
| **LOS Assert** | LOSA | -30 | | | dBm | |
| **LOS De-Assert** | LOSD | | | -16 | dBm | |
| **LOS Hysteresis** | | 0.5 | | | dB | |
| **SRS Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}** | {0.31, 0.4, 0.45, 0.34, 0.38, 0.4} | | | | | |

**Pin Descriptions**

| Pin | Symbol | Name | Ref. |
|---|---|---|---|
| **1** | VeeT | Transmitter Ground. | 1 |
| **2** | Tx_Fault | Transmitter Fault Indication. | |
| **3** | Tx_Disable | Disables the transmitter or laser output. | 2 |
| **4** | SDA | 2-Wire Serial Interface Data. | 2 |
| **5** | SCL | 2-Wire Serial Interface Clock. | 2 |
| **6** | Mod_ABS | Indicates the module online state. This pin is connected to the VeeT or VeeR pin. | |
| **7** | RS0 | Selects a rate for the module. This pin is connected to the 33kΩ resistor. | |
| **8** | LOS | Indicates a loss of received signals. | 2 |
| **9** | RS1 | Selects a rate for the module. This pin is connected to the 33kΩ resistor. | |
| **10** | VeeR | Receiver Ground. | 1 |
| **11** | VeeR | Receiver Ground 1. | 1 |
| **12** | RD- | Inverse Received Data Output. | |
| **13** | RD+ | Received Data Output. | |
| **14** | VeeR | Receiver Ground. | 1 |
| **15** | VccR | +3.3V Receiver Power. | 1 |
| **16** | VccT | +3.3V Transmitter Power. | 1 |
| **17** | VeeT | Transmitter Ground. | 1 |
| **18** | TD+ | Transmit Data Input. | |
| **19** | TD- | Inverse Transmit Data Input. | |
| **20** | VeeT | Transmitter Ground. | 1 |

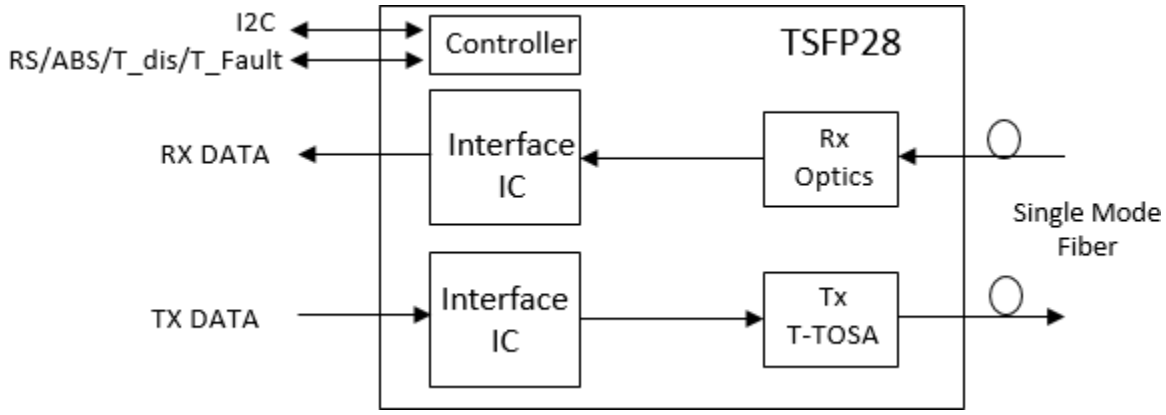
**Notes:**

1. The ground of the module (operating module ground) and that of the module shell are separate from each other.
2. 4.7kΩ–10kΩ resistor is used on the module to pull the output up to 3.15–3.45V.



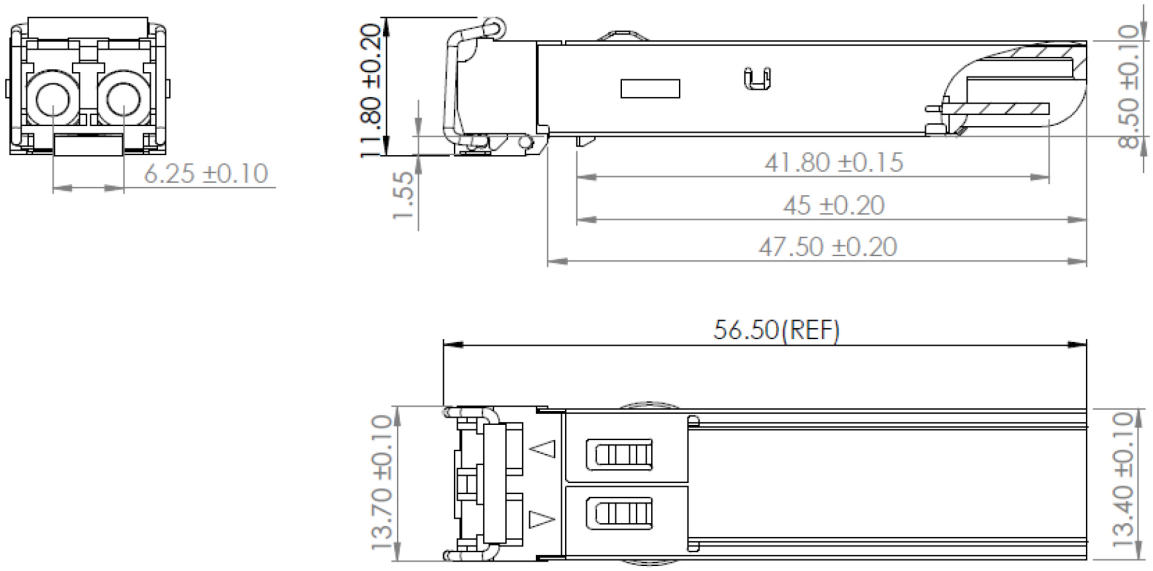

Pin-Out of Connector Block on Host Board

**Transceiver Block Diagram**



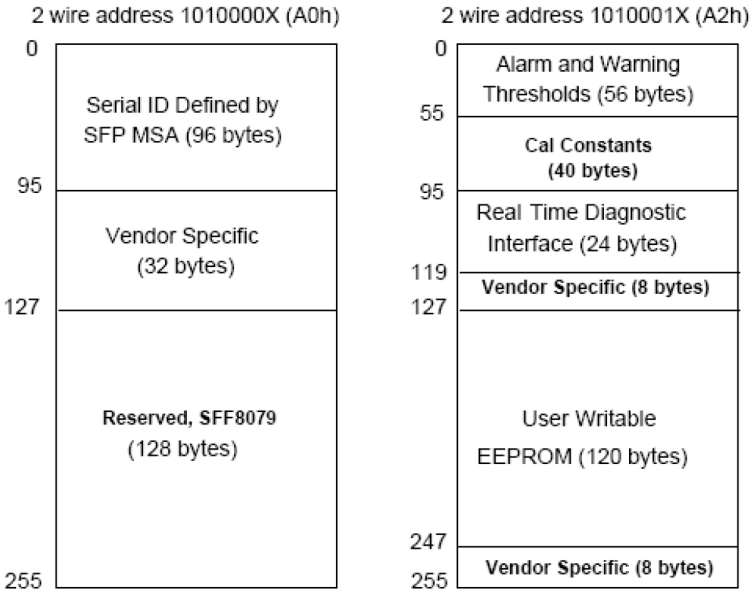
**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).




**EEPROM Information**

EEPROM memory map-specific data field description is as below:



**OptioConnect**
**Innovation for the Future of High-Speed Networking**

**Who We Are**
OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

**What We Do**
At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

**Smarter Networks by Design**
Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

**Our Team**
Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

**Our Mission**
To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

**Let's Connect**
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