

### **SFP-25GB-DW31-10-I-OPC**

MSA and TAA 25GBase-DWDM SFP28 Transceiver C-Band 100GHz (SMF, 1552.52nm, 10km, LC, DOM, -40 to 85C)

#### **Features**

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 25GBase-LR Ethernet
- Access, Metro and Enterprise

#### **Product Description**

This MSA compliant SFP28 transceiver provides 25GBase-DWDM throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1552.52nm via an LC connector. It is capable of withstanding rugged environments and can operate at temperatures between -40 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

## Wavelength Guide (100GHz ITU Channels)

| Channel | Wavelength(nm) | Frequency(THZ) | Channel | Wavelength(nm) | Frequency(THZ) |
|---------|----------------|----------------|---------|----------------|----------------|
| D21     | 1560.61        | 192.1          | D41     | 1544.53        | 194.1          |
| D22     | 1559.79        | 192.2          | D42     | 1543.73        | 194.2          |
| D23     | 1558.98        | 192.3          | D43     | 1542.94        | 194.3          |
| D24     | 1558.17        | 192.4          | D44     | 1542.14        | 194.4          |
| D25     | 1557.36        | 192.5          | D45     | 1541.35        | 194.5          |
| D26     | 1556.55        | 192.6          | D46     | 1540.56        | 194.6          |
| D27     | 1555.75        | 192.7          | D47     | 1539.77        | 194.7          |
| D28     | 1554.94        | 192.8          | D48     | 1538.98        | 194.8          |
| D29     | 1554.13        | 192.9          | D49     | 1538.19        | 194.9          |
| D30     | 1553.33        | 193.0          | D50     | 1537.4         | 195.0          |
| D31     | 1552.52        | 193.1          | D51     | 1536.61        | 195.1          |
| D32     | 1551.72        | 193.2          | D52     | 1535.82        | 195.2          |
| D33     | 1550.92        | 193.3          | D53     | 1535.04        | 195.3          |
| D34     | 1550.12        | 193.4          | D54     | 1534.25        | 195.4          |
| D35     | 1549.32        | 193.5          | D55     | 1533.47        | 195.5          |
| D36     | 1548.51        | 193.6          | D56     | 1532.68        | 195.6          |
| D37     | 1547.72        | 193.7          | D57     | 1531.9         | 195.7          |
| D38     | 1546.92        | 193.8          | D58     | 1531.12        | 195.8          |
| D39     | 1546.12        | 193.9          | D59     | 1530.33        | 195.9          |
| D40     | 1545.32        | 194.0          | D60     | 1529.55        | 196.0          |

## Absolute Maximum Ratings

| Parameter                  | Symbol | Min.  | Typ. | Max.  | Unit | Notes |
|----------------------------|--------|-------|------|-------|------|-------|
| Maximum Supply Voltage     | Vcc    | -0.3  |      | 4.0   | V    |       |
| Storage Temperature        | TS     | -40   |      | 85    | °C   |       |
| Operating Case Temperature | Tc     | -40   |      | 85    | °C   |       |
| Relative Humidity          | RH     | 0     |      | 85    | %    |       |
| Data Rate                  | BR     | 24.33 |      | 25.78 | Gbps |       |

## Electrical Characteristics

| Parameter                          | Symbol                    | Min.            | Typ. | Max.                 | Unit  | Notes |
|------------------------------------|---------------------------|-----------------|------|----------------------|-------|-------|
| Supply Voltage                     | V <sub>CC</sub>           | 3.13            |      | 3.47                 |       |       |
| Power Dissipation                  | PD                        |                 |      | 2.0                  | W     |       |
| Transmitter                        |                           |                 |      |                      |       |       |
| Data Input Swing Differential      | V <sub>IN</sub>           | 190             |      | 1000                 | mV    |       |
| Differential line input Impedance  | R <sub>IN</sub>           | 80              | 100  | 120                  | Ohm   |       |
| Transmitter Fault Output-High      | V <sub>FaultH</sub>       | 2               |      | V <sub>CC</sub> +0.3 | V     |       |
| Transmitter Fault Output-Low       | V <sub>FaultL</sub>       | V <sub>EE</sub> |      | V <sub>EE</sub> +0.8 | V     |       |
| Transmitter Disable Voltage-High   | V <sub>DisH</sub>         | 2               |      | V <sub>CC</sub> +0.3 | V     |       |
| Transmitter Disable Voltage- low   | V <sub>DisL</sub>         | V <sub>EE</sub> |      | V <sub>EE</sub> +0.8 | V     |       |
| Receiver                           |                           |                 |      |                      |       |       |
| Differential line Output Impedance | R <sub>OUT</sub>          | 80              | 100  | 120                  | Ohm   |       |
| Differential Data Output Voltage   | V <sub>DR</sub>           | 350             |      | 850                  | mVp-p |       |
| LOS Output Voltage-High            | V <sub>LOSH</sub>         | 2               |      | V <sub>CC</sub> +0.3 | V     |       |
| LOS Output Voltage-Low             | V <sub>LOSL</sub>         | V <sub>EE</sub> |      | V <sub>EE</sub> +0.8 | V     |       |
| Others                             |                           |                 |      |                      |       |       |
| Cold-Start time                    | T <sub>start-cooled</sub> |                 |      | 35                   | s     |       |

## Optical Characteristics

| Parameter                                                    | Symbol                | Min.    | Typ. | Max.    | Unit  | Notes |
|--------------------------------------------------------------|-----------------------|---------|------|---------|-------|-------|
| Transmitter                                                  |                       |         |      |         |       |       |
| Wavelength                                                   | $\lambda$             | 1529.55 |      | 1560.61 | nm    |       |
| Center Wavelength Spacing                                    |                       | 100     |      |         | GHz   |       |
| Average Launched Power                                       | P <sub>O</sub>        | -1      |      | 5       | dBm   |       |
| Extinction Ratio                                             | ER                    | 6       |      |         | dB    |       |
| Average Launched Power (Laser Off)                           | P <sub>off</sub>      |         |      | -30     | dBm   |       |
| Side-Mode Suppression Ratio                                  | SMSR                  | 30      |      |         | dB    |       |
| Relative Intensity Noise                                     | RIN <sub>20 OMA</sub> |         |      | -130    | dB/Hz |       |
| Receiver                                                     |                       |         |      |         |       |       |
| Center Wavelength                                            | $\lambda_{IN}$        | 1260    |      | 1620    | nm    |       |
| Receiver Overload                                            | P <sub>overload</sub> | 2       |      |         | dBm   |       |
| Receiver Sensitivity @5E-5 BOL                               | P <sub>sen BOL</sub>  |         |      | -15     | dBm   |       |
| Receiver Sensitivity @5E-5 EOL                               | P <sub>sen EOL</sub>  |         |      | -14.5   | dBm   | 1     |
| Receiver Sensitivity @5E-5 EOL after 10km fiber transmission | P <sub>sen1 EOL</sub> |         |      | -9.0    | dBm   | 1     |
| Los Of Signal Assert                                         | P <sub>A</sub>        | -30     |      |         | dBm   |       |
| Los Of Signal De-assert                                      | P <sub>D</sub>        |         |      | -16     | dBm   |       |
| LOS -Hysteresis                                              | P <sub>Hys</sub>      | 0.5     |      | 6       | dB    |       |

### Notes:

1. Measured at 5E-5, ER>4dB, PRBS 2<sup>31</sup> -1

## Pin Descriptions

| Pin | Symbol  | Name/Descriptions                                              | Ref. |
|-----|---------|----------------------------------------------------------------|------|
| 1   | VEET    | Transmitter Ground                                             | 1    |
| 2   | TFAULT  | Transmitter Fault                                              | 2    |
| 3   | TDIS    | Transmitter Disable. Laser output disabled on high or open.    | 3    |
| 4   | SDA     | 2-wire Serial Interface Data Line                              | 2    |
| 5   | SCL     | 2-wire Serial Interface Clock Line                             | 2    |
| 6   | MOD_ABS | Module Absent. Grounded within the module                      | 2    |
| 7   | NA      | Not Used                                                       |      |
| 8   | RX_LOS  | Loss of Signal indication. Logic 0 indicates normal operation. | 4    |
| 9   | NA      | No Used                                                        |      |
| 10  | VEER    | Receiver Ground                                                | 1    |
| 11  | VEER    | Receiver Ground                                                | 1    |
| 12  | RD-     | Receiver Inverted DATA out. AC Coupled.                        |      |
| 13  | RD+     | Receiver Non-inverted DATA out. AC Coupled.                    |      |
| 14  | VEER    | Receiver Ground                                                | 1    |
| 15  | VCCR    | Receiver Power Supply                                          | 5    |
| 16  | VCCT    | Transmitter Power Supply                                       | 5    |
| 17  | VEET    | Transmitter Ground                                             | 1    |
| 18  | TD+     | Transmitter Non-Inverted DATA in. AC Coupled.                  |      |
| 19  | TD-     | Transmitter Inverted DATA in. AC Coupled.                      |      |
| 20  | VEET    | Transmitter Ground                                             | 1    |

## Notes:

1. Circuit ground is internally isolated from chassis ground.
2. T<sub>FAULT</sub> is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on T<sub>DIS</sub> >2.0V or open, enabled on T<sub>DIS</sub> <0.8V.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
5. Internally connected



Pin-out of connector Block on Host board

### Block Diagram of Transceiver



### Recommended Interface Circuit



## Mechanical Specifications



## **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**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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