



### **XFP-10GB-CW29-40-OPC**

MSA and TAA 10GBase-CWDM XFP Transceiver (SMF, 1290nm, 40km, LC, DOM)

#### **Features**

- INF-8077i Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 10x Gigabit Ethernet over CWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise
- Mobile Fronthaul CPRI/OBSAI

#### **Product Description**

This MSA compliant XFP transceiver provides 10GBase-CWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1290nm via an LC connector. It can operate at temperatures between 0 and 70C. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. 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-883G Method 3015.7
- 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

## CWDM Wavelength

| Band            | Channels | Wavelength |      |        |
|-----------------|----------|------------|------|--------|
|                 |          | Min.       | Typ. | Max.   |
| O-Band          | 27       | 1264       | 1270 | 1277.5 |
|                 | 29       | 1284       | 1290 | 1297.5 |
|                 | 31       | 1304       | 1310 | 1317.5 |
|                 | 33       | 1324       | 1330 | 1337.5 |
|                 | 35       | 1344       | 1350 | 1357.5 |
| E-Band Extended | 37       | 1364       | 1370 | 1377.5 |
|                 | 39       | 1384       | 1390 | 1397.5 |
|                 | 41       | 1404       | 1410 | 1417.5 |
|                 | 43       | 1424       | 1430 | 1437.5 |
|                 | 45       | 1444       | 1450 | 1457.5 |

## Absolute Maximum Ratings

| Parameter                   | Symbol | Min  | Max | Unit |
|-----------------------------|--------|------|-----|------|
| Storage Temperature         | TS     | -40  | +85 | °C   |
| Maximum Supply Voltage      | VCC    | -0.5 | 3.6 | V    |
| Operating Relative Humidity |        |      | 95  | %    |
| Operating Case Temperature  | Tc     | 0    | +70 | °C   |

\*Exceeding any one of these values may destroy the device immediately.

## Electrical Characteristics

| Parameter                      | Symbol     | Min.      | Typ. | Max.     | Unit | Notes |
|--------------------------------|------------|-----------|------|----------|------|-------|
| Power Supply Voltage           | Vcc        | 3.15      | 3.3  | 3.45     | V    |       |
| Power Supply Current           | Icc        |           |      | 750      | mA   |       |
| <b>Transmitter</b>             |            |           |      |          |      |       |
| Input differential Impedance   | Rin        |           | 100  |          |      |       |
| Differential data input        | Vin,pp     | 120       |      | 820      | mV   | 1     |
| Transmit Disable Voltage       | VD         | 2.0       |      | Vcc      | V    |       |
| Transmit Enable Voltage        | VEN        | GND       |      | GND +0.8 | V    |       |
| Transmit Disable Assert Time   |            |           |      | 10       | us   |       |
| <b>Receiver</b>                |            |           |      |          |      |       |
| Differential data output swing | Vout,pp    | 340       | 650  | 850      | mV   | 1     |
| RX Rise time (20-80%)          | tr         |           |      | 38       | ps   |       |
| RX Fall time (20-80%)          | tf         |           |      | 38       | ps   |       |
| LOS Fault                      | VLOS fault | Vcc – 0.5 |      | VccHOST  | V    | 2     |
| LOS Normal                     | VLOS norm  | GND       |      | GND+0.5  |      | 2     |

### Notes:

1. After internal AC coupling
2. Loss of signal is open collector to be pulled up to with a 4.7k-10kohm resister to 3.15-3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

## Optical Characteristics

| Parameter                   | Symbol          | Min.          | Typ.        | Max.            | Unit | Notes |
|-----------------------------|-----------------|---------------|-------------|-----------------|------|-------|
| Power Budget                | PB              |               | 14          |                 | dB   |       |
| Data Rate                   |                 |               | 10.3125     |                 | Gbps |       |
| Transmitter                 |                 |               |             |                 |      |       |
| Center Wavelength           | $\lambda_C$     | $\lambda_C-6$ | $\lambda_C$ | $\lambda_C-7.5$ | nm   |       |
| Spectral Width (-20dB)      | $\Delta\lambda$ |               |             | 1               | nm   |       |
| Side Mode Suppression Ratio | SMSR            | 30            |             |                 | dB   |       |
| Average Output Power        | Pout            | -1            |             | 4               | dBm  | 3     |
| Extinction Ratio            | ER              | 3.5           |             |                 | dB   |       |
| Pout@TX Disable Asserted    | Pout            |               |             | -30             | dBm  |       |
| Receiver                    |                 |               |             |                 |      |       |
| Center Wavelength           | $\lambda_C$     | 1260          |             | 1600            | nm   |       |
| Receiver Sensitivity        | Pmin            |               |             | -15             | dBm  | 4     |
| Receiver Overload           | Pmax            | 0.5           |             |                 | dBm  |       |
| LOS De-Assert               | LOSD            |               |             | -17.8           | dBm  |       |
| LOS Assert                  | LOSA            | -29.8         |             |                 | dBm  |       |
| LOS Hysteresis              |                 | 1             |             |                 | dB   |       |

### Notes:

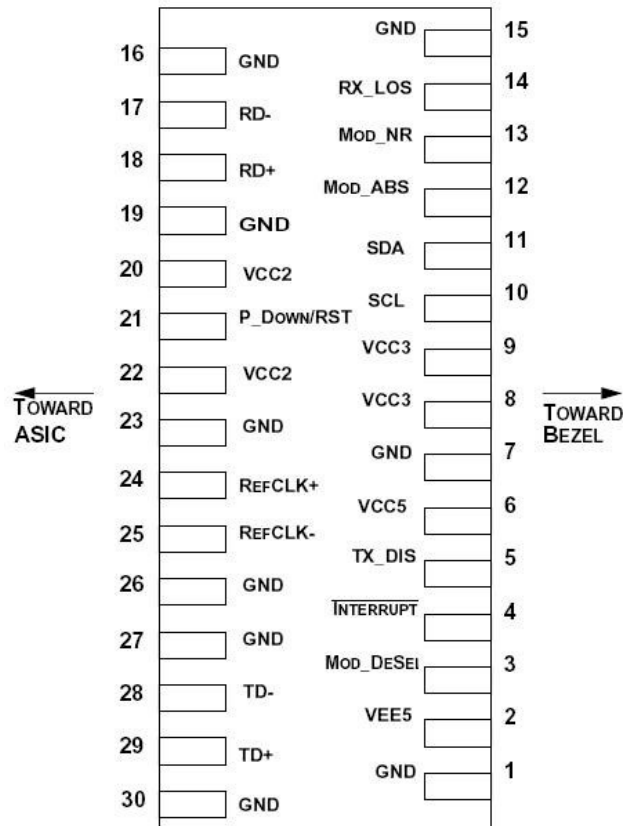
1. Output power is coupled into a 9/125 $\mu$ m SMF.
2. Average received power; BER less than 1E-12 and PRBS 231-1 test pattern.

## Pin Descriptions

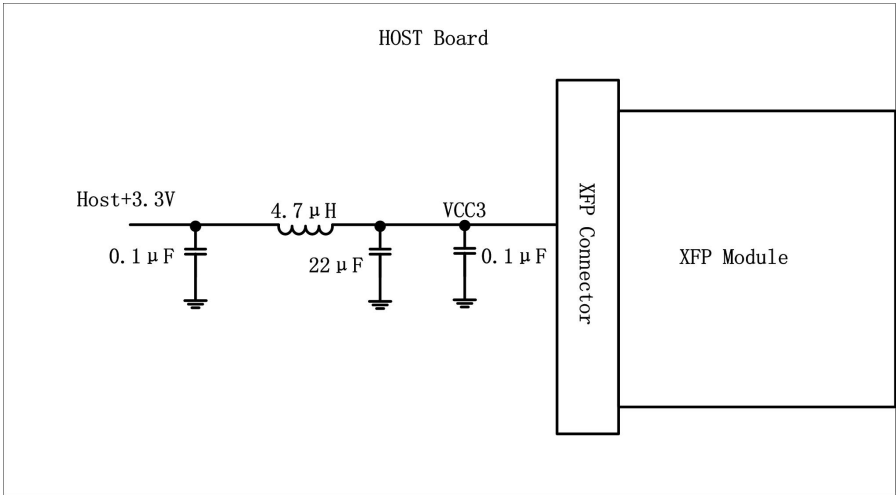
| Pin | Symbol           | Function                                                                                                                                                                                                                                                                   | Notes |
|-----|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1   | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 2   | V <sub>EE5</sub> | Optional -5.2 Power Supply - Not Required                                                                                                                                                                                                                                  |       |
| 3   | Mod_Desel        | Module De-select; When held low allows module to respond to 2-wire serial interface commands                                                                                                                                                                               |       |
| 4   | Interrupt        | Interrupt; Indicates presence of an important condition which can be read over the 2-wire serial interface.                                                                                                                                                                | 2     |
| 5   | TX_DIS           | Transmitter Disable; Transmitter laser source turned off                                                                                                                                                                                                                   |       |
| 6   | VCC5             | +5V Power Supply – Not required                                                                                                                                                                                                                                            |       |
| 7   | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 8   | VCC3             | +3.3V Power Supply                                                                                                                                                                                                                                                         |       |
| 9   | VCC3             | +3.3V Power Supply                                                                                                                                                                                                                                                         |       |
| 10  | SCL              | Serial 2-wire Interface clock.                                                                                                                                                                                                                                             | 2     |
| 11  | SDA              | Serial 2-wire Interface Data Line                                                                                                                                                                                                                                          | 2     |
| 12  | Mod_Abs          | Module Absent: Indicated module is not present. Grounded in the module.                                                                                                                                                                                                    | 2     |
| 13  | Mod_NR           | Module Not Ready                                                                                                                                                                                                                                                           | 2     |
| 14  | RX_LOS           | Receiver Loss of Signal Indicator                                                                                                                                                                                                                                          | 2     |
| 15  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 16  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 17  | RD-              | Receiver Inverted Data Output                                                                                                                                                                                                                                              |       |
| 18  | RD+              | Receiver Non-Inverted Data Output                                                                                                                                                                                                                                          |       |
| 19  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 20  | VCC2             | +1.8V Power Supply (Not required).                                                                                                                                                                                                                                         |       |
| 21  | P_DOWN/RST       | Power down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset<br>Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle. |       |
| 22  | VCC2             | +1.8V Power Supply (Not required)                                                                                                                                                                                                                                          |       |
| 23  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 24  | REFCLK+          | Reference Clock Non-Inverted Input, AC coupled on the host board - Not Required                                                                                                                                                                                            | 3     |
| 25  | REFCLK-          | Reference Clock Inverted Input, AC coupled on the host board – Not Required                                                                                                                                                                                                | 3     |
| 26  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 27  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |
| 28  | TD-              | Transmitter Inverted Data Input                                                                                                                                                                                                                                            |       |
| 29  | TD+              | Transmitter Non-Inverted Data Input                                                                                                                                                                                                                                        |       |
| 30  | GND              | Module Ground                                                                                                                                                                                                                                                              | 1     |

**Notes:**

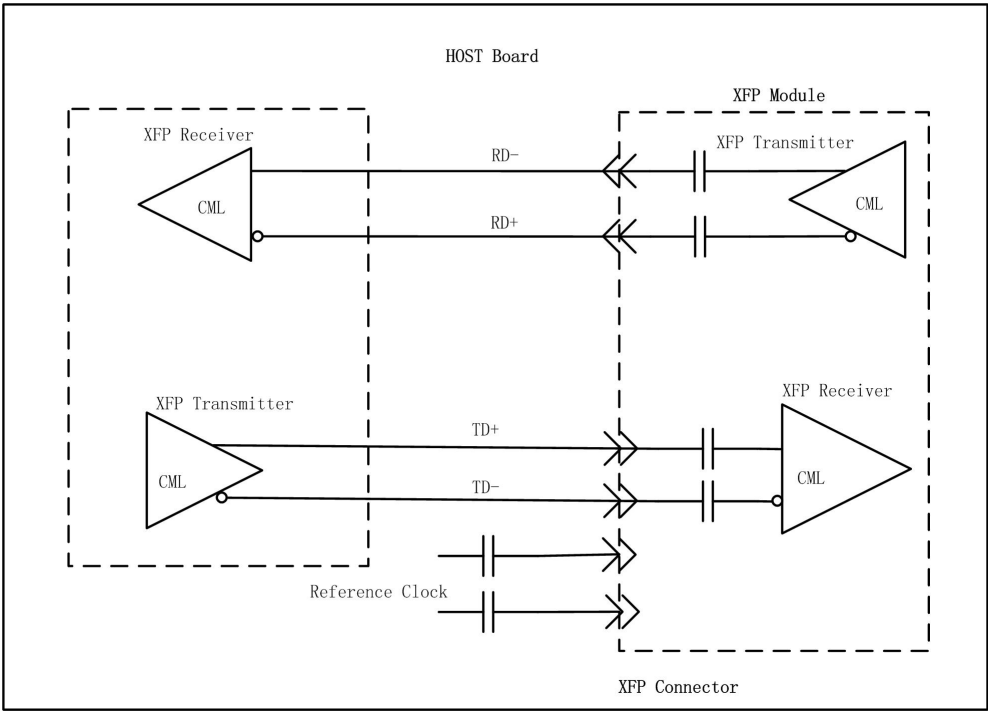
1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.
3. Reference Clock input is not required.

**Electrical Pin-out Details**

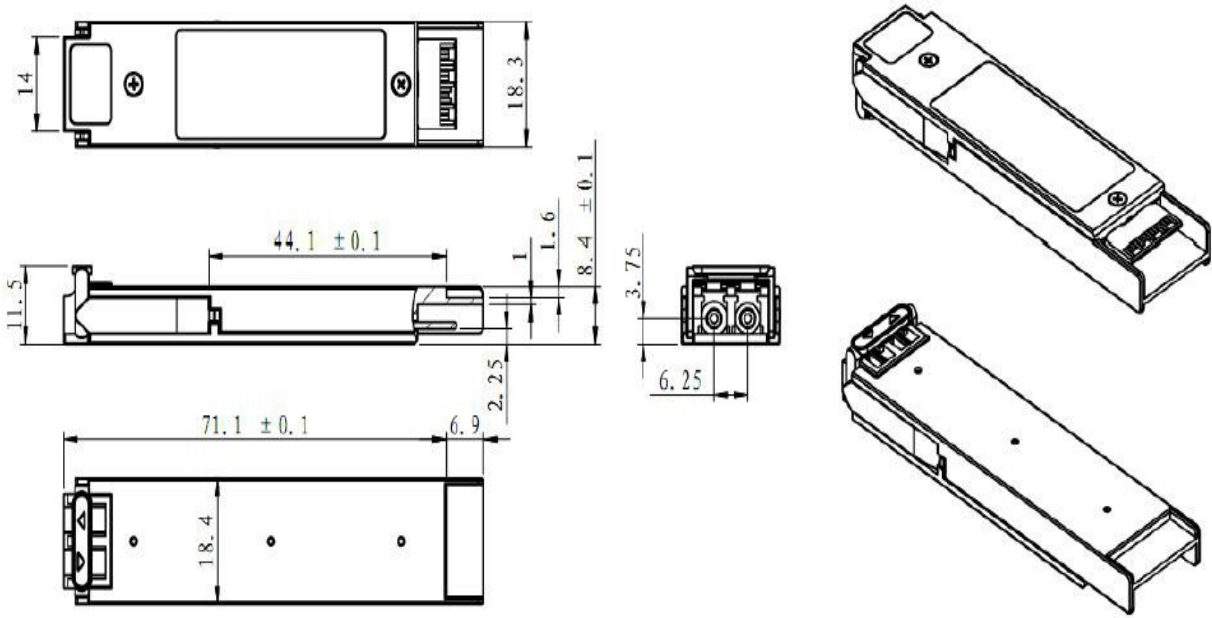
Recommended Host Board Power Supply Circuit



Recommend High-speed 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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