

ONS-SE-155-1510-C

Cisco® ONS-SE-155-1510 Compatible TAA OC-3-CWDM SFP Transceiver (SMF, 1510nm, 120km, LC, DOM, -40 to 85C)

Features:

- INF-8074 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:

- Ethernet over CWDM
- Access, Metro and Enterprise

Product Description

This Cisco® ONS-SE-155-1510 compatible SFP transceiver provides OC-3 (155mbps) transmission rates for up to 120km over single-mode fiber (SMF) using a wavelength of 1510nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® 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.

ProLabs'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."



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|------------------|------|------------|------|------|-------|
| Maximum Supply Voltage | V _{cc} | -0.5 | | 4.0 | V | |
| Storage Temperature | T _{stg} | -40 | | 85 | °C | |
| Operating Case Temperature | T _c | -40 | 25 | 85 | °C | |
| Relative Humidity | RH | 5 | | 95 | % | |
| Data Rate | | | 125 155 | | Mbps | |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|-------------------|-------|------|-----------------|-------|-------|
| Power Supply Voltage | V _{cc} | 3.135 | 3.3 | 3.465 | V | |
| Power Supply Current | I _{cc} | | | 300 | mA | |
| Power Dissipation | P _{DISS} | | | 1000 | mW | |
| Transmitter Differential Input Voltage (TD +/-) | | 300 | | 2200 | mVp-p | 1 |
| Receiver Differential Output Voltage (RD +/-) | | 600 | | 1200 | mVp-p | 2 |
| Low-Speed Output: Transmitter Fault (Tx_Fault)/Loss of Signal (LOS) | VOH | 2.0 | | V _{cc} | V | 3 |
| | VOL | 0 | | 0.8 | V | |
| Low-Speed Input: Transmitter Disable (Tx_Disable), MOD_DEF 1, MOD_DEF 2 | VIH | 2.0 | | V _{cc} | V | 4 |
| | VIL | 0 | | 0.8 | V | |

Notes:

1. Internally AC coupled and terminated to 100Ω differential load.
2. Internally AC coupled bit requires a 100Ω differential termination or internal to Serializer/Deserializer.
3. Pulled up externally with a 4.7kΩ to 10kΩ resistor on the host board to V_{cc}T/R.
4. MOD_DEF1 and MOD_DEF2 must be pulled up externally with a 4.7kΩ to 10kΩ resistor on the host board V_{cc}T/R.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------|--|---------------|-----------|---------------|------|-------|
| Transmitter | | | | | | |
| Launch Optical Power | Pavg | 2 | | 7 | dBm | |
| Center Wavelength Range | λ_C | $\lambda-6.5$ | λ | $\lambda+6.5$ | nm | |
| Extinction Ratio | ER | 10 | | | dB | |
| Spectral Width (-20dB) | $\Delta\lambda$ | | | 1 | nm | |
| Side-Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Total Jitter | TJ | | | 0.1 | ps | |
| Dispersion Penalty | | | | 1.5 | dB | |
| Optical Rise/Fall Time | Tr/Tf | | | 1.5 | ns | |
| Pout @ Tx_Disable Asserted | POUT | | | -35 | dBm | |
| Eye Diagram | ITU-T G.957 STM-1 and Telcordia GR-253-CORE Compatible | | | | | |
| Receiver | | | | | | |
| Receiver Sensitivity | S | | | -34 | dBm | 1 |
| Receiver Overload | POL | -10 | | | dBm | 1 |
| Optical Return Loss | ORL | 12 | | | dB | |
| LOS De-Assert | LOSD | | | -35 | dBm | |
| LOS Assert | LOSA | -45 | | | dBm | |

Notes:

1. Measured with PRBS $2^{23}-1$ test pattern, 155.52Mbps, ER=10dB, and BER< 10^{-12} .

Pin Descriptions

| Pin | Symbol | Name/Description | Engagement Order (Insertion) | Notes |
|-----|-------------|---|------------------------------|-------|
| 1 | VeeT | Transmitter Ground. | 1 | |
| 2 | Tx_Fault | Transmitter Fault Indication. | 3 | 1 |
| 3 | Tx_Disable | Transmitter Disable. Module disables on high or open. | 3 | 2 |
| 4 | MOD_DEF2 | Module Definition 2. 2-Wire Serial ID Interface. | 3 | 3 |
| 5 | MOD_DEF1 | Module Definition 1. 2-Wire Serial ID Interface. | 3 | 3 |
| 6 | MOD_DEF0 | Module Definition 0. Grounded within the module. | 3 | 3 |
| 7 | Rate Select | Not Connected. | 3 | |
| 8 | LOS | Loss of Signal. | 3 | 4 |
| 9 | VeeR | Receiver Ground. | 1 | |
| 10 | VeeR | Receiver Ground. | 1 | |
| 11 | VeeR | Receiver Ground. | 1 | |
| 12 | RD- | Inverse Received Data Out. | 3 | 5 |
| 13 | RD+ | Received Data Out. | 3 | 5 |
| 14 | VeeR | Receiver Ground. | 1 | |
| 15 | VccR | Receiver Power. +3.3V±5%. | 2 | 6 |
| 16 | VccT | Transmitter Power. +3.3V±5%. | 2 | 6 |
| 17 | VeeT | Transmitter Ground. | 1 | |
| 18 | TD+ | Transmitter Data In. | 3 | 7 |
| 19 | TD- | Inverse Transmitter Data In. | 3 | 7 |
| 20 | VeeT | Transmitter Ground. | 1 | |

Notes:

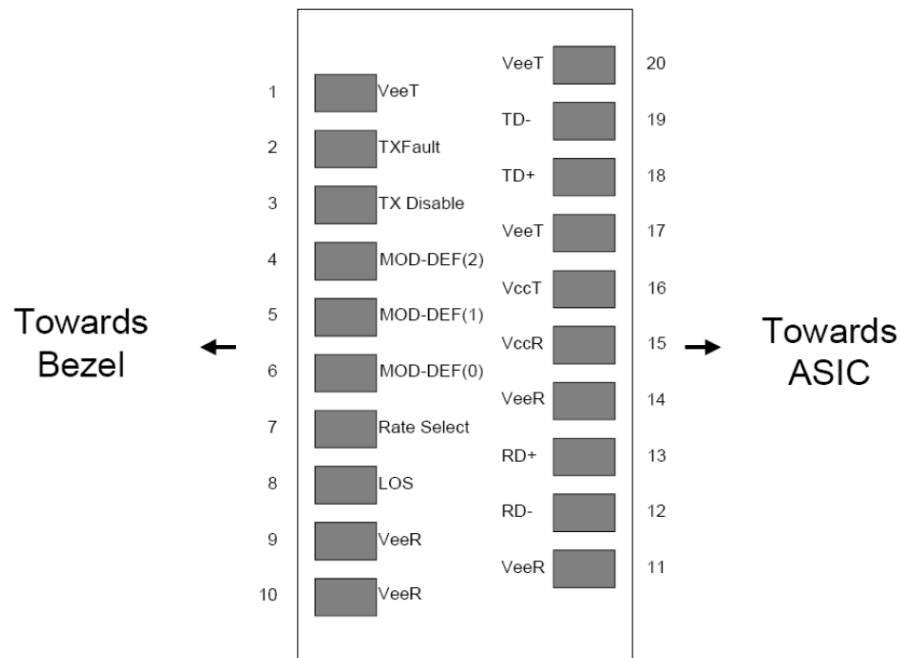
- Tx_Fault is open collector/drain output which should be pulled up externally with a 4.7KΩ-10KΩ resistor on the host board to supply <VccT +0.3V or VccR+0.3V. When “high,” this output indicates a laser fault of some kind. “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.
- Tx_Disable input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7KΩ-10KΩ resistor.

| | |
|------------------------|----------------------|
| Low (0V-0.8V): | Transmitter On |
| Between (0.8V and 2V): | Undefined |
| High (2.0V-VccT): | Transmitter Disabled |
| Open: | Transmitter Disabled |
- MOD_Def0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7KΩ-10KΩ resistor on the host board to supply less than VccT+0.3V or VccR+0.3V.
Mod-DEF0 is grounded by the module to indicate that the module is present.

Mod_DEF1 is clock line of the 2-wire serial interface for optional serial ID.

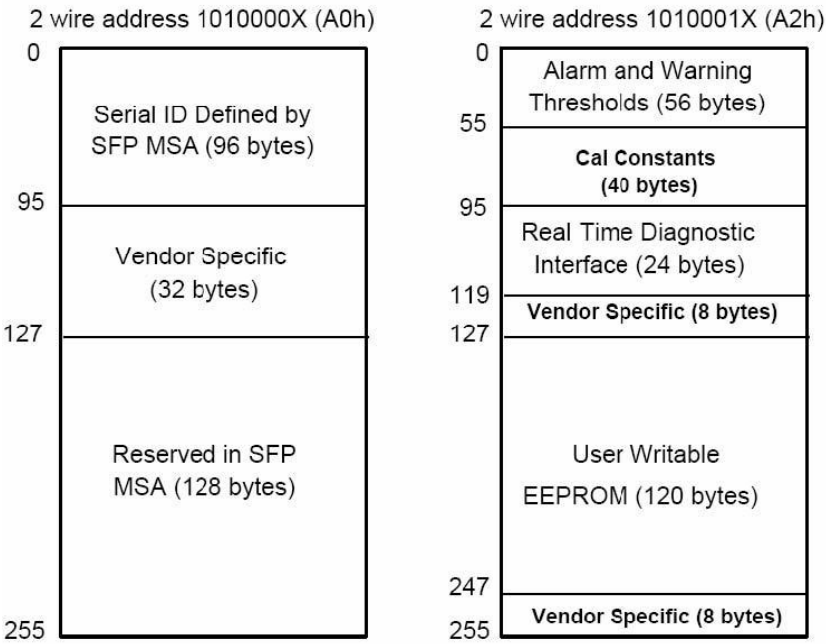
Mod_DEF2 is data line of the 2-wire serial interface for optional serial ID.

4. LOS (Loss of signal) is an open collector/drain output which should be pulled up externally with a 4.7K Ω -10K Ω resistor on the host board to supply $<V_{ccT}+0.3V$ or $V_{ccR}+0.3V$. When "high," this output indicates the received optical power is below the worst case receiver sensitivity (as defined by the standard in use). "Low" indicates normal operation. In the "low" state, the output will be pulled to $<0.8V$.
5. RD-/+: These are the differential receiver outputs. They are AC coupled 100 Ω differential lines which should be terminated with 100 Ω differential at the user SERDES. The AC coupling is done inside the module and thus not required on the host board.
6. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V \pm 5% at the SFP connector pin. The in-rush current will typically be no more than 30mA above steady state supply current after 500ns.
7. TD-/+: These are the differential transmitter inputs. They are AC coupled differential lines with 100 Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on host board.

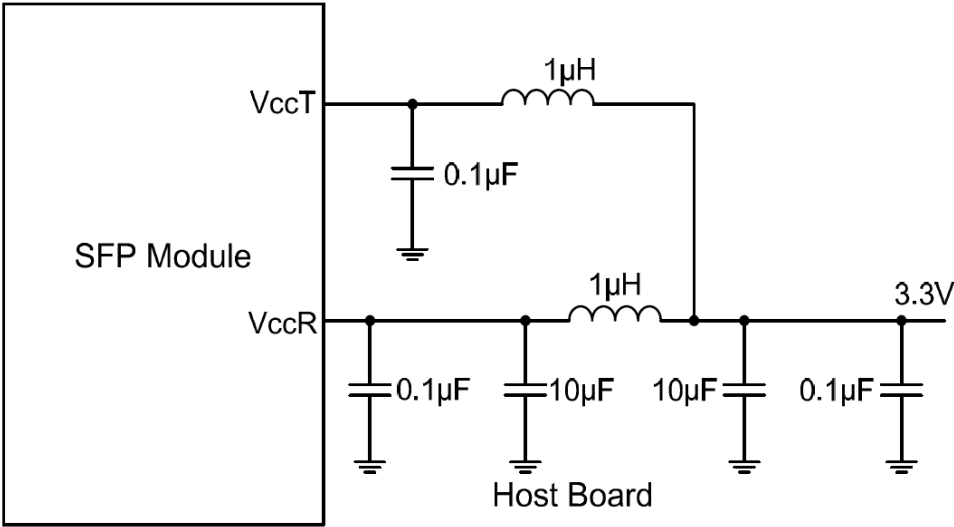


Pin-Out of Connector Block on the Host Board

Digital Diagnostic Memory Map

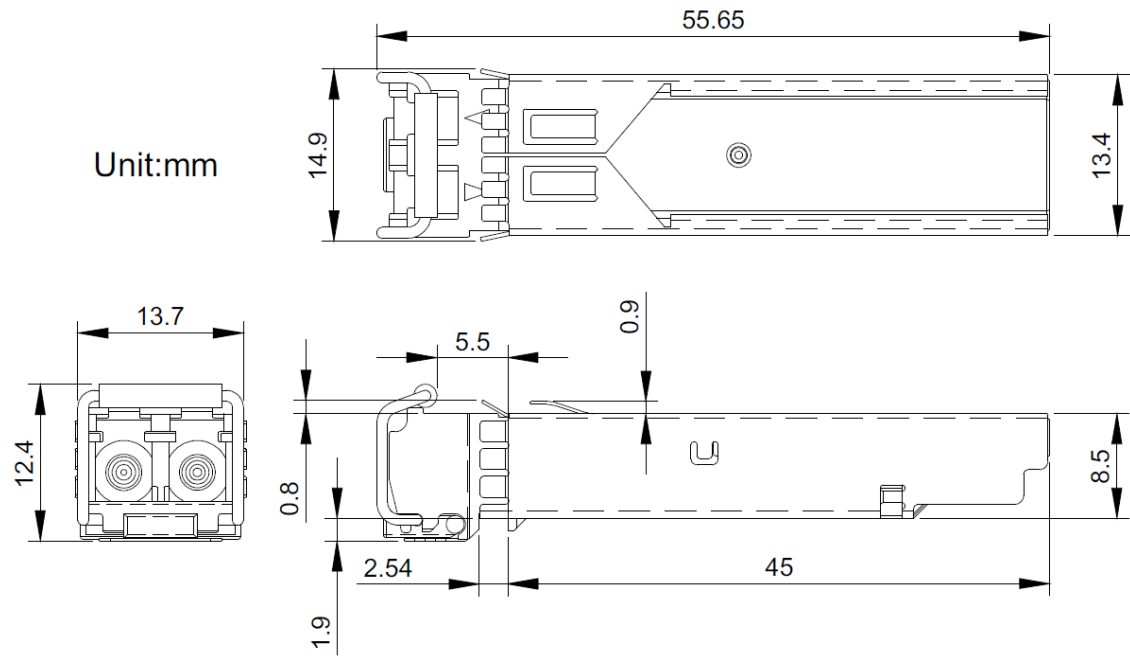


Recommended Host Board Power Supply



Mechanical Specifications

Unit:mm



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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