



## CWDM-SFP25G-1310-40-SKY

Cisco® CWDM-SFP25G-1310-40 Compatible 25Gbase-CWDM SFP28 Transceiver (SMF, 1310nm, 40km, LC, DOM)

### Product Description

This Cisco® CWDM-SFP25G-1310-40 compatible SFP28 transceiver provides 25GBase-CWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1310nm 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

### Features:

- Up to 25.78Gbps Data Links
- CWDM DFB Laser and APD receiver
- Up to 40km transmission on SMF
- Hot-pluggable SFP28 footprint
- Specifications compliant with SFF 8472
- Metal enclosure, for lower EMI
- Compliant with SFF-8402 with LC connector
- Dual CDR with bypass function
- Power dissipation: 2.0W
- Single 3.3V power supply
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



### Applications:

- 25x Gigabit Ethernet over CWDM
- Access, Metro and Enterprise
- Mobile Fronthaul CPRI/OBSAI

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*For your product safety, please read the following information carefully before any manipulation of the transceiver:*



#### **ESD**

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



#### **LASER SAFETY**

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

*The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.*

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### CWDM Available Wavelengths

| Wavelengths | Min.   | Typ. | Max.   |
|-------------|--------|------|--------|
| 27          | 1264.5 | 1271 | 1277.5 |
| 29          | 1284.5 | 1291 | 1297.5 |
| 31          | 1304.5 | 1311 | 1317.5 |

### Absolute Maximum Ratings

| Parameter                          | Symbol            | Min. | Typ.  | Max. | Unit | Notes |
|------------------------------------|-------------------|------|-------|------|------|-------|
| Maximum Supply Voltage             | Vcc               | -0.3 |       | 4    | V    |       |
| Storage Temperature                | TS                | -40  |       | 85   | °C   |       |
| Operating Case Temperature         | Tc                | 0    |       | 70   | °C   |       |
| Relative Humidity (non-condensing) | RH                | 0    |       | 85   | %    |       |
| Data Rate                          | BR                |      | 25.78 |      | Gbps | 1     |
| Transmission Distance              | TD                |      | 40    |      | km   |       |
| Coupled fiber                      | Single mode fiber |      |       |      |      | 2     |

### Notes:

1. TX Rate/RX Rate
2. 9/125um SMF

## Electrical Characteristics

| Parameter                         | Symbol  | Min.    | Typ. | Max.    | Unit | Notes |
|-----------------------------------|---------|---------|------|---------|------|-------|
| Power Supply Voltage              | Vcc     | 3.14    | 3.3  | 3.47    | V    |       |
| Power Supply Current              | Icc     |         |      | 550     | mA   |       |
|                                   | Icc     |         |      | 600     | mA   |       |
| Signal Input Voltage              | VSI     | Vcc-0.3 |      | Vcc+0.3 | V    |       |
| Transmitter                       |         |         |      |         |      |       |
| Input differential impedance      | Rin     |         | 100  |         | Ω    | 1     |
| Single ended data input swing     | Vin,pp  | 180     |      | 700     | mV   |       |
| Transmitter Fault Output-High     | VFaultH | 2       |      | Vcc+0.3 | V    |       |
| Transmitter Fault Output-Low      | VFaultL | 0       |      | 0.8     | V    |       |
| Transmitter Disable Voltage- High | VDisH   | 2       |      | Vcc+0.3 | V    |       |
| Transmitter Disable Voltage- low  | VDisL   | 0       |      | 0.8     | V    |       |
| Receiver                          |         |         |      |         |      |       |
| Differential data output swing    | Vout,pp | 300     |      | 850     | mV   | 2     |
| LOS Output Voltage-High           | VLOSH   | 2       |      | Vcc+0.3 | V    |       |
| LOS Output Voltage-Low            | VLOSL   | 0       |      | 0.8     | V    |       |

### Notes:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Into 100 ohms differential termination.

## Optical Characteristics

| Parameter                                                                                                   | Symbol                             | Min.  | Typ. | Max.  | Unit  | Notes |
|-------------------------------------------------------------------------------------------------------------|------------------------------------|-------|------|-------|-------|-------|
| Transmitter                                                                                                 |                                    |       |      |       |       |       |
| Average Launched Power                                                                                      | P <sub>o</sub>                     | 0     |      | +6.0  | dBm   |       |
| Center Wavelength Range                                                                                     | λ <sub>C</sub>                     | λ-6.5 |      | λ+6.5 | nm    | 1     |
| Spectrum Bandwidth (-20dB)                                                                                  | Δλ                                 |       |      | 1     | nm    |       |
| Side-Mode Suppression Ratio                                                                                 | SMSR                               | 30    |      |       | dB    |       |
| Extinction Ratio                                                                                            | ER                                 | 3.5   |      |       | dB    | 2     |
| Relative Intensity Noise                                                                                    | RIN <sub>20OMA</sub>               |       |      | -130  | dB/Hz |       |
| Average Launched Power (Laser Off)                                                                          | P <sub>off</sub>                   |       |      | -30   |       |       |
| Optical return loss tolerance                                                                               |                                    |       |      | 20    | dB    |       |
| Transmitter reflectance                                                                                     |                                    |       |      | -12   | dB    |       |
| Transmitter eye mask definition<br>{X1, X2, X3, Y1, Y2, Y3}<br>Hit ratio 5x10 <sup>-5</sup> hits per sample | {0.31, 0.4, 0.45, 0.34, 0.38, 0.4} |       |      |       |       | 3     |
| Receiver                                                                                                    |                                    |       |      |       |       |       |
| Input Optical Wavelength                                                                                    | λ <sub>IN</sub>                    | 1270  |      | 1610  | nm    |       |
| Damage threshold                                                                                            |                                    | -3    |      |       | dBm   |       |
| Receiver Sensitivity                                                                                        | P <sub>sen1</sub>                  |       |      | -19   | dBm   | 4     |
| Input Saturation Power (Overload)                                                                           | PSAT                               | -6    |      |       | dBm   | 4     |
| Los Of Signal Assert                                                                                        | P <sub>A</sub>                     | -35   |      |       | dBm   |       |
| Los Of Signal De-assert                                                                                     | P <sub>D</sub>                     |       |      | -20   | dBm   |       |
| LOS -Hysteresis                                                                                             | PHys                               | 0.5   |      | 6     | dB    |       |

### Notes:

1.  $\lambda$  is: 1271~1311 (nm)
2. Measured with a PRBS 231-1 test pattern, @25.78Gb/s.
3. Transmitter eye mask definition, Compliant with IEEE 802.3cc.
4. Measured with Light source 1310nm, ER=3.5dB; BER = $<5 \times 10^{-5}$  @PRBS=231-1 NRZ.

## Pin Descriptions

| Pin | Symbol     | Name/Descriptions                                                              | Ref. |
|-----|------------|--------------------------------------------------------------------------------|------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |
| 2   | TX Fault   | Transmitter Fault. LVTTTL-O                                                    | 2    |
| 3   | TX Disable | Transmitter Disable. Laser output disabled on high or open. LVTTTL-I.          | 3    |
| 4   | SDA        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O. |      |
| 5   | SCL        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.   |      |
| 6   | MOD_ABS    | Module Absent, Connect to VeeT or VeeR in Module.                              | 4    |
| 7   | RS0        | Rate Select 0. Not used                                                        | 5    |
| 8   | LOS        | Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.       | 2    |
| 9   | RS1        | Rate Select 1. Not used                                                        | 5    |
| 10  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 11  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 12  | RD-        | Receiver Inverted DATA out. AC Coupled. CML-O.                                 |      |
| 13  | RD+        | Receiver Non-inverted DATA out. AC Coupled. CML-O.                             |      |
| 14  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 15  | VccR       | Receiver Power Supply.                                                         |      |
| 16  | VccT       | Transmitter Power Supply.                                                      |      |
| 17  | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |
| 18  | TD+        | Transmitter Non-Inverted DATA in. AC Coupled. CML-I.                           |      |
| 19  | TD-        | Transmitter Inverted DATA in. AC Coupled. CML-O.                               |      |
| 20  | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |

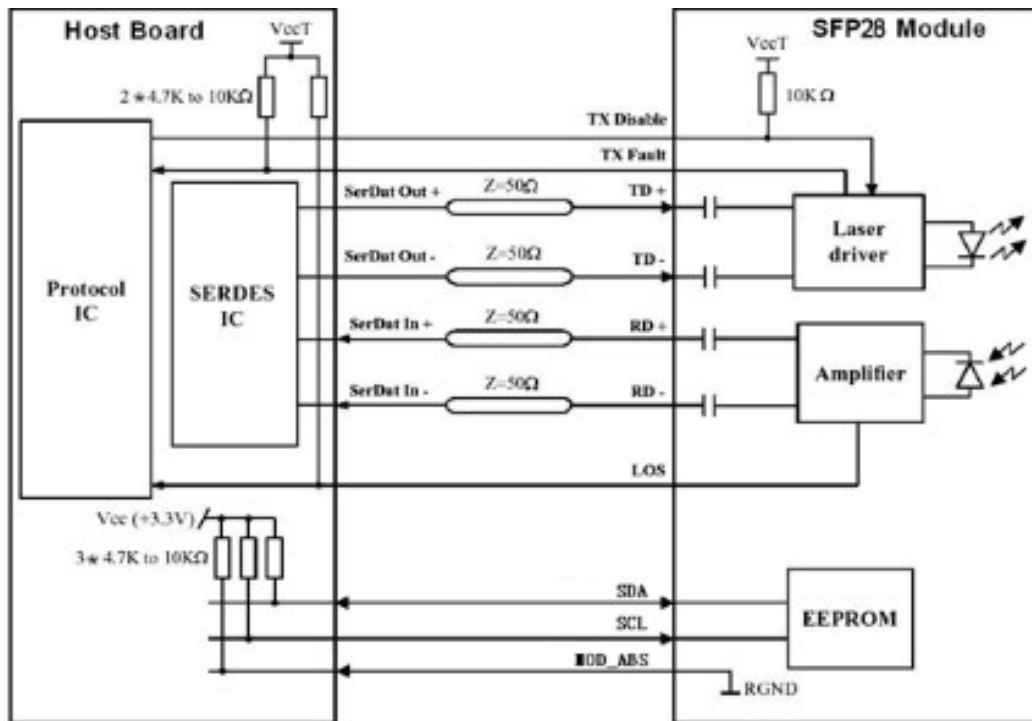
## Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc\_Host with resistor in the range 4.7K $\Omega$  to 10K $\Omega$ . Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx\_Disable is an input contact with a 4.7K $\Omega$  to 10K $\Omega$  pull-up resistor to VccT inside module.
4. Mod\_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc\_Host with a resistor in the range from 4.7K $\Omega$  to 10K $\Omega$ . Mod\_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



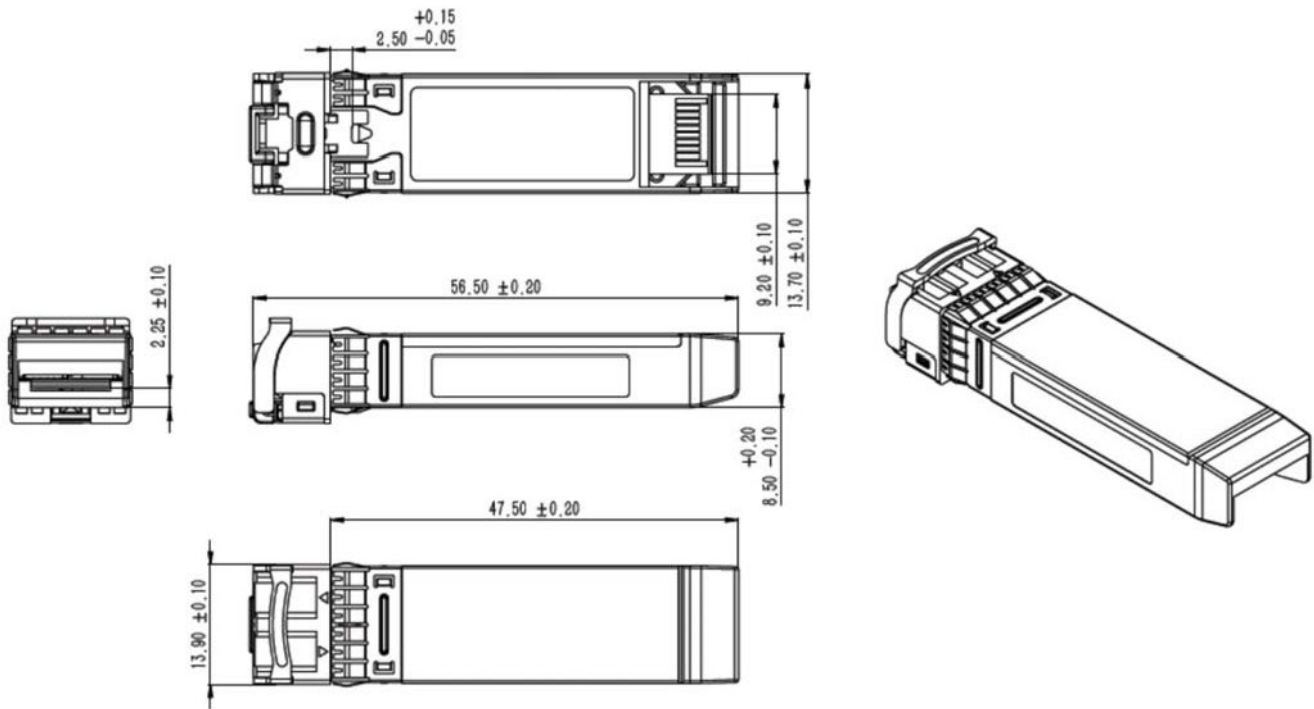
Pin-out of connector Block on Host board

### Recommended Interface Circuit Schematic



## Mechanical Specifications

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



# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

