

# SFP13020L3xD – SFP Dual Fibre

## 1310nm / 20km / 3.1Gbps

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 Class 1 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.

## 1. Overview

SFP13020L3xD is a high performance transceiver module for up to 3.072Gbps data links over a single mode fibre pair. The maximum reach<sup>1</sup> is 20km, with 8.6dB end of life (EOL) power budget. The transmitter is a 1310nm DFB laser, the receiver is a PIN photodiode.

This transceiver module is compliant with the Small Form-factor Pluggable (SFP) Multisource Agreement (MSA) and hot pluggable. Always contact SkyLane Optics® commercial agents for compatibility with different equipment platforms.

## 2. Features

- SFP Multi-Source Agreement compliant [INF-8074]
- Hot pluggable SFP footprint
- Serial ID functionality supported according to [SFF-8472]
- Class 1 laser safety standard IEC 60825 compliant
- Supports up to 3.072Gbps CPRI/OBSAI
- Dual LC connector
- 1310nm DFB transmitter
- 20km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -40 to 85°C
- Low power dissipation (<1W)
- Digital Diagnostics Monitoring (DDM)



Figure 1. SFP Dual Fibre  
(non-binding illustration)

## 3. Applications

- CPRI 3.072/2.4576/1.228Gbps and 614Mbps
- OBSAI 3.072/1.536Gbps and 768Mbps

## 4. Optical Interface

| P/N          | Wavelength [nm] | Optical Output Power <sup>2</sup> [dBm] | Receiver Sensitivity <sup>3</sup> [dBm] | Transmitter and Dispersion Penalty [dB] | Receiver Overload <sup>4</sup> [dBm] | Power Budget <sup>2</sup> [dB] |
|--------------|-----------------|---|---|---|--------------------------------------|--------------------------------|
| SFP13020L3xD | 1310nm          | -8.4 to -3                              | ≤ -17                                   | 1                                       | -3                                   | ≥ 8.6                          |

1. Distance is estimated assuming typical optical losses after decent quality fibre deployment; Only optical budget value is guaranteed.

2. EOL, over operating temperature range

3. Measured with 3.072Gbps PRBS 2<sup>7</sup>-1, ER=9dB, BER≤10<sup>-12</sup>

4. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers (optical loop back) before ensuring that proper optical attenuation is used

## 5. Technical Parameters

### 5.1. Recommended Operating Conditions

| Parameter                  | Min   | Typ | Max   | Unit | Notes          |
|----------------------------|-------|-----|-------|------|----------------|
| Storage temperature        | -40   |     | 85    | °C   |                |
| Operating Case Temperature | 0     |     | 70    | °C   | SFP13020L30D   |
|                            | -40   |     | 85    | °C   | SFP13020L32D   |
| Relative Humidity          | 5     |     | 95    | %    | Non condensing |
| Power Supply Voltage       | 3.135 |     | 3.465 | V    |                |
| Power Supply Current       |       |     | 300   | mA   |                |

### 5.2. Transmitter Optical Specifications

| Parameter                                | Min  | Typ | Max  | Unit | Notes |
|--|------|-----|------|------|-------|
| Average Output Power                     | -8.4 |     | -3   | dBm  | 5     |
| Centre Wavelength                        | 1290 |     | 1340 | nm   |       |
| Spectral Width (-20dB)                   |      |     | 4    | nm   |       |
| Extinction Ratio                         | 3.5  |     |      | dB   |       |
| Transmitter and Dispersion Penalty (TDP) |      |     | 1    | dB   |       |

5. Output power coupled into a 9/125µm single mode fibre

### 5.3. Receiver Optical Specifications

| Parameter                | Min  | Typ | Max  | Unit | Notes |
|--------------------------|------|-----|------|------|-------|
| Receiver Sensitivity     |      |     | -17  | dBm  | 6     |
| Receiver Overload        | -3   |     |      | dBm  | 6     |
| Receiver Operating Range | 1260 |     | 1600 | nm   |       |

6. Measured with 3.072Gbps PRBS 2<sup>7</sup>-1, ER=9dB, BER≤10<sup>-12</sup>

## 6. Transceiver Electrical Pad Layout

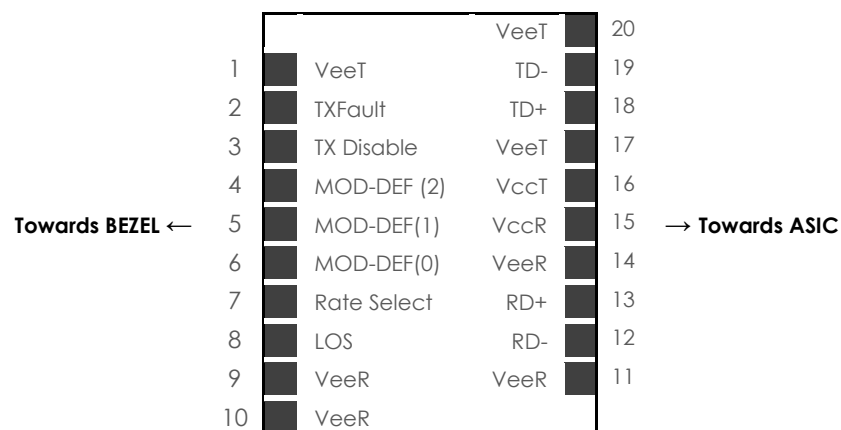


Figure 2. Transceiver Electrical Pad Layout

## 7. Module Electrical Pin Definition

SFP MSA (INF-8074i)

| Pin Number | Name        | Function                      |
|------------|-------------|-------------------------------|
| 1          | VeeT        | Transmitter Ground            |
| 2          | TX Fault    | Transmitter Fault Indication  |
| 3          | TX_ Disable | Transmitter Disable           |
| 4          | MOD-DEF2    | 2-Wire Serial Interface Data  |
| 5          | MOD-DEF1    | 2-Wire Serial Interface Clock |
| 6          | MOD-DEF0    | Grounded in Module            |
| 7          | Rate Select | Not Used                      |
| 8          | LOS         | Loss of Signal                |
| 9          | VeeR        | Receiver Ground               |
| 10         | VeeR        | Receiver Ground               |
| 11         | VeeR        | Receiver Ground               |
| 12         | RD-         | Inverted Received Data Out    |
| 13         | RD+         | Received Data Out             |
| 14         | VeeR        | Receiver Ground               |
| 15         | VccR        | Receiver Power                |
| 16         | VccT        | Transmitter Power             |
| 17         | VeeT        | Transmitter Ground            |
| 18         | TD+         | Transmit Data In              |
| 19         | TD-         | Inverted Transmit Data In     |
| 20         | VeeT        | Transmitter Ground            |

## 8. EEPROM

SFP MSA (SFF-8472)

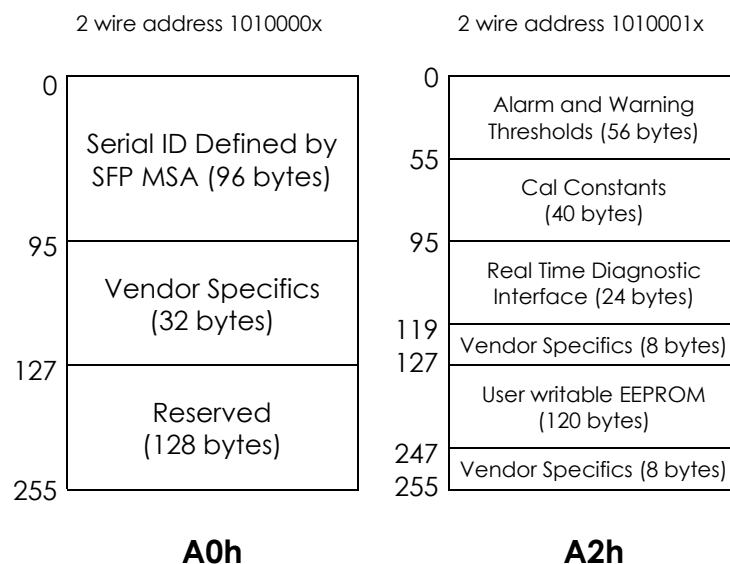


Figure 3. EEPROM of a SFP

## 9. Ordering Information

| Part Number         | Description   |
|---------------------|---|
| <b>SFP13020L30D</b> | SFP Dual Fibre, Tx 1310nm (DFB), Rx (PIN), maximum distance 20km, power budget 8.6dB, 3.1Gbps, LC connector, <b>0°C to 70°C</b> , DDM   |
| <b>SFP13020L32D</b> | SFP Dual Fibre, Tx 1310nm (DFB), Rx (PIN), maximum distance 20km, power budget 8.6dB, 3.1Gbps, LC connector, <b>-40°C to 85°C</b> , DDM |

## 10. Document Revision Information

| Revision | Description     |
|----------|-----------------|
| <b>A</b> | Initial release |

Skylane Optics® supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:  
**support@skylaneoptics.com**

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