# S2813010250F – SFP28 Dual Fibre

1310nm / 10km / 25GBASE-LR

*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.*

## 1. Overview

S2813010250F is a high performance transceiver module for 25 Gigabit Ethernet data links over a single mode fibre pair. The maximum reach is 10km. The transmitter is a 1310nm Distributed Feedback (DFB) laser, the receiver is a PIN photodiode.

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

## 2. Features

- SFP+ Multi-Source Agreement compliant (SFF-8431)
- Hot pluggable SFP+ footprint
- Serial ID functionality supported according to SFF-8472
- 25.781Gbps Serial Electrical Interface (CEI-28G-VSR)
- Dual LC Connector
- 1310nm DFB Transmitter
- PIN Receiver
- Up to 10km Point-to-Point Transmission on Single Mode Fibre
- Built-in dual CDR
- Operating temperature range 0°C to 70°C
- Power Dissipation <1.5W
- Single +3.3V Power Supply

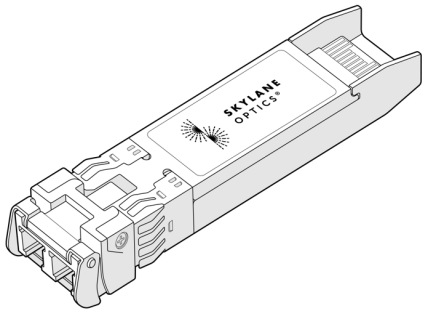


**Figure 1. SFP28 Dual Fibre**
(non-binding illustration)

## 3. Applications

- 25× Gigabit Ethernet

## 4. Optical Interface

| P/N | Wavelength | Protocol | Optical Output Power [dBm] | Stressed Receiver Sensitivity[2] (OMA) [dBm] | Optical Receiver Overload[3] [dBm] | Link Length[4] [km] |
|---|---|---|---|---|---|---|
| **S2813010250F** | 1310nm | 25GBASE-LR | -7 to 2 | ≤ -9.5 | 2 | ≤ 10 |

1. EOL over operating temperature range
2. Measured with 25.78Gbps, BER≤$5\times10^{-5}$, PRBS $2^{31}$-1
3. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers before ensuring that proper optical attenuation is used
4. Cabled optical fibre as per IEEE 802.3-2012

## 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 | |
| Relative Humidity | 5 | | 85 | % | Non-Condensing |
| Power Supply Voltage | 3.135 | 3.3 | 3.465 | V | |
| Power Supply Current | | | 450 | mA | |
| Power Dissipation | | | 1.5 | W | |

| 5.2. Transmitter Optical Specifications | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Min** | **Typ** | **Max** | **Unit** | **Notes** |
| Data Rate | | 25.78125 | | Gbps | 5 |
| Average Output Power | -7 | | 2 | dBm | 6, 7 |
| Launched OMA | -4 | | 2.2 | | 6, 8 |
| Launched OMA minus TDP | -5 | | | dBm | 6 |
| Centre Wavelength | 1295 | | 1325 | nm | |
| Transmitter and Dispersion Penalty (TDP) | | | 2.7 | dB | |
| Extinction Ratio | 3 | | | dB | |

5. IEEE 802.3-2012
6. Output power coupled into a 9/125 µm single mode fibre
7. Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance
8. Even if the TDP is <1 dB, the launched OMA must exceed -4dBm

| 5.3. Receiver Optical Specifications | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Min** | **Typ** | **Max** | **Unit** | **Notes** |
| Operating Wavelength | 1295 | | 1325 | nm | |
| Average Receive Power | -13.3 | | 2 | dBm | 9 |
| Receiver Sensitivity (OMA) | | | -12 | dBm | 10 |
| Stressed Receiver Sensitivity (OMA) | | | -9.5 | dBm | 11 |

9. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance
10. Maximum receiver sensitivity (OMA) is informative
11. Measured with 25.78Gbps, BER≤$5\times10^{-5}$, PRBS $2^{31}$-1

## 6. Transceiver Electrical Pad Layout

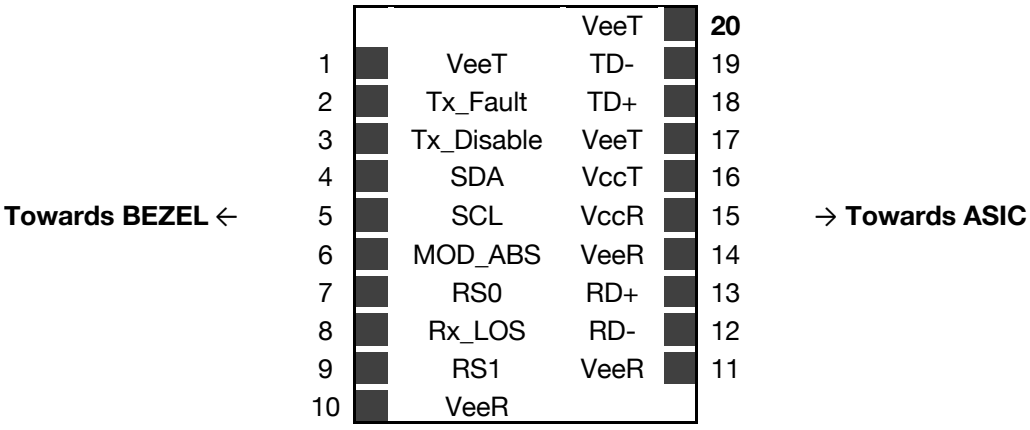


Figure 2. Transceiver Electrical Pad Layout

## 7. Module Electrical Pin Definition

| Pin Number | Name | Function |
|---|---|---|
| 1 | VeeT | Module Transmitter Ground |
| 2 | Tx_Fault | Module Transmitter Fault |
| 3 | Tx_ Disable | Transmitter Disable |
| 4 | SDA | 2-Wire Serial Interface Data |
| 5 | SCL | 2-Wire Serial Interface Clock |
| 6 | Mod_ABS | Module Absent |
| 7 | RS0 | Rate Select 0 |
| 8 | Rx_LOS | Receiver Loss of Signal |
| 9 | RS1 | Not Used |
| 10 | VeeR | Module Receiver Ground |
| 11 | VeeR | Module Receiver Ground |
| 12 | RD- | Receiver Inverted Data Output |
| 13 | RD+ | Receiver Non-Inverted Data Output |
| 14 | VeeR | Module Receiver Ground |
| 15 | VccR | Module Receiver 3.3V Supply |
| 16 | VccT | Module Transmitter 3.3V Supply |
| 17 | VeeT | Module Transmitter Ground |
| 18 | TD+ | Transmitter Non-Inverted Data Input |
| 19 | TD- | Transmitter Inverted Data Input |
| 20 | VeeT | Module Transmitter Ground |

## 8. EEPROM

SFP+ MSA (SFF-8472)

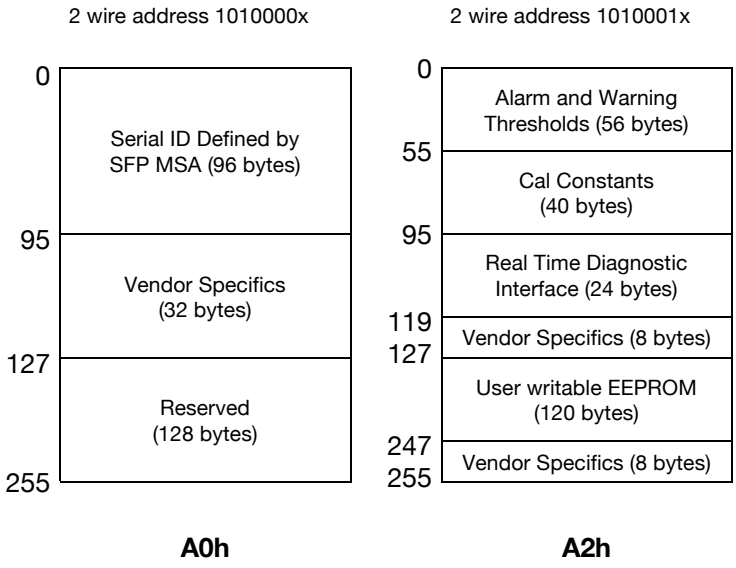


Figure 3. SFP28 Memory Map

## 9. Ordering Information

| Part Number | Description |
|---|---|
| S2813010250F | SFP28 LR, 1310nm, Tx (DFB), Rx (PIN), maximum distance 10km on SMF, 25x Gigabit Ethernet, dual LC connector, 0°C to 70°C, DDM |

## 10. Document Revision Information

| Revision | Description |
|---|---|
| A | 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**