



**CL-SFP+\_D40-T-XX**  
**SFP+ DWDM Tunable 50GHz / 40km / 10G links**  
**SFP Dual Fibre**



**Features**

- SFP+ Multi-Source Agreement compatible, SFF-8431 revision 4.1 and SFP DWDM Tunable SFF-8690 compliant
- Hot pluggable SFP footprint
- Serial ID functionality supported according to [SFF-8472]
- Class 1 laser safety standard IEC 60825 compliant
- Dual LC connector
- C-band tunable wavelengths for 50GHz DWDM applications
- 40km, point-to-point transmission on single mode fiber pair
- Supported bitrates from 9.95 Gbps up to 11.3 Gbps
- Operating temperature range 0°C to 70°C
- Power dissipation (<2W)
- Digital Diagnostic Monitoring implemented
- RoHS 6/6 compliant
- Built in PHY SGMII interface
- Limiting SFI electrical output interface

**Overview**

CL-SFP+\_D40-T-XX is a high performance transceiver module for 10 Gbps line rates from 9.95 Gbps up to 11.3 Gbps data link over a single mode fiber pair. The maximum reach is 40km for a 23dB end of life (EOL) power budget. The emitter is a C-band cooled tunable transmitter, the receiver is an APD photodiode.

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

**Application**

- DWDM networks
- 10Gb Ethernet applications
- 10G Fiber channel application

**Optical Interface**

| P/N              | Wavelength [nm] | Output Optical Power <sup>1</sup> [dBm] | Optical Receiver Sensitivity <sup>2</sup> [dBm] | Power Budget <sup>1</sup> [dB] | Trasmitter Dispersion Penalty[dB] |
|------------------|-----------------|---|---|--------------------------------|-----------------------------------|
| CL-SFP+_D40-T-XX | C-band tunable  | -1 to -3                                | -24 to -7                                       | 23                             | 2                                 |

1. EOL, over operating temperature range  
 2. Measured at 10 Gigabit Ethernet



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**Technical parameters**

**5.1. Recommended Operating Conditions**

| Parameter                  | Min | Typ | Max | Units | Notes          |
|----------------------------|-----|-----|-----|-------|----------------|
| Storage temperature        | -40 |     | 85  | °C    |                |
| Operating Case Temperature | 0   |     | 70  | °C    |                |
| Relative Humidity          | 5   |     | 95  | %     | Non condensing |
| Power Supply Voltage       | 3.1 | 3.3 | 3.5 | V     |                |
| Power Supply Current       |     |     |     | mA    |                |

**5.2. Transmitter Optical Specifications (0 to 70°C, 3.3V +/-5%)**

| Parameter                   | Min | Typ | Max | Units | Notes    |
|-----------------------------|-----|-----|-----|-------|----------|
| Average Output Power        | -1  |     | 3   | dBm   | 3        |
| Center Wavelength           |     | 50  |     | nm    |          |
| Optical Extinction Ratio ER | 9   |     |     | dB    |          |
| Spectral Width              |     |     | 0.4 | nm    | At 20 dB |

3. Output power coupled into a 9/125 μm single-mode fiber

**5.3. Receiver Optical Specifications (0 to 70°C, 3.3V +/- 5%)**

| Parameter         | Min | Typ | Max | Units | Notes |
|-------------------|-----|-----|-----|-------|-------|
| Sensitivity       |     |     | -24 | dBm   | 4,5   |
| Receiver Overload | -7  |     |     | dBm   |       |

4. With BER better than or equal to  $1 \times 10^{-12}$ , measured in the center of the eye opening with 2<sup>-1</sup>-1 PRBS

5. Low bitrates <4.25G datarate < High bitrates

**Transceiver Electrical Pad Layout**

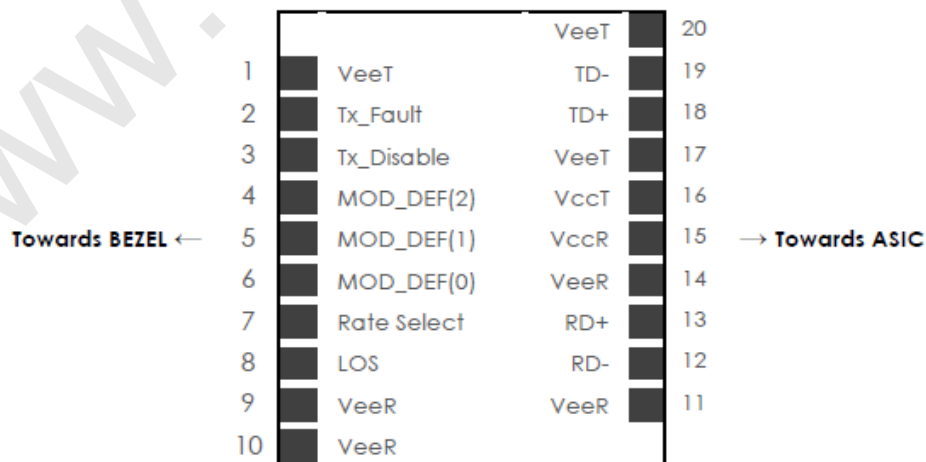


Figure 2. Transceiver Electrical Pad Layout



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**Pin Functions Definitions**

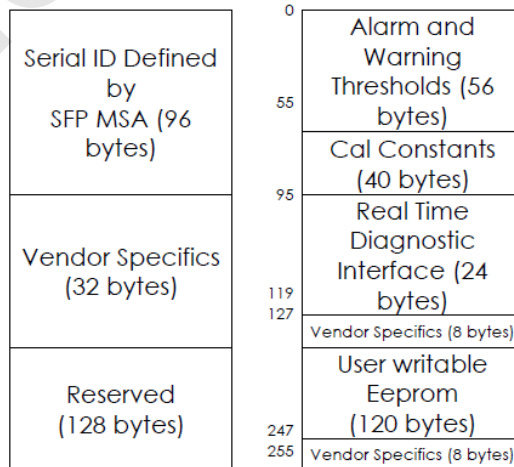
| Pin Number | Name        | Function                                   |
|------------|-------------|--|
| 1          | Vee         | Transceiver Ground                         |
| 2          | TX_Fault    | Transmitter Fault Indication               |
| 3          | TX1_Disable | Transmitter Disable of Channel 1           |
| 4          | MOD-DEF 2   | 2-Wire Serial Interface Data (SDA)         |
| 5          | MOD-DEF 1   | 2-Wire Serial Interface Clock (SCL)        |
| 6          | TD2-        | Inverted transmit data input of Channel 2  |
| 7          | TD2+        | Transmit Data Input of Channel 2           |
| 8          | LOS1        | Loss of signal of Channel 1                |
| 9          | RD2+        | Received sata output of Channel 2          |
| 10         | RD2-        | Inverted received data output of Channel 2 |
| 11         | Vee         | Transceiver Ground                         |
| 12         | RD1-        | Inverted received data output of Channel 1 |
| 13         | RD1+        | Received data output of Channel 1          |
| 14         | LOS2        | Loss of signal of Channel 2                |
| 15         | VccR        | Receiver Power                             |
| 16         | VccT        | Transmitter Power                          |
| 17         | TX2_Disable | Transmitter disable of Channel 2           |
| 18         | TD1+        | Transmit data input of Channel 1           |
| 19         | TD1-        | Inverted transmit data input of Channel 1  |
| 20         | Vee         | Transceiver Ground                         |

**EEPROM**

MSA compliant [SFF-8472]

2 wire address 1010000x

2 wire address 1010001x



**A0h**

**A2h**

Figure 3. EEPROM of a SFP +



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**Ordering information**

| Part Number      | Description  |
|------------------|--|
| CL-SFP+_D40-T-XX | SFP+ DWDM dual fiber, Tx C-band Tunable 1550nm (DWDM cooled tunable transmitter), Rx (APD), maximum distance 40km, power budget 23db, 9.95 Gbps up 11.3 Gbps, LC connector, 2W, limiting, 0°C to 70°C, DDM |