

# SO-CFP-40GBASE-LR4

CFP, 40Gbps Ethernet LR4, SDH/SONET, OTN, SM, DDM, 6.7dB, 10km

## OVERVIEW

The SO-CFP-40GBASE-LR4 is a CFP (C Form-factor Pluggable) transceiver for 40 Gbps applications. It is intended for use in inter- and intra-connect applications within and between data centers between switches, routers, storage equipment etc. The optical performance is in accordance with the 40GBASE-LR standard, i.e. for optical distances up to 10km over a SingleMode (SM) fiber.

SO-CFP-40GBASE-LR4 uses four CWDM channels/lanes @ 10 Gbps to transport an Ethernet, SDH/SONET or OTN signal.

## TECHNICAL DATA

|                            |  |
|----------------------------|--|
| <b>Technology</b>          | Grey CFP   |
| <b>Transmission media</b>  | SM (2x LC)   |
| <b>Typical reach</b>       | 10 km  |
| <b>Nominal wavelength</b>  | Lane 1: 1271 nm<br>Lane 2: 1291 nm<br>Lane 3: 1311 nm<br>Lane 4: 1331 nm |
| <b>Interface standards</b> | 40GBASE-LR4  |
| <b>Bit rate range</b>      | 39.813 - 43.018 Gbps <sup>1)</sup><br>9.95 - 11.3 Gbps <sup>2)</sup>     |
| <b>Protocols</b>           | Eth: 40GbE<br>SDH/SONET: STM-256/OC-768<br>OTN: OTU3                     |
| <b>Power budget</b>        | 0 - 6.7 dB   |
| <b>Temperature range</b>   | -10°C to +75°C   |
| <b>Power consumption</b>   | < 8W   |

<sup>1)</sup> Aggregated line rate

<sup>2)</sup> Per lane line rate

<sup>3)</sup> Total power (all lanes)

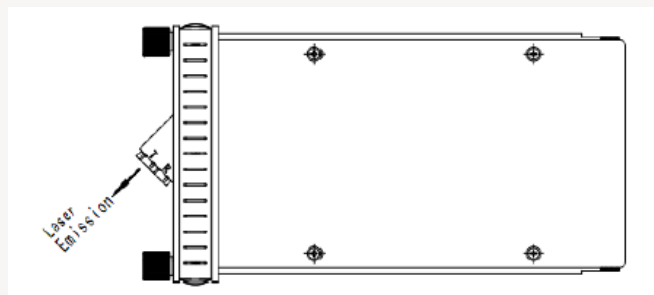
<sup>4)</sup> Lane 1

<sup>5)</sup> Lane 2

<sup>6)</sup> Lane 3

<sup>7)</sup> Lane 4

<sup>8)</sup> Per lane @ 10.3125 Gbps



|                         |                        |  |
|-------------------------|------------------------|--|
| <b>Transmitter data</b> | Output power, tot:     | Max: +8.3 dBm <sup>3)</sup>  |
|                         | Output power, per lane | Min: -7.0 dBm<br>Max: +2.3dBm  |
| <b>Receiver data</b>    | Tx wavelength (nm):    | 1264.5 – 1277.5 <sup>4)</sup><br>1284.5 – 1297.5 <sup>5)</sup><br>1304.5 – 1317.5 <sup>6)</sup><br>1324.5 – 1337.5 <sup>7)</sup> |
|                         | Minimum input power:   | -13.7 dBm <sup>8)</sup>  |
|                         | Overload (max power):  | +2.3 dBm <sup>8)</sup>   |
|                         | Wavelength range:      | 1264.5 – 1277.5 <sup>4)</sup><br>1284.5 – 1297.5 <sup>5)</sup><br>1304.5 – 1317.5 <sup>6)</sup><br>1324.5 – 1337.5 <sup>7)</sup> |
| <b>DDM</b>              |                        | Yes  |
| <b>MSA compliance</b>   |                        | CFP MSA  |

### Regulatory compliance

|                  |   |
|------------------|---|
| <b>EMC CE</b>    | EN 55022:2010<br>EN 55024:2010  |
| <b>UL/Safety</b> | UL 60950-1  |
| <b>FCC</b>       | 47 CFR PART 15 OCT, 2013  |
| <b>RoHS</b>      | RoHS 6  |
| <b>TUV</b>       | EN 60950-1:2006+A11+A1+A12+A2<br>EN 60825-1:2014<br>EN 60825-2:2004+A1+A2 |

|                      |                |
|----------------------|----------------|
| <b>Storage temp.</b> | -40°C to +85°C |
|----------------------|----------------|

Note! See "Definitions" below.

## ORDERING INFORMATION

| Part number        | Description  |
|--------------------|--|
| SO-CFP-40GBase-LR4 | CFP, 40Gbps Ethernet LR4, SDH/SONET, OTN, SM, DDM, 6.7dB, 10km |

## DEFINITIONS

|                               |   |
|-------------------------------|---|
| Technology:                   | Grey; Transceiver type for non-WDM applications. Electrical or optical.<br>CWDM; Transceiver type for CWDM applications using G.694.2 channel grid.<br>DWDM; Transceiver type for DWDM applications using G.694.1 channel grid.<br>BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber.<br>DAC: Direct Attach Cable (DAC). Electrical or optical cable with attached connectors. |
| Transmission Media:           | Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).   |
| Typical reach:                | Nominal distance performance based on dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification.   |
| Bit rate range:               | Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).   |
| Protocols:                    | Protocols within supported bit rate range.  |
| Nominal wavelength:           | Typical wavelength from transmitter.  |
| Interface standards:          | Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services.   |
| Power budget:                 | Min and max power budget between Transmitter and Receiver. Excluding any dispersion penalty.  |
| Dispersion tolerance/penalty: | Maximum amount of tolerated dispersion and required reduction of power budget to maintain BER better than $1E^{-12}$ . Defined at a specific bit rate.  |
| Temperature range:            | Max operating case temperature range.<br>Standard temperature range: typically 0°C to +70°C (32°F to +158°F)<br>Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F)<br>Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)   |
| Power consumption:            | Worst case power consumption.   |
| Transmitter Output power:     | Average output power. Provided in min and max values.   |
| Receiver minimum input power: | Minimum average input power at specified BER, normally $1E^{-12}$ .   |
| Receiver max input power:     | Maximum average input power giving a BER, normally $1E^{-12}$ .   |
| DDM:                          | Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.   |