

# SO-SFP-10GE-LR70-Cxx

SFP+, 10G Multirate, CWDM, DDM, 23dB, 1270nm-1450nm (10ch)

## OVERVIEW

The SO-SFP-10GE-LR70-Cxx is a versatile CWDM transceiver supporting a wide range of traffic formats ranging from 0.614Gbps to 11.3Gbps. The optical performance provides a power budget of 23dB giving a distance of up to 70km depending on used wavelength. Please note the higher intrinsic fiber attenuation in the 1271-1451nm area.

The transceiver is available in 10 CWDM wavelength versions, spanning from 1270nm to 1450nm in accordance with the G.694.2 standard. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

## TECHNICAL DATA

| Parameter             | Value  |
|-----------------------|--|
| Technology            | CWDM SFP   |
| Transmission media    | SM (2x LC)   |
| Typical reach         | Up to 70km <sup>1)</sup>   |
| Nominal wavelengths   | 1271 – 1451nm (10ch)   |
| Bit rate range        | 0.614Gbps – 11.3Gbps   |
| Protocol support      | 10GbE-WAN, 10GbE-LAN<br>GbE<br>STM-64 / OC192<br>STM-16 / OC48<br>STM-4/OC12<br>OTU2e, OTU2, OTU1<br>10G FC, 8G FC, 4G FC, 1G FC<br>CPRI Opt 1 (0.6144Gbps)<br>CPRI Opt 2 (1.2288Gbps)<br>CPRI Opt 3 (2.4576Gbps)<br>CPRI Opt 4 (3.0720Gbps)<br>CPRI Opt 5 (4.9152Gbps)<br>CPRI Opt 6 (6.1440Gbps)<br>CPRI Opt 7 (9.8304Gbps)<br>CPRI Opt 7A (8.11008Gbps)<br>CPRI Opt 8 (10.1376Gbps)<br>OBSAI 0.768Gbps<br>OBSAI 1.536Gbps<br>OBSAI 3.0720Gbps<br>OBSAI 6.1440Gbps |
| Power consumption     | < 1.5W   |
| Operating temperature | -5°C to +70°C  |
| Storage temperature   | -40°C to +85°C   |

| Parameter                | Value  |
|--------------------------|--|
| <b>Transmitter data:</b> |  |
| Output power             | Min: +2dBm <sup>3)</sup><br>Max: +5dBm <sup>3)</sup> |
| Transmit wavelength      | 1271 to 1451nm (G.694.2)                             |
| <b>Receiver data:</b>    |  |
| Minimum input power      | -21dBm <sup>2)</sup> <sup>3)</sup>                   |
| Overload (max power)     | -6.0dBm <sup>2)</sup> <sup>3)</sup>                  |
| Wavelength range         | 1260 – 1620nm  |
| Power budget             | 11.0 – 23.0dB  |
| Optical path penalty     | 2dB  |
| DDM                      | Yes  |
| MSA compliance           | SFF-8431, SFF-8472                                   |

<sup>1)</sup> Dependent on fiber type, used channel and bit rate.

<sup>2)</sup> Measured at 10.3Gbps using PRBS31 @ BER 1x10<sup>-12</sup>

<sup>3)</sup> Average power

### Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance



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## ORDERING INFORMATION

| Ordering number      | Description  |
|----------------------|--|
| SO-SFP-10GE-LR70-C27 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1270nm |
| SO-SFP-10GE-LR70-C29 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1290nm |
| SO-SFP-10GE-LR70-C31 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1310nm |
| SO-SFP-10GE-LR70-C33 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1330nm |
| SO-SFP-10GE-LR70-C35 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1350nm |
| SO-SFP-10GE-LR70-C37 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1370nm |
| SO-SFP-10GE-LR70-C39 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1390nm |
| SO-SFP-10GE-LR70-C41 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1410nm |
| SO-SFP-10GE-LR70-C43 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1430nm |
| SO-SFP-10GE-LR70-C45 | SFP+, 614Mbps - 11.3Gbps, Multirate, CWDM, DDM, 23dB, 1450nm |

## GENERAL DEFINITIONS

| Parameter                    | Description  |
|------------------------------|--|
| 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. Electrical cable with attached connectors.<br>AOC: Active Optical Cable. 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 typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.  |
| 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(s) from transmitter.  |
| Interface standards          | Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services or 100G 4WDM-10 etc.  |
| Power budget                 | Min and max power budget between Transmitter and Receiver w/o optical path penalties.  |
| Dispersion tolerance/penalty | Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.   |
| Temperature range            | Max operating case temperature range.<br>Standard temperature range (C-temp): 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. Will vary over temperature.  |
| Transmitter Output power     | Average output power. Provided in min and max values.  |
| Receiver minimum input power | Minimum average input power at specified BER, normally $1E^{-12}$ . Note that some protocols require FEC to achieve sufficient BER.  |
| Receiver max input power     | Maximum average input power giving a BER, normally $1E^{-12}$ .  |
| DDM                          | Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.   |

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