

# SO-SFP28-L10-Dxxxx-I

SFP28 25G Ethernet DWDM 192.00-196.00THz 10km 13dB I-temp LC D9200-D9600

## OVERVIEW

The SO-SFP28-L10-Dxxxx-I is an SFP28 form-factor DWDM transceiver for 25 Gbps Ethernet applications. The transceiver is intended for use in interconnect applications between data centers with switches, routers, storage equipment etc. The optical performance supports distances up to 10km over a SingleMode (SM) fiber without dispersion compensation. SO-SFP28-L10-Dxxxx-I also supports the high data rate CPRI option 10 for fronthaul applications having a bit rate of 24.33024 Gbps.

The transceiver is provided in 41 channel versions at the 100GHz DWDM grid as specified in the ITU-T 694.1 standard.

As stipulated by the 25G Ethernet standards, Forward Error Correction (FEC) is required to be implemented by the host equipment in order to ensure reliable system operation. The optical parameters below will provide a bit error ratio (BER) of  $5 \times 10^{-5}$  for 25G Ethernet. FEC will provide the required quality for secure service.

This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification. The transceiver supports the Industrial temperature range (I-temp):  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $185^{\circ}\text{F}$ ).

## TECHNICAL DATA

Parameter	Value
Technology	DWDM SFP28
Transmission media	SM (2x LC)
Typical reach	10km
Nominal wavelength	192.10 - 196.00THz (41ch)
Bit rate support	25.78Gbps <sup>1)</sup> 24.33Gbps <sup>2)</sup>
Protocol support	25GbE CPRI opt 10
Power budget	3 – 13dB <sup>4)</sup>
Dispersion tolerance	-200 to +200ps/nm
Power consumption	< 2W
Operating temperature	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Storage temperature	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$

<sup>1)</sup> 25GbE

<sup>2)</sup> CPRI opt 10

<sup>3)</sup> Average power

<sup>4)</sup> at 25.78 Gbps (25GbE) and BER  $5 \times 10^{-5}$  using PRBS31

Parameter	Value
<b>Transmitter data:</b>	
Output power	Min: -1.0dB <sup>3)</sup> Max: +4.0dBm <sup>3)</sup>
Transmit wavelength	192.10 - 196.00THz 100GHz steps (G.694.1)
<b>Receiver data:</b>	
Minimum input power	-14.0dBm <sup>3) 4)</sup>
OSNR tolerance	33dB
Overload (max power)	+2.0dBm <sup>3) 4)</sup>
Wavelength range	1480 – 1580nm
LOS Assert	Min -30dBm
LOS De-assert	Max -17dBm
LOS Hysteresis	Min 0.5dBm
DDM	Yes
MSA compliance	SFP28, SFF-8402



### Safety/regulatory compliance:

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

RoHS compliance

Subject to change without notice.

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## ORDERING INFORMATION

Part number	Freq. THz	$\lambda$ nm	Part number	Freq. THz	$\lambda$ nm
SO-SFP28-L10-D9200	192.00	1561.42	SO-SFP28-L10-D9410	194.10	1544.53
SO-SFP28-L10-D9210	192.10	1560.61	SO-SFP28-L10-D9420	194.20	1543.73
SO-SFP28-L10-D9220	192.20	1559.79	SO-SFP28-L10-D9430	194.30	1542.94
SO-SFP28-L10-D9230	192.30	1558.98	SO-SFP28-L10-D9440	194.40	1542.14
SO-SFP28-L10-D9240	192.40	1558.17	SO-SFP28-L10-D9450	194.50	1541.35
SO-SFP28-L10-D9250	192.50	1557.36	SO-SFP28-L10-D9460	194.60	1540.56
SO-SFP28-L10-D9260	192.60	1556.55	SO-SFP28-L10-D9470	194.70	1539.77
SO-SFP28-L10-D9270	192.70	1555.75	SO-SFP28-L10-D9480	194.80	1538.98
SO-SFP28-L10-D9280	192.80	1554.94	SO-SFP28-L10-D9490	194.90	1538.19
SO-SFP28-L10-D9290	192.90	1554.13	SO-SFP28-L10-D9500	195.00	1537.40
SO-SFP28-L10-D9300	193.00	1553.33	SO-SFP28-L10-D9510	195.10	1536.61
SO-SFP28-L10-D9310	193.10	1552.52	SO-SFP28-L10-D9520	195.20	1535.82
SO-SFP28-L10-D9320	193.20	1551.72	SO-SFP28-L10-D9530	195.30	1535.04
SO-SFP28-L10-D9330	193.30	1550.92	SO-SFP28-L10-D9540	195.40	1534.25
SO-SFP28-L10-D9340	193.40	1550.12	SO-SFP28-L10-D9550	195.50	1533.47
SO-SFP28-L10-D9350	193.50	1549.32	SO-SFP28-L10-D9560	195.60	1532.68
SO-SFP28-L10-D9360	193.60	1548.51	SO-SFP28-L10-D9570	195.70	1531.90
SO-SFP28-L10-D9370	193.70	1547.72	SO-SFP28-L10-D9580	195.80	1531.12
SO-SFP28-L10-D9380	193.80	1546.92	SO-SFP28-L10-D9590	195.90	1530.33
SO-SFP28-L10-D9390	193.90	1546.12	SO-SFP28-L10-D9600	196.00	1529.55
SO-SFP28-L10-D9400	194.00	1545.32			

## GENERAL DEFINITIONS

Parameter	Description
Technology	Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable. Electrical 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. Standard temperature range (C-temp): 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F) 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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