

**DATASHEET 5.0****SO-QSFP28-LR4-2L****QSFP28, 100GBASE-LR4, 1310nm, SM, DDM, 6.3dB, 2km****OVERVIEW**

The SO-QSFP28-LR4-2L is a QSFP28 form-factor transceiver for 100 Gbps Ethernet 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 based on the 100GBASE-LR4 standard, but due to dispersion properties limited to distances of up to 2km over a SingleMode (SM) fiber.

SO-QSFP28-LR4-2L uses four channels/lanes @ 25.78 Gbps to transport the Ethernet signal. Digital diagnostics functions (DDM) are available via an I2C interface, as specified by the QSFP28 MSA.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP28
Transmission media	SM (2x LC)
Typical reach	2km
Nominal wavelength	Lane 1: 1295.56nm Lane 2: 1300.05nm Lane 3: 1304.58nm Lane 4: 1309.14nm
Interface standards	100GBASE-LR4
Bit rate range	103.12 Gbps ¹⁾ 25.78 Gbps ²⁾
Protocols	Eth: 100GbE
Power budget	0 – 6.3 dB
Temperature range	0°C to +70°C
Power consumption	< 3.5 W

- 1) Aggregated line rate 100GbE
- 2) Per lane line rate (100GbE)
- 3) Total power (all lanes)
- 4) Lane 1
- 5) Lane 2
- 6) Lane 3
- 7) Lane 4
- 8) Per lane @ 25.78 Gbps (100GbE)



Parameter	Value
Transmitter data:	
Output power, tot:	Max: +10.5dBm ³⁾
Output power, per lane	Min: -4.3dBm ⁸⁾ Max: +4.5dBm ⁸⁾
Tx wavelength (nm):	1294.53 – 1296.59nm ⁴⁾ 1299.02 – 1301.02nm ⁵⁾ 1303.54 – 1305.63nm ⁶⁾ 1308.09 – 1310.19nm ⁷⁾
Receiver data:	
Minimum input power	-10.6 dBm ⁸⁾
Overload (max power)	+4.5dBm ⁸⁾
Wavelength range	1294.53 – 1296.59nm ⁴⁾ 1299.02 – 1301.09nm ⁵⁾ 1303.54 – 1305.63nm ⁶⁾ 1308.09 – 1310.19nm ⁷⁾
DDM	Yes
MSA compliance	QSFP28 MSA

EMC CE	EN 55032:2012, EN 55032:2015 EN 55024:2010, EN 55024:2010+A1
UL/Safety	UL 60950-1
FCC	47 CFR PART 15 OCT, 2013
RoHS	RoHS 6
TUV	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2

Storage temperature	-40°C to +85°C
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Note! See definitions below

ORDERING INFORMATION

Ordering number	Description
SO-QSFP28-LR4-2L	QSFP28, 100GBASE-LR4, 1310nm, SM, DDM, 6.3dB, 2km

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 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. Standard temperature range: typically 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.
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.