

SO-QSFP28-ER4

QSFP28, 100G Ethernet ER4, SM 1296/1300/1305/1309nm, 40km, 18dB, LC

OVERVIEW

The SO-QSFP28-ER4 is a QSFP28 form-factor transceiver for 100 Gbps Ethernet (100GBASE-ER4) 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 100GBASE-ER standard, i.e. for optical distances up to 40km over a SingleMode (SM) fiber.

SO-QSFP28-ER4 uses four LANWDM channels/lanes @ 25.78 Gbps to transport an Ethernet signal.

Forward Error Correction (FEC) is required in the host equipment in order to ensure reliable system operation at the specified distance. The FEC type shall be as defined in IEEE802.3bj, i.e. Reed Solomon RS(528,514). The below optical parameters will provide a bit error ratio (BER) of 5×10^{-5} . FEC will render in the required BER of better than 1×10^{-12} .

Without FEC the distance performance will be reduced to 30km and the power budget to about 16dB.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP28
Transmission media	SM (2x LC)
Typical reach	40km
Nominal wavelength	Lane 1: 1295.56nm Lane 2: 1300.05nm Lane 3: 1304.58nm Lane 4: 1309.14nm
Interface standards	100GBASE-ER4
Bit rate support	103.12 Gbps ¹⁾ 25.78 Gbps ²⁾
Protocol support	100GbE
Power budget	10 – 18dB
Optical path penalty	2dB
Power consumption	< 5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

¹⁾ Aggregated line rate 100GbE

²⁾ Per lane

³⁾ Average power

⁴⁾ Specified at BER 5×10^{-5}

Parameter	Value
Transmitter data:	
Output power, total	Max +8.9dBm ³⁾
Output power, per lane	Min: -2.5dBm ³⁾ Max: +6.5dBm ³⁾
Transmit wavelength	1294.53 – 1296.59nm 1299.02 – 1301.09nm 1303.54 – 1305.63nm 1308.09 – 1310.19nm
Receiver data:	
Minimum input power	-20.5dBm ^{2) 3) 4)}
Overload (max power)	-3.5dBm ^{2) 3) 4)}
Wavelength range	1294.53 – 1296.59nm 1299.02 – 1301.09nm 1303.54 – 1305.63nm 1308.09 – 1310.19nm
DDM	Yes
MSA compliance	QSFP28 MSA



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

Ordering number	Description
SO-QSFP28-ER4	QSFP28, 100G Eth ER4, 1310nm, SM, 40km

GENERAL DEFINITIONS

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 (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.
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. Commercial 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 .
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.

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