

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 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

Technology	Grey QSFP28
Transmission media	SM (2x LC)
Typical reach	40 km
Nominal wavelength	Lane 1: 1295.56 nm Lane 2: 1300.05 nm Lane 3: 1304.58 nm Lane 4: 1309.14 nm
Interface standards	100GBASE-ER4
Bit rate range	103.12 Gbps ¹⁾ 25.78 Gbps ²⁾
Protocols	Eth: 100GbE
Power budget	10 - 18 dB
Temperature range	0°C to +70°C
Power consumption	< 5W

Transmitter data	Total average power	Max +8.9dBm ³⁾
	Output power, per lane	Min: -2.5 dBm ⁸⁾ Max: +6.5 dBm ⁸⁾
	Tx wavelength (nm):	1294.53 – 1296.59 ⁴⁾ 1299.02 – 1301.09 ⁵⁾ 1303.54 – 1305.63 ⁶⁾ 1308.09 – 1310.19 ⁷⁾
Receiver data	Minimum input power:	-20.5 dBm ⁸⁾
	Overload (max power):	-3.5 dBm ⁸⁾
	Wavelength range:	1294.53 – 1296.59 ⁴⁾ 1299.02 – 1301.09 ⁵⁾ 1303.54 – 1305.63 ⁶⁾ 1308.09 – 1310.19 ⁷⁾
DDM	Yes	
MSA compliance	QSFP+ MSA	

¹⁾ Aggregated line rate

²⁾ Per lane line rate

³⁾ All lanes

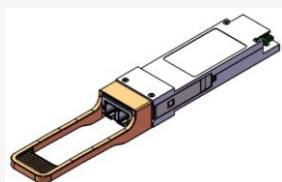
⁴⁾ Lane 1

⁵⁾ Lane 2

⁶⁾ Lane 3

⁷⁾ Lane 4

⁸⁾ Per lane @ 25.78 Gbps at BER 5E-5



Regulatory compliance

EMC CE	EN 55032:2012, EN 55024:2010 EN 55032:2015, EN 55024:2010+A1 UL 60950-1
FCC	47 CFR PART 15 OCT, 2013
RoHS	RoHS 6, 2011/65/EU
TUV	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2

Storage temp.	-40°C to +85°C
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Note! See "Definitions" below.

ORDERING INFORMATION

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

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.
Transmission Media:	DAC: Direct Attach Cable (DAC). Electrical or optical cable with attached connectors. 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.