

DATASHEET 5.3

SO-QSFP-ER4

QSFP-DD 400G Ethernet-LR4, 4x100G PAM4,1271nm/1291nm/1311nm/1331nm, 10km, 6.3dB, LC

OVERVIEW

The SO-QSFP-ER4 is a QSFP+ (Quad Small Form-factor Pluggable Plus) transceiver for 40 Gbps applications such as inter- and intra-connect within and between data centers between switches, routers, storage equipment etc.

The SO-QSFP-ER4 converts 4x 10Gbps flows into four CWDM channels in the 1300nm band up to 40 km over a SingleMode (SM) fiber.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP+
Transmission media	SM (2x LC)
Typical reach	40km
Nominal wavelengths	Lane 1: 1271nm Lane 2: 1291nm Lane 3: 1311nm Lane 4: 1331nm
Interface standards	400GBASE-ER4
Bit rate support	441.25 / 43.018Gbps ¹ 10.3125 / 10.7546Gbps ²
Protocol support	40GbE / OTU3
Power budget	9 – 18.5dB
Optical path penalty	2.6dB
Power consumption	< 3.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

¹ Aggregated line rate

² Per lane

³ Average power,

⁴ At BER less than 10⁻¹², with a 231-1 PRBS

Parameter	Value
Transmitter data:	
Output power, total	Max +10.5dBm ³
Output power, per lane	Min: -2.7dBm ³ Max: +4.5dBm ³
Transmit wavelength	1264.5 - 1277.5 nm 1284.5 - 1297.5 nm 1304.5 - 1317.5 nm 1324.5 - 1337.5 nm
Receiver data:	
Minimum input power	-21.2dBm ^{2 3 4}
Overload (max power)	+4.0 dBm ^{2 3 4}
Wavelength range	1264.5 - 1277.5 nm 1284.5 - 1297.5 nm 1304.5 - 1317.5 nm 1324.5 - 1337.5 nm
LOS Assert	Min -34dBm
LOS De-Assert	Max -24dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	QSFP+ MSA, SFF-8436

Safety / regulatory compliance

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

ORDERING INFORMATION

Ordering number	Description
SO-QSFP-ER4	QSFP+, 40G Ethernet ER4, SM, 1271/1291/1311/1331nm, 40km, 18.5dB, LC

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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