

**DATASHEET 5.0****SO-QSFP-ESR4****QSFP+, 40G Ethernet eSR4, MM, 850nm, 400m, 1.9dB, MPO****OVERVIEW**

The SO-QSFP-ESR4 is a QSFP+ (Quad Small Form-factor Pluggable Plus) transceiver for IEEE Std 802.3ba compliant 40 Gbps Ethernet applications such as inter- and intra-connect within and between data centers between switches, routers, storage equipment etc. The SO-QSFP-ESR4 converts 4x 10 Gbps flows into four channels at 850nm over a ribbon-fiber connection.

The SO-QSFP-ESR4 is SR4 compliant but exceeds the SR4 distance performance by bridging up to 400m over an OM4 MultiMode (MM) fiber.

The transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The SO-QSFP-ESR4 provides transport over an MPO/MTP 12 or 8 ribbon fiber cable.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP+
Transmission media	SM (1x MPO)
Typical reach	300m/400m OM3/OM4
Nominal wavelength	4x 850nm
Interface standards	40GBASE-eSR4
Bit rate support	41.25 Gbps ¹⁾ 10.3125 Gbps ²⁾
Protocol support	40GbE Infiniband QDR/DDR
Power budget	0 – 1.9 dB
Power consumption	< 1.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

- 1). Aggregated line rate
- 2). Per channel
- 3). Average power
- 4). Measured with PRBS 2³¹-1 test pattern, 10.3125Gb/s, BER<10⁻¹²

Parameter	Value
Transmitter data:	
Output power	Min: -7.6dBm ³⁾ Max: +2.4dBm ³⁾
Transmit wavelength	830 – 860nm
Receiver data:	
Minimum input power	-9.5dBm ^{3) 4)}
Overload (max power)	+2.4dBm ^{3) 4)}
Wavelength range	830 – 860nm
DDM	Yes
MSA compliance	QSFP+ MSA SFF-8636



Safety/regulatory compliance:

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

RoHS compliance

MPO (Multi-fiber Push On) is an optical connector for ribbon cables with four to twenty-four fibers.
MTP is a specific brand of an MPO connector.

ORDERING INFORMATION

Ordering number	Description
SO-QSFP-ESR4	QSFP+, 40G Ethernet eSR4, MM 850nm, 300m/OM3, 400m/OM4, 1.9dB, MPO

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 (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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