INDEPENDENT DATA SOLUTIONS

smartoptics

DATASHEET 5.3

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 applicationsW 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

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.

Parameter	Value
Transmitter data:	
Output power, total	Min: -7.6dBm [3]
	Max: +2.4dBm [3]
Transmit wavelength	1264.5 - 1277.5 nm
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

ORDERING INFORMATION

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

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.