

SO-QSFP28-100G-FRx

QSFP28, 100G Ethernet FR, SM, CWDM, PAM4, 2km, 4dB, LC

OVERVIEW

The SO-QSFP28-100G-FRx is a QSFP28 form-factor transceiver for 100 Gbps Ethernet applications. It is intended for use in intra- and interconnect applications within and between data centers between switches, routers, storage equipment etc.

SO-QSFP28-100G-FRx is a single-lambda 100G transceiver provided in four different CWDM wavelength versions that match the wavelengths of the 400G Transceiver SO-QSFP-DD-4C-FR4 to support a 400G to 4x 100G break-out configuration.

SO-QSFP28-100G-FRx has an optical performance enabling distances of up to 2km over a SingleMode (SM) G.652 fiber-pair cable. Forward Error Correction (FEC) is required to be implemented by the host in order to ensure reliable system operation. The FEC type shall be as defined in IEEE802.3bj, i.e. Reed Solomon RS(528,514). The optical parameters will provide a bit error ratio (BER) of 2.4×10^{-4} . FEC will render in the required BER of better than 1×10^{-12} .

SO-QSFP28-100G-FRx uses a single channel/lane @ 50Gbaud using PAM4 modulation to transport the Ethernet signal. The electrical interface is 4x 25.78Gbps and compliant with OIF CEI-28G-VSR. Digital diagnostics functions (DDM) are available via an I2C interface, as specified by the QSFP28 MSA.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP28
Transmission media	SM (2x LC)
Typical reach	2km
Nominal wavelengths	1271 nm ³⁾ 1291 nm ⁴⁾ 1311 nm ⁵⁾ 1331 nm ⁶⁾
Interface standards	100GBASE-FR
Bit rate support	103.12 Gbps ¹⁾ 53.125 Gbd ²⁾
Protocol support	100GbE
Power budget	0 – 4.0 dB
Power consumption	< 4.5 W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

¹⁾ Aggregated line rate 100GbE

²⁾ Line baud rate

³⁾ SO-QSFP28-100G-FRA

⁴⁾ SO-QSFP28-100G-FRB

⁵⁾ SO-QSFP28-100G-FRC

⁶⁾ SO-QSFP28-100G-FRD

Safety/regulatory compliance:

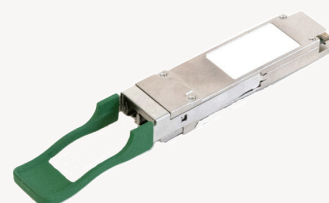
TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance

Parameter	Value
Transmitter data:	
Output power	Min: -2.4 dBm ⁸⁾ Max: +4.0 dBm ⁸⁾
Transmit wavelengths	1264.5 - 1277.5 nm ³⁾ 1284.5 - 1297.5 nm ⁴⁾ 1304.5 - 1317.5 nm ⁵⁾ 1324.5 - 1337.5 nm ⁶⁾
Receiver data:	
Minimum input power	-6.4 dBm ⁷⁾ ⁸⁾
Overload (max power)	+4.5 dBm ⁷⁾ ⁸⁾
Wavelength range	1264.5 - 1277.5 nm ³⁾ 1284.5 - 1297.5 nm ⁴⁾ 1304.5 - 1317.5 nm ⁵⁾ 1324.5 - 1337.5 nm ⁶⁾
DDM	Yes
MSA compliance	QSFP28 MSA SFF-8636

⁷⁾ Specified at BER 2.4×10^{-4}

⁸⁾ Average power



Subject to change without notice.

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ORDERING INFORMATION

Ordering number	Description
SO-QSFP28-100G-FRA	QSFP28, 100G Ethernet FR, SM, 1x 1271nm, PAM4, 2km, 4.0dB, LC
SO-QSFP28-100G-FRB	QSFP28, 100G Ethernet FR, SM, 1x 1291nm, PAM4, 2km, 4.0dB, LC
SO-QSFP28-100G-FRC	QSFP28, 100G Ethernet FR, SM, 1x 1311nm, PAM4, 2km, 4.0dB, LC
SO-QSFP28-100G-FRD	QSFP28, 100G Ethernet FR, SM, 1x 1331nm, PAM4, 2km, 4.0dB, 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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