

SO-QSFP28-100G-FR_x

QSFP28, 100G Ethernet FR, SM, 1x CWDM, PAM4, 2km, 4dB, LC

OVERVIEW

The SO-QSFP28-100G-FR_x 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-FR_x 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-FR_x has an optical performance enabling distances of up to 2km over a SingleMode (SM) 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^{-5} . FEC will render in the required BER of better than 1×10^{-12} .

SO-QSFP28-100G-FR_x 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

Technology	Grey QSFP28
Transmission media	SM (2x LC)
Typical reach	2 km
Nominal wavelength	1271 nm ³⁾ 1291 nm ⁴⁾ 1311 nm ⁵⁾ 1331 nm ⁶⁾
Interface standards	100GBASE-FR
Bit rate range	103.12 Gbps ¹⁾ 53.125 Gbd ²⁾
Protocols Eth:	100GbE
Power budget	0 – 4.0 dB
Temperature range	0°C to +70°C
Power consumption	< 4.5 W

¹⁾ Aggregated line rate 100GbE

²⁾ Baud rate

³⁾ SO-QSFP28-100G-FRA

⁴⁾ SO-QSFP28-100G-FRB

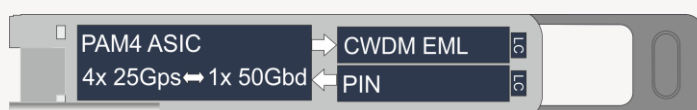
⁵⁾ SO-QSFP28-100G-FRC

⁶⁾ SO-QSFP28-100G-FRD

Transmitter data	Output power:	Min: -2.4 dBm Max: +4.0 dBm
	Tx 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
	Overload (max power):	+4.5 dBm
	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

Safety	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2 UL 60950-1
RoHS	EU Directive 2011/65/EU

Storage temp.	-40°C to +85°C
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Subject to change without notice.

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ORDERING INFORMATION

Part number	Description
SO-QSFP28-100G-FRA	QSFP28, 100G Ethernet FR, SM, 1x 1271nm, PAM4, 2km, 4dB, LC
SO-QSFP28-100G-FRB	QSFP28, 100G Ethernet FR, SM, 1x 1291nm, PAM4, 2km, 4dB, LC
SO-QSFP28-100G-FRC	QSFP28, 100G Ethernet FR, SM, 1x 1311nm, PAM4, 2km, 4dB, LC
SO-QSFP28-100G-FRD	QSFP28, 100G Ethernet FR, SM, 1x 1331nm, PAM4, 2km, 4dB, LC

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 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.