

SO-QSFP-DD-4C-FR4 / -4

QSFP-DD 400G-FR4 Ethernet, PAM4, CMIS3.0/4.0, 1271nm/1291nm/1311nm/1331nm, 2km, 4dB, LC

OVERVIEW

The SO-QSFP-DD-4C-FR4 is a QSFP-DD form-factor transceiver for 400Gbps Ethernet applications. It is intended for use in data center interconnect between switches, routers, storage equipment etc. for optical distances up to 2km over a SingleMode (SM) fiber cable.

The electrical interface consists of eight 53.125G signals (400GAUI-8) that are converted to eight PAM4-modulated channels/lanes to transport the Ethernet signal. Digital diagnostics functions are available via an I²C interface, as specified by the QSFP-DD MSA.

The optical interface to the transceiver is 2x LC connectors.

The transceiver is provided in two versions, compliant with Common Management Interface Specification CMIS3.0 and CMIS4.0.

TECHNICAL DATA

Technology	Grey QSFP-DD	Transmitter data	Output power, per lane	Min: -3.3 dBm ³⁾ Max: +3.5 dBm ³⁾
Transmission media	SM (2x LC)		Tx wavelength (nm):	1264.5 - 1277.5 nm 1284.5 - 1297.5 nm 1304.5 - 1317.5 nm 1324.5 - 1337.5 nm
Typical reach	2 km			
Nominal wavelength	1271 nm 1291 nm 1311 nm 1331 nm	Receiver data	Minimum input power:	-7.3 dBm ³⁾
Bit rate range	425 Gbps ¹⁾ 53.125 Gbd ²⁾		Overload (max power):	+3.5 dBm ³⁾
Protocols Eth:	400GbE		Wavelength range:	1264.5 - 1277.5 nm 1284.5 - 1297.5 nm 1304.5 - 1317.5 nm 1324.5 - 1337.5 nm
Interface standard / MSA	400G-FR4	DDM		Yes
Power budget	0 - 4.0 dB	MSA compliance		QSFP-DD MSA
Temperature range	0°C to +70°C			
Power consumption	< 10 W			

¹⁾ Aggregated line rate (400GbE)

²⁾ Lane baud rate

³⁾ Per lane

Regulatory compliance

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

Note! See "Definitions" below.



Subject to change without notice.

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ORDERING INFORMATION

Part number	Description
SO-QSFP-DD-4C-FR4	QSFP-DD 400G-FR4 Ethernet, 4x100G-FR, PAM4 CMIS3.0, 1271nm/1291nm/1311nm/1331nm 2km 4dB LC
SO-QSFP-DD-4C-FR4-4	QSFP-DD 400G-FR4 Ethernet, 4x100G-FR, PAM4 CMIS4.0, 1271nm/1291nm/1311nm/1331nm 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. 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. Excluding any dispersion penalty.
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 at specified BER, normally $1E^{-12}$.
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.