

**DATASHEET 5.0**

SO-QSFP28-50GE-BX40D-2930/3029

QSFP28, BiDi, 50G Ethernet, 1294.40nm/1308.24nm, SM, 40km, 18dB, LC

OVERVIEW

The SO-QSFP28-50GE-BX40D-2930/3029 is a bi-directional transceiver solution operating directly on a single-fiber without the need for a separate optical filter. This is achieved by having two transceivers that inject different wavelengths into the same single-fiber. The solution thus consists of two transceivers; SO-QSFP28-50GE-BX40D-2930 and SO-QSFP28-50GE-BX40D-3029, operating at transmit wavelengths 1294.40nm and 1308.24nm respectively. Using a single-fiber solution provides a cost-efficient solution for interconnect and it simplifies the patching since no separate transmit/receive direction has to be taken into account.

The transceivers have a 2x26.5625Gbps electrical interface which are transformed into a single PAM4 modulated, single wavelength solution at 52.125Gbps. The transceiver pair supports 50GbE services, having an optical performance that provides a bridgeable distance of up to 40km.

As stipulated by the 50G Ethernet standards, Forward Error Correction (FEC) is required to be implemented by the host equipment in order to ensure reliable system operation. The optical parameters below will provide a bit error ratio (BER) of 2.4×10^{-5} for 50G Ethernet. FEC will provide the required quality for secure service.

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

TECHNICAL DATA

Parameter	Value
Technology	BiDi QSFP28
Transmission media	SM (1x LC)
Typical reach	40km
Nominal wavelengths	Tx: 1294.40nm / Rx: 1308.24nm ¹⁾ Tx: 1308.24nm / Rx: 1294.40nm ²⁾
Interface standards	50GbE IEEE802.3cd
Bit rate support	52.125Gbps
Protocol support	50GbE
Power budget	10 – 18dB
Power consumption	< 4.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

- 1). SO-QSFP28-50GE-BX40D-2930
- 2). SO-QSFP28-50GE-BX40D-3029
- 3). Average power, per lane
- 4). 50GbE (53.125 Gbps) and BER 2.4E-5

Parameter	Value
Transmitter data:	
Output power, per lane	Min: +0.4dBm ³⁾ Max: +6.3dBm ³⁾
Transmit wavelengths	1292.21 – 1296.59 nm ¹⁾ 1306.29 – 1310.19 nm ²⁾
Receiver data:	
Minimum input power	-17.6dBm ^{3) 4)}
Overload (max power)	-3.4dBm ^{3) 4)}
Wavelength range	1306.29 – 1310.19 nm ¹⁾ 1292.21 – 1296.59 nm ²⁾
LOS Assert	-21dBm
LOS De-assert	-18dBm
DDM	Yes
MSA compliance	QSFP28 MSA SFF-8472

Safety/regulatory compliance:

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

RoHS compliance

ORDERING INFORMATION

Ordering number	Description
SO-QSFP28-50GE-BX40D-2930	QSFP28, BiDi, 50G Ethernet, Tx/Rx=1294.40nm/1308.24nm, SM, 40km, 18dB, LC
SO-QSFP28-50GE-BX40D-3029	QSFP28, BiDi, 50G Ethernet, Tx/Rx=1308.24nm/1294.40nm, SM, 40km, 18dB, LC

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. Electrical cable with attached connectors. AOC: Active Optical Cable. 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 typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.
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(s) from transmitter.
Interface standards	Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services.
Power budget	Min and max power budget between Transmitter and Receiver w/o optical path penalties.
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. Standard temperature range (C-temp): 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. 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 $1E^{-12}$. Note that some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $1E^{-12}$.
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.

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