QSFP28 100GE BiDi 70km

QSFP28, BiDi, 100G Eth, 4LAN-WDM, SM, 70km, 27dB, LC

TQ2034-BXXY-SO

The TQ2034-BXXy-SO 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 each inject four LAN-WDM wavelengths into the same single-fiber. The solution thus consists of two transceivers; TQ2034-BWXC-SO transmitting at the lower wavelengths 1274/1278/1282/1287nm and TQ2034-BXWy-SO transmitting at the high wavelengths 1296/1300/1305/1309nm. 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.

TQ2034-BXXy-SO has an optical performance enabling distances of up to 70km 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 5 x 10-5. FEC will render in the required BER of better than 1 x 10-12.

Digital diagnostics functions (DDM) are available via an I2C interface, as specified by the QSFP28 MSA. The transceiver is available in two temperature range options, one being the Extended temperature range (E-temp): -20°C to 85°C (-20°F to 185°F).

TECHNICAL DATA

Parameter	Value
Technology	ZR4 lite, BiDi QSFP28
Transmission media	SM (1x LC)
Typical reach	70km
Nominal wavelengths	Tx: 1274/1278/1282/1287nm, Rx: 1296/1300/1305/1309nm [1]
	Tx: 1296/1300/1305/1309nm Rx: 1274/1278/1282/1287nm [2]
Bit rate support	103.12Gbps [3]
	25.78Gbps [4]
Protocol support	100GbE
Power budget	12.0 – 27.0dB
Power consumption	< 6.0W
Operating temperature	0°C to +70°C (-BxxC-)
	-20°C to +85°C (-BxxE-)
Storage temperature	-40°C to +85°C

[1] TQ2034-BWXy-SO (Latch of the transceiver is Blue)

[2] TQ2034-BXWy-SO (Latch of the transceiver is Red)

[3] Aggregated line rate 100GbE

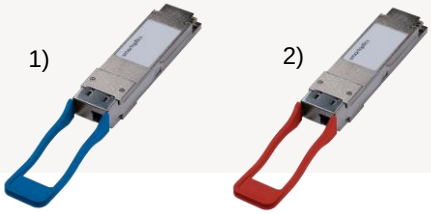
[4] Line rate per 25.78Gbps lane

[5] Average power per lane, is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

[6] Per 25.78Gbps lane. Measured with PRBS31 (2^{31}-1) @ BER 5E-5

Safety/regulatory compliance:
TUV/UL/FDA (contact Smartoptics for latest certification information)
RoHS compliance

Parameter	Value
Transmitter data:	
Output power, per lane	Min: +1.0dBm [5]
	Max: +7.0dBm [5]
Output power, OMA	Min: +3.0dBm
	Max: +8.8dBm
Extinction Ration	Min: 8dB
Transmit wavelengths	1274/1278/1282/1287nm [1]
	1296/1300/1305/1309nm [2]
Receiver data:	
Receiver sensitivity, OMA	-24dBm [6]
Minimum input power	-26.0dBm [5]
Overload (max power), average power per lane	-5.0dBm [6]
Receiver wavelengths	1296/1300/1305/1309nm [1]
	1296/1300/1305/1309nm [2]
LOS Assert	-40dBm
LOS De-assert	-26dBm
LOS Hysteresis	Min: 0.5dB, Max: 5.0dB
DDM	Yes
MSA Compliance	QSFP28 MSA, SFF-8636



ORDERING INFORMATION

Ordering number	Description
TQ2034-BWXC-SO	QSFP28 BiDi 100G 4WL Tx 1282nm 70km
TQ2034-BXWC-SO	QSFP28 BiDi 100G 4WL Tx 1305nm 70km
TQ2034-BWXE-SO	QSFP28 BiDi 100G 4WL Tx 1282nm 70km-E
TQ2034-BXWE-SO	QSFP28 BiDi 100G 4WL Tx 1305nm 70km-E

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 or 100G 4WDM-10 etc.
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): 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 ≤ $1x\ 10^{-12}$. Some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally ≤ $1x10^{-12}$.
Optical modulation Amplitude, OMA	Optical Modulation Amplitude is a parameter that, in certain standards, specifies the output power and receiver sensitivity. To measure the OMA, a oscilloscope with a baud rate corresponding to the transceiver is required. Thus, this parameter cannot be measured using an ordinary optical power meter.
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.