

# QSFP28 100GE O-BAND DWDM 25km

QSFP28, O-Band DWDM, 100G Ethernet, SM, 25km, 15dB, LC

## TQ2026-OXXC-SO

TQ2026-OXXC-SO is a QSFP28 form-factor O-Band DWDM 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.

The transceiver is provided in 16 channel versions with 200GHz spacing. The optical performance enables distances of up to 25km over a SingleMode (SM) G.652 fiber-pair cable.

The module includes FEC coding Forward Error Correction (KP4 FEC) to ensure reliable system operation. The host system shall thus not have FEC activated. The optical parameters will provide a bit error ratio (BER) of  $2.4 \times 10^{-4}$ . FEC will render in the required BER of better than  $1 \times 10^{-12}$ .

The TQ2026-OXXC-SO transceivers uses a single lane carrier @ 50Gbaud with 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.

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

## TECHNICAL DATA

Parameter	Value
Technology	O-Band DWDM QSFP28
Transmission media	SM (2x LC)
Typical reach	25km
Nominal wavelengths	228.4 - 231.4 THz (16ch)
Interface standards	100GBASE
Bit rate support	106.25Gbps <sup>1)</sup> 53.125Gbd <sup>2)</sup>
Protocol support	100GbE
Power budget	8.6 – 15dB
Power consumption	< 5.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

<sup>1)</sup> Aggregated line rate 100GbE with FEC

<sup>2)</sup> Line baud rate

<sup>3)</sup> Average power, per lane

<sup>4)</sup> Specified at BER  $2.4 \times 10^{-4}$

Parameter	Value
<b>Transmitter data:</b>	
Output power, per lane	Min: +0.0dBm <sup>3)</sup> Max: +5.6dBm <sup>3)</sup>
Transmit wavelengths	228.4 – 231.4 THz (16ch)
<b>Receiver data:</b>	
Minimum input power	-15.0dBm <sup>3) 4)</sup>
Overload (max power)	-3.0dBm <sup>3) 4)</sup>
Wavelength range	1290-1325nm
LOS Assert	-18dBm
LOS De-assert	-15dBm
DDM	Yes
MSA compliance	QSFP28 MSA SFF-8472

### Safety/regulatory compliance:

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

RoHS compliance

Subject to change without notice.

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## ORDERING INFORMATION

Ordering number	Freq. THz	$\lambda$ nm	Ordering number	Freq. THz	$\lambda$ nm
TQ2026-O55C-SO	228.4	1312.58	TQ2026-O39C-SO	230.0	1303.45
TQ2026-O53C-SO	228.6	1311.43	TQ2026-O37C-SO	230.2	1302.31
TQ2026-O51C-SO	228.8	1310.28	TQ2026-O35C-SO	230.4	1301.18
TQ2026-O49C-SO	229.0	1309.14	TQ2026-O33C-SO	230.6	1300.05
TQ2026-O47C-SO	229.2	1308.00	TQ2026-O31C-SO	230.8	1298.93
TQ2026-O45C-SO	229.4	1306.85	TQ2026-O29C-SO	231.0	1297.80
TQ2026-O43C-SO	229.6	1305.72	TQ2026-O27C-SO	231.2	1296.68
TQ2026-O41C-SO	229.8	1304.58	TQ2026-O25C-SO	231.4	1295.56

Note: The above channels represent the center channels defined in the CW-WDM MSA.

## 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 $\leq 1 \times 10^{-12}$ . Some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $\leq 1 \times 10^{-12}$ .
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.

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