

QSFP-DD 100GE DP-QPSK 450KM

QSFP-DD 100G Coherent Tunable SM 450km CMIS4.1 LC

OVERVIEW

The TQD011-TUNC-SO is an QSFP-DD form-factor (type 2a) DWDM transceiver for 100Gbps Ethernet applications. The transceiver is intended for use in interconnect applications between data centers with switches, routers etc. having QSFP-DD support but where the services are limited to 100Gbps.

SO-TQSFDD-100G uses the 100G option of OpenZR+ using the powerful Open Forward Error Correction (oFEC) scheme giving a Net Coding Gain (NCG) of 11.6dB at a pre-FEC BER of 2.0×10^{-2} and up to 8600ps/nm Chromatic Dispersion Compensation (CDC).

The transceiver is managed via a I²C interface and according to CMIS 4.1.

The TQD011-TUNC-SO supports the following CMIS application codes:

CMIS Application code	Host format	Payload	Media Format	FEC	Modulation	Operating range
1	CAUI4	100G	OpenZR+	oFEC	DP-QPSK	
2	CAUI4 KR4 FEC	100G	OpenZR+	oFEC	DP-QPSK	
3	100GAUI-2 KP4 FEC	100G	OpenZR+	oFEC	DP-QPSK	

TECHNICAL DATA

Parameter	Value
Technology	DWDM QSFP-DD type 2a
Transmission media	SM (2x LC)
Typical reach	Unamplified: 130km Dispersion limited: 450km
Nominal wavelengths	Tunable C-band
Interface standards	OpenZR+
Protocol support	100GBASE-R SyncE
Power consumption	17.0W (Class 8)
Operating temperature	0°C to +75°C
Storage temperature	-40°C to +85°C

¹⁾ Receiver sensitivity at unamplified configurations

²⁾ Signal power of the channel at the OSNR performance value

³⁾ Signal input power.

Parameter	Value
Transmitter data:	
Output power	Min: -5dBm Max: 0dBm
Transmit VOA dynamic range	0 - 10dB
Transmit wavelengths	191.275 - 196.125THz in minimum 6.25GHz steps
Wavelength switch time	Max 86s channel to channel
Receiver data:	
Minimum input power	-32.0dBm @ high OSNR >36dB ¹⁾ -20dBm ²⁾
Overload (max power)	13dBm ³⁾
OSNR tolerance	15.5dB
CD tolerance	Min: 8600ps/nm
Pre-FEC BER	2.0×10^{-2}
DDM	Yes
MSA compliance	QSFP-DD MSA OpenZR+ MSA, v1.0, CMIS 4.1

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 code	Description
TQD011-TUNC-SO	QSFP-DD 100G Coherent Tunable SM 450km CMIS4.1 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 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 $1E^{-12}$. 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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