

QSFP56 200G SR4

QSFP56 200GBASE-SR4 Ethernet, 850nm, 1.9dB@OM4, MPO12

TQ5001-M85C-SO

The TQ5001-M85C-SO is a QSFP56 form-factor transceiver for 200 Gbps Ethernet (200GBASE-SR4) applications. It is intended for use in inter- and intra-connect applications within data centers between switches, routers, storage equipment etc. The optical performance is in accordance with the 100GBASE-SR IEEE 802.3bm standard, i.e. for optical distances up to 100m over a MultiMode (MM) OM4-grade ribbon fiber.

The module has 4 independent electrical input/output channels operating at 26.5625GBd per channel. This transceiver uses four PAM4 modulated lanes operating at 850nm. The transceiver requires that the host system uses Forward Error Correction (FEC).

The electrical interface is compliant with the 200GAUI-4 interface as defined by IEEE 802.3bs.

Digital diagnostics functions are available via an I²C interface, as specified by the QSFP56 MSA using CMIS4.0.

TECHNICAL DATA

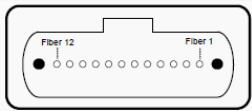
Parameter	Value
Technology	Grey QSFP56
Transmission media	MM (1x MPO-12)
Typical reach	100m @ OM4
Nominal wavelengths	4x 850nm
Interface standards	200GBAS-SR4
	InfiniBand HDR
Bit rate support	212.5Gbps ¹⁾
	26.5625Gbd (PAM4) ²⁾
Protocol support	200GbE
Power budget	0 –1.9dB
Power consumption	< 5.0W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

Parameter	Value
Transmitter data:	
Output power, per lane	Min: -6.5dBm
	Max: +4.0dBm
Transmit wavelengths	840 – 860nm
Receiver data:	
Minimum input power per lane	-8.4dBm ³⁾
Overload (max power) per lane	+4.0dBm ³⁾
Wavelength range	840 – 860nm
LOS Assert	Min 17dBm
LOS De-Assert	Max -12dBm
LOS Hysteresis	Min 0.5dBm
DDM	Yes
MSA compliance	QSFP56 MSA, CMIS4.0

¹⁾ Aggregated line rate 200GbE

²⁾ Line rate per lane

³⁾ Specified at BER 2x10⁻⁴



Safety/regulatory compliance:

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

RoHS compliance

APPLICATION CODE LIST

CMIS Application Code	Host format	Electrical interface	Host Electrical ID	Payload	FEC	MSA	Media ID
1	200GBASE-R	200GAUI-4 (4x 50G)	0x0F	200G	RS-FEC	200GBASE-SR4	0x0E
2	4 x 50GBASE-R	4x 50GAUI-1 (4x 50G)	0x0A	200G	RS-FEC	50GBASE-SR	0x07
3	IB HDR	IB HRR	0x31	200G	-	200GBASE-SR4	0x0E

ORDERING INFORMATION

Ordering number	Description
TQ5001-M85C-SO	QSFP28, 100G Eth SR4, MM 4x 850nm, 100m, 1.9dB, MPO

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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