

# SO-QSFP28-SWDM4

QSFP28, 100G Ethernet SWDM4, MM, 850/880/910/940nm, 150m, 1.8dB, LC

## OVERVIEW

The SO-QSFP28-SWDM4 is a QSFP28 form-factor transceiver for 100 Gbps Ethernet applications. It is intended for use in inter- and intra-connect applications within and between data centers between switches, routers, storage equipment etc. The transceiver is based on the SWDM4 industry standard having the target to enable existing 10 Gbps MultiMode infrastructure to be re-used for 40 Gbps and 100 Gbps without adding more fiber.

SO-QSFP28-SWDM4 has an optical performance enabling distances of up to 150m over a MultiMode (MM) 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  $5 \times 10^{-5}$ . FEC will render in the required BER of better than  $1 \times 10^{-12}$ .

SO-QSFP28-SWDM4 uses four channels/lanes in the 850-940nm region @ 25.78 Gbps to transport the Ethernet signal. Digital diagnostics functions (DDM) are available via an I2C interface, as specified by the QSFP28 MSA.

## TECHNICAL DATA

<b>Technology</b>	Grey QSFP28
<b>Transmission media</b>	MM (2x LC)
<b>Typical reach</b>	75 m @ OM3 100 m @ OM4 150 m @ OM5
<b>Nominal wavelength</b>	4x 850 nm
<b>Interface standards</b>	100GBASE-SWDM4
<b>Bit rate range</b>	103.12 Gbps <sup>1)</sup> 25.78 Gbps <sup>2)</sup>
<b>Protocols</b> Eth:	100GbE
<b>Power budget</b>	0 – 1.8 dB <sup>3)</sup>
<b>Temperature range</b>	0°C to +70°C
<b>Power consumption</b>	< 3.5 W

<b>Transmitter data</b>	Output power, per lane Tx wavelengths:	Min: -7.5 dBm <sup>4)</sup> 850 nm 880 nm 910 nm 940 nm
<b>Receiver data</b>	Minimum input power: Overload (max power): Wavelength range:	-9.4 dBm <sup>4)</sup> +3.4 dBm <sup>4)</sup> 1295 – 1325
<b>DDM</b>		Yes
<b>MSA compliance</b>		QSFP28 MSA SWDM4 MSA

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

<sup>2)</sup> Line rate per lane

<sup>3)</sup> Including max path penalty

<sup>4)</sup> Average power, per lane

<b>Laser Eye Safety</b>	CDRH 21 CFR 1040 and Laser Notice 50 EN 60825-1:2014, EN 60825-2:2004+A1+A2
<b>Electrical Safety</b>	EN 60950-1:2006+A11+A1+A12+A2 ANSI/UL Std. No. 60950-1:2014
<b>RoHS</b>	RoHS-6

<b>Storage temp.</b>	-40°C to +85°C
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## ORDERING INFORMATION

Part number	Description
SO-QSFP28-SWDM4	QSFP28, 100G Eth, SWDM4, MM, 150m

## DEFINITIONS

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 (DAC). Electrical or 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 dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification.
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 from transmitter.
Interface standards:	Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services.
Power budget:	Min and max power budget between Transmitter and Receiver.
Dispersion tolerance/penalty:	Maximum amount of tolerated dispersion and required reduction of power budget to maintain BER better than $1E^{-12}$ . Defined at a specific bit rate.
Temperature range:	Max operating case temperature range. Standard temperature range: 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.
Transmitter Output power:	Average output power. Provided in min and max values.
Receiver minimum input power:	Minimum average input power at specified BER, normally $1E^{-12}$ .
Receiver max input power:	Maximum average input power giving a BER, normally $1E^{-12}$ .
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.