

**DATASHEET 5.2****SO-QSFP-IR4-PSM****QSFP+, 40G Ethernet IR4, 4x 11.2Gbps, SM, 1310nm, 2km, 7.4dB, MPO (APC)****OVERVIEW**

The SO-QSFP-IR4-PSM is a QSFP+ (Quad Small Form-factor Pluggable Plus) transceiver for 40Gbps applications such as inter- and intra-connect within and between data centers between switches, routers, storage equipment etc.

The SO-QSFP-IR4-PSM converts 4x 10Gbps flows into four channels at 1310nm up to 2 km over a SingleMode (SM) fiber. The module is also capable of rates up to 4x 11.2Gbps, allowing an aggregated bandwidth of 44Gbps.

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

The SO-QSFP-IR4-PSM provides transport over an MPO/MTP12 or 8 ribbon fiber cable.

## TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP+
Transmission media	SM (1x MPO)
Typical reach	2km
Nominal wavelength	1310nm
Interface standards	40GBASE-IR4
Bit rate support	41.25Gbps, 44.8Gbps <sup>1)</sup> 10.3125Gbps, 11.2Gbps <sup>2)</sup>
Protocol support	40GbE, 4x 10GFC, 4x OTU2, 4xOTU2e
Power budget	0 – 7.4dB
Power consumption	< 3.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

- 1). Aggregated line rate
- 2). Per lane
- 3). Average power
- 4). At BER less than  $10^{-12}$ , with a  $2^{31}-1$  PRBS

### Safety/regulatory compliance:

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

RoHS compliance

MPO (Multi-fiber Push On) is an optical connector for ribbon cables with four to twenty-four fibers.

MTP is a specific brand of an MPO connector.

Note: An MPO/MTP connector with 8-degree Angled Physical Contact (APC) shall be used with this product to minimize MPO/MTP connection induced reflections.

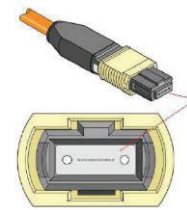
## ORDERING INFORMATION

Ordering number	Description
SO-QSFP-IR4-PSM	QSFP+, 40G Ethernet IR4, SM, 1310nm, 2km, 7.4dB, MPO (APC)

## 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.

Parameter	Value
<b>Transmitter data:</b>	
Output power, per lane	Min: -5.2dBm <sup>3)</sup> Max: +0.5dBm <sup>3)</sup>
Transmit wavelength	1260 – 1360nm
<b>Receiver data:</b>	
Minimum input power	-12.6dBm <sup>2) 3) 4)</sup>
Overload (max power)	+0.5dBm <sup>2) 3) 4)</sup>
Wavelength range	1260 – 1360nm
LOS Assert	Min -30dBm
LOS De-Assert	Max -15dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	QSFP+ MSA, SFF-8436



8-degree contact face

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 100G4WDM-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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