INDEPENDENT DATA SOLUTIONS

smartoptics

DATASHEET 5.2

SO-QSFP-LR4-PSM

QSFP+, 40G Ethernet LR4, 4x 11.2Gbps, SM, 1310nm, 10km, 6.6dB, MPO (APC)

OVERVIEW

The SO-QSFP-LR4-PSM is a QSFP+ (Quad Small Form-factor Pluggable Plus) transceiver for 40 Gbps applications where the transport is made using four channels at 10 Gbps. It is intended for use in inter- and intra-connect applications within and between data centers with switches, routers, storage equipment etc.

The transceiver can also be used for 10GbE-LAN interconnect applications, providing a higher density as compared to four individual 10G connections using e.g. SFP+ transceivers. The module is also capable of rates up to 4x 11.2Gbps, allowing an aggregated bandwidth of 44Gbps.

The SO-QSFP-LR4-PSM provides transport over an MPO/MTP 12 or 8 ribbon fiber cable up to 10 km over a SingleMode (SM) fiber.

TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP+
Transmission media	SM (1x MPO/APC)
Typical reach	10km
Nominal wavelength	1310nm
Interface standards	40GBASE-LR4
Bit rate support	41.25Gbps, 44.8Gbps [1]
	10.3125Gbps 4x 11.2Gbps [2]
Protocol support	40GbE / 4x 10GbE-LAN / 4x 10GFC / 4x OTU2 / 4x OTU2e
	Infiniband QDR, DDR, SDR
Power budget	0 – 6.6dB
Power consumption	< 3.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

Parameter	Value
Transmitter data:	
Output power, per lane	Min: -6.0dBm [3]
	Max: +1.5dBm [3]
Transmit wavelength	1260 – 1355nm
Receiver data:	
Minimum input power	-12.6Bm [2] [3] [4]
Overload (max power)	+2.3dBm [2] [3] [4]
Wavelength range	1260 – 1355nm
LOS Assert	Min -30dBm
LOS De-Assert	Max -15dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	QSFP+ MSA, SFF-8436

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-LR4-PSM	QSFP+, 40G Ethernet LR4, SM, 1310nm, 10km, 6.6dB, 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.

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.