

**DATASHEET 5.1****SO-SFP-1000BASE-BX-MMD-35 & -53****SFP BiDi, 1.063/1.25Gbps, 1310/1550nm, MM, DDM, 11dB, 1km, C-temp & I-temp****OVERVIEW**

The SO-SFP-1000BASE-BX-MMD is a bi-directional transceiver solution operating directly on a single-fiber without the need for a separate optical filter. This is achieved by having two transceivers that inject different wavelengths into the same single-fiber. The solution thus consists of two transceivers; SO-SFP-1000BASE-BX-MMD-35 and SO-SFP-1000BASE-BX-MMD-53, operating at 1310nm and 1550nm respectively on a MultiMode (MM) fiber. Using a single-fiber solution provides a cost-efficient solution for interconnect and it simplifies the patching since no separate transmit/receive direction has to be taken into account.

The transceiver pair supports 1Gbps Fiberchannel (1G FC), 1Gbps Ethernet (GbE) and the mobile fronthaul CPRI option 1 services. The optical performance of the transceiver pair provides a bridgeable distance of up to 1000m.

The transceiver solution is available in two temperature range options, one being the Industrial temperature range (I-temp) of -40°C to +85°C (-40°F to +185°F). The transceivers provide digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

## TECHNICAL DATA

Parameter	Value
Technology	BiDi SFP
Transmission media	MM (1x LC)
Typical reach	500m@62.5/125um (500MHz*km) 1000m@50/125um (800MHz*km)
Nominal wavelengths	1310nm <sup>1)</sup> / 1550nm <sup>2)</sup>
Bit rate range	1.0625 / 1.25Gbps
Protocol support	GbE 1G FC CPRI Opt 2 (1.2288 Gbps)
Power budget	0 – 11.5 dB <sup>4)</sup> / 0 – 12.5 dB <sup>5)</sup>
Power consumption	< 1 W
Operating temperature	0°C to +70°C -40°C to +85°C (-I)
Storage temperature	-40°C to +85°C

Parameter	Value
<b>Transmitter data:</b>	
Output power	Min: -9.5dBm <sup>3)</sup> Max: -3.0dBm <sup>3)</sup>
Transmit wavelength	1260 - 1360nm <sup>1)</sup> 1500 - 1580nm <sup>2)</sup>
<b>Receiver data:</b>	
Minimum input power	-21dBm <sup>3) 4)</sup> -22dBm <sup>3) 5)</sup>
Overload (max power)	-3Bm <sup>3) 4)</sup>
Wavelength range	1500 – 1580nm <sup>1)</sup> 1260 – 1360nm <sup>2)</sup>
LOS Assert	Min -35dBm
LOS De-assert	Max -dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	SFP MSA, SFF 8472

<sup>1)</sup> SO-SFP-1000BASE-BX-MMD-35

<sup>2)</sup> SO-SFP-1000BASE-BX-MMD-53

<sup>3)</sup> Average power.

<sup>4)</sup> @ GbE, PRBS 2<sup>7</sup>-1, BER <1E-12

<sup>5)</sup> @ FE, PRBS 2<sup>7</sup>-1, BER <1E-12

## ORDERING INFORMATION

Ordering number	Description
SO-SFP-1000Base-BX-MMD-35	SFP, BiDi, 1G Ethernet, 1G FC, TX/RX=1310/1550nm, MM, 1km, 11dB, LC
SO-SFP-1000Base-BX-MMD-53	SFP, BiDi, 1G Ethernet, 1G FC, TX/RX=1550/1310nm, MM, 1km, 11dB, LC
SO-SFP-1000Base-BX-MMD-35-I	SFP, BiDi, 1G Ethernet, 1G FC, TX/RX=1310/1550nm, MM, 1km, 11dB, I-temp, LC
SO-SFP-1000Base-BX-MMD-53-I	SFP, BiDi, 1G Ethernet, 1G FC, TX/RX=1550/1310nm, MM, 1km, 11dB, I-temp, 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.

## GENERAL DEFINITIONS

Parameter	Description
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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