

**DATASHEET 5.4****SO-SFP28-32GFC-SD****SFP28, 32G FC, 25GbE, 850nm, MM, DDM, 7dB, 100m****OVERVIEW**

The SO-SFP28-32GFC-SD is an 850nm SFP28 transceiver for MultiMode (MM) fiber, supporting 8G, 16G and 32G Fiber Channel (FC) as well as 25G and 10G Ethernet services. The optical performance provides a bridgeable distance of up to 100 m for 32G FC when using an OM4 grade MM fiber.

The transceiver has no minimum distance (i.e. no minimum attenuation) which is ideal for intra-office connections since extra attenuators need not be considered.

The transceiver has a Rate\_Select function compliant with SFF-8472 Rev12.2 where a switch between 32G FC / 25GbE and 16G FC / 8G FC / 10GbE is done.

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

As stipulated by the 32G FC and 25G Ethernet standards, Forward Error Correction (FEC) is required to be implemented by the host to ensure reliable system operation. The optical parameters below will provide a bit error ratio (BER) of  $1 \times 10^{-6}$  for 32G FC and  $5 \times 10^{-5}$  for 25GbE. FEC will provide the required quality for secure service.

## TECHNICAL DATA

Parameter	Value
Technology	Grey SFP28
Transmission media	SM (2x LC)
Typical reach	100m @ OM4, 70m @ OM3
Nominal wavelength	850nm
Bit rate support	8.5 / 14.025 / 28.05Gbps (FC) 10.31 / 25.78Gbps (Eth)
Protocol support	8G, 16G, 32G FC 25GE
Power budget	0 – 7.0dB for 32G FC 0-1.9dB for 25GE
Power consumption	< 1.0W
Operating temperature	-0°C to +70°C
Storage temperature	-40°C to +85°C

1). Average power.

2). @ BER 1x10<sup>-6</sup>, back-to-back.

Parameter	Value
<b>Transmitter data:</b>	
Output power 32G FC	Min: -1.4dBm <sup>1)</sup> Max: +2.0dBm <sup>1)</sup>
25GE	Min: -8.4dBm <sup>1)</sup> Max: +2.4dBm <sup>1)</sup>
Transmit wavelength	840nm – 860nm
<b>Receiver data:</b>	
Minimum input power 32G FC	-8.4dBm <sup>1) 2)</sup>
25GE	-10.3dBm <sup>1) 2)</sup>
Overload (max power)	+2.4dBm <sup>1) 2)</sup>
Wavelength range	840nm – 860nm
LOS Assert	Min -20dBm
LOS De-assert	Max -12dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	SFF-8402, -8472

### Safety/regulatory compliance:

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

RoHS compliance

## RATE\_SELECT OPERATION

The SO-SFP28-32GFC-SD supports high data rates 25.78G/28.05G and Low data rates 14.025G/10.31G/8.5G. Rate\_Select is compliant with SFF-8472 Rev12.2.

Logic OR of RS0 pin and bit 110.3 of A2H	Logic OR of RS1 pin and bit 118.3 of A2H	RX Data Rate	TX Data Rate
High	High	25.78G/28.05G	25.78G/28.05G
Low	Low	14.025G/10.31G/8.5G	14.025G/10.31G/8.5G

## ORDERING INFORMATION

Ordering code	Description
SO-SFP28-32GFC-SD	SFP28, 32G FC, 25G Ethernet, MM, 850nm, 100m@OM4, 7dB, 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.
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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