

# SO-SFP28-LWDM-x-E

SFP28, 25GE, LANWDM, SM, DDM, 21dB, 30km, E-temp, LC

## OVERVIEW

The SO-SFP28-LWDM-x-E is an SFP28 form-factor transceiver for 25 Gbps Ethernet applications. The transceiver is intended for use in interconnect applications between data centers with switches, routers, storage equipment etc. The optical performance supports distances up to 30km over a SingleMode (SM) fiber. SO-SFP28-LWDM-x also supports the high data rate CPRI option 10 for fronthaul applications having a bit rate of 24.33024 Gbps.

The SO-SFP28-LWDM-x is provided in eight different wavelength versions according to the LANWDM wavelength grid where the SM fiber has its lowest dispersion properties.

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

Digital diagnostics functions are available via an I2C interface, as specified by the MSA.

## TECHNICAL DATA

<b>Technology</b>	LANWDM SFP28
<b>Transmission media</b>	SM (2x LC)
<b>Typical reach</b>	30 km
<b>Nominal wavelength</b>	1295.56 nm 1300.05 nm 1304.58 nm 1309.14 nm 1277.89 nm 1282.26 nm 1286.66 nm 1291.10 nm
<b>Bit rate range</b>	25.78 Gbps <sup>1)</sup> 24.33 Gbps <sup>2)</sup>
<b>Protocols</b>	Eth: 25GbE CPRI: CPRI opt 10
<b>Power budget</b>	10 – 21 dB <sup>3)</sup>
<b>Dispersion penalty</b>	1.5 dB
<b>Temperature range</b>	-20°C to +85°C
<b>Power consumption</b>	< 2.2 W

<sup>1)</sup> 25G Ethernet

<sup>2)</sup> CPRI opt 10

<sup>3)</sup> at 25.78 Gbps (25GbE) and BER 5E-5

<b>Transmitter data</b>	<b>Output power:</b>	Min: +1.0 dBm Max: +6.0dBm
	<b>Wavelength range:</b>	1294.53 – 1296.59 nm 1299.02 - 1301.09 nm 1303.54 - 1305.63 nm 1308.09 - 1310.19 nm 1276.86 - 1278.92 nm 1281.23 - 1283.29 nm 1285.65 - 1287.69 nm 1290.07 - 1292.12 nm
<b>Receiver data</b>	<b>Minimum input power:</b>	-20.0 dBm <sup>3)</sup>
	<b>Overload (max power):</b>	-4.0 dBm
	<b>Wavelength range:</b>	1260 – 1355 nm
<b>DDM</b>		Yes
<b>MSA compliance</b>		SFP28 SFF-8402

### Regulatory compliance

<b>EMC CE</b>	EN 55032:2012, EN 55032:2015 EN 55024:2010, EN 55024:2010+A1
<b>UL/Safety</b>	UL 60950-1
<b>FCC</b>	47 CFR PART 15 OCT, 2013
<b>RoHS</b>	RoHS 6
<b>TUV</b>	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2

<b>Storage temp.</b>	-40°C to +85°C
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Note: The 25GbE specification states that a 25GbE interface can operate with or without FEC. The optical data above is defined at a BER of  $5 \times 10^{-5}$ , implying that FEC shall be enabled on the host equipment to provide required quality at specified distance.

## ORDERING INFORMATION

Part number	Description
SO-SFP28-LWDM-A-E	SFP28 25GE CPRI opt 10 LANWDM 1295.56nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-B-E	SFP28 25GE CPRI opt 10 LANWDM 1300.05nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-C-E	SFP28 25GE CPRI opt 10 LANWDM 1304.58nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-D-E	SFP28 25GE CPRI opt 10 LANWDM 1309.14nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-E-E	SFP28 25GE CPRI opt 10 LANWDM 1277.89nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-F-E	SFP28 25GE CPRI opt 10 LANWDM 1282.26nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-G-E	SFP28 25GE CPRI opt 10 LANWDM 1286.66nm SM DDM 21dB 30km, E-temp, LC
SO-SFP28-LWDM-H-E	SFP28 25GE CPRI opt 10 LANWDM 1291.10nm SM DDM 21dB 30km, E-temp, LC

## 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. Excluding any dispersion penalty.
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.