DUXNET

PRODUCT DATASHEET

DUXSFP28GSR

SFP28, 25G/10G Ethernet LR, 1310nm, SM, 10km, 6.3dB, LC

OVERVIEW

The SO-SFP28-LR is an SFP+ form-factor transceiver for 25 Gbps Ethernet applications. Since the transmission rate can reach up to 28Gbps, the engineering and industry name is SFP28. It is intended for use in interconnect applications between data centers with switches, routers, storage equipment etc. The optical performance supports distances up to 10km over a SingleMode (SM) fiber. SO-SFP28-LR also supports the high data rate CPRI option 10 having a bit rate of 24.33024 Gbps. With the Clock and Data Recovery (CDR) functionality disabled, the transceiver can also be used for 10GbE-LAN and 10GbE-WAN services.

SO-SFP28-LR uses a single 1310nm channel @ 25.78 Gbps to transport a 25G Ethernet signal. 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 x 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

Technology	Grey SFP28
Transmission media	SM (2x LC)
Typical reach	10km
Nominal wavelength	1x 1310nm
Bit rate support	24.33 / 25.78Gbps [1)] 9.953 / 10.312Gbps [2)]
Protocol support	25GE [1)] 10GE WAN/LAN [2)] CPRI opt 10 [1)]

Power budget		0 – 6.3dB
Dispersion penalty		Max 2.7dB
Power consumption		< 1.2W
Operating temperature		0°C to +70°C
Storage temperature		-40°C to +85°C
Transmitter data	**Output power**	Min: -7.0dBm [3]
		Max: +2.0dBm [3]
	Transmit wavelength	1295 – 1325nm
Receiver data	**Minimum input power**	-13.3dBm [3] [4]
	Overload (max power)	+2.0dBm [3] [4]
	Wavelength range	1260 – 1325nm
	LOS Assert	Max -17dBm
	LOS De-assert	Min -30dBm
	LOS Hysteresis	Min 0.5dB
	DDM	Yes
	MSA compliance	SFF-8402
Safety/regulatory compliance		TUV/UL/FDA (contact Smartoptics for latest certification information)
		RoHS compliance

GENERAL 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. 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

CDR RATE SELECT LOGIC

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	Status of RX CDR	Status of TX CDR
High / 1	High / 1	24.33G/25.78G	24.33G/25.78G	CDR Engaged	CDR Engaged
Low / 0	Low / 0	9.95G/10.31G	9.95G/10.31G	CDR Bypassed	CDR Bypassed

ORDERING INFORMATION

SO-SFP28-LR	SFP28, 25G/10G Ethernet LR, 1310nm, SM, 10km, 6.3dB, LC

[1] CDR engaged

[2] CDR disengaged

[3] Average power

[4] at 25.78 Gbps (25GE) and BER $5E^{-5}$

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