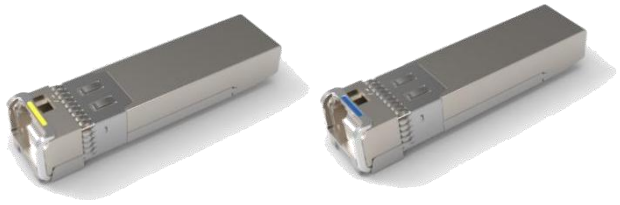
25G-SFP28-BD23(32)-10I

25G SFP28 10km 1270/1330nm BIDI Transceiver



Features

- Supports 25GBASE-BR10;
- Lane bit rate 25.78 Gb/s;
- Up to 10km transmission on SMF;
- DML laser and PIN receiver;
- High speed I/O electrical interface (25GAUI);
- I2C interface with integrated Digital Diagnostic monitoring;
- SFP28 MSA package with single LC connector;
- Single +3.3V power supply;
- Maximum power consumption 2 W;
- Operating case temperature: -40 to 85 °C;
- Compliant to SFF-8402 and SFF-8419;
- Complies with EU Directive 2015/863/EU.

Application

- 25GBASE-BR10;
- Other Optical Links.

Order Information

Table 1- order information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI
25G-SFP28-BD23-10I	25.78Gbps	1270nm DML	SMF	10KM	LC	-40~85C	Y
25G-SFP28-BD32-10I	25.78Gbps	1330nm DML	SMF	10KM	LC	-40~85C	Y

Absolute Maximum Ratings

Table 2-Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_S	-40		85	°C
Supply Voltage	V_{CC}	-0.5		4	V
Operating Relative Humidity	RH	5		95	%

Recommended Operating Conditions

Table 3-Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T_C	-40	-	85	°C	
Power Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Power Supply Current	I_{CC}	-	-	576	mA	
Maximum Power Dissipation	P_D	-	-	2	W	
Bit Rate	BR		25.78	-	Gb/s	
Transmission Distance	TD		-	10	km	Over SMF

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Optical Characteristics

Table 4-Optical Characteristics

Transmitter						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Center Wavelength	λ_0	1260	1270	1280	nm	Rx 1330nm
Center Wavelength	λ_0	1320	1330	1340	nm	Rx 1270nm
Optical Modulation Amplitude	OMA	-4	-	2.2	dBm	
Average launch power	Pout	-7		2	dBm	1
Average Output Power (Laser Turn off)	$P_{0UT-OFF}$	-	-	-20	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Extinction Ratio	ER	3	-	-	dB	
Path penalty	DP	-	-	2.7	dB	
Optical Return Loss Tolerance	ORLT	-	-	20	dB	
Transmitter reflectance	Tref	-	-	-26	dB	
Optical Eye Mask	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					2
Receiver						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Center Wavelength	λ_0	1320	1330	1340	nm	Tx 1270nm
Center Wavelength	λ_0	1260	1270	1280	nm	Tx 1330nm
Receiver sensitivity (OMA)	P_{OMA}	-	-	-12	dBm	3
Average receive power	Pin	-13.3		2	dBm	4
Damage threshold	Pdamage	3	-	-	dBm	
Overload	Pol	2	-	-	dBm	
Reflectance	Ref	-	-	-26	dB	
LOS Assert per lane	LOS_A	-30	-	-	dBm	
LOS De-assert	LOS_D	-	-	-13.5	dBm	
LOS Hysteresis	LOS_H	0.5	-	5	dB	

Notes:

1. Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Measured with a PRBS 2^{31}-1 test pattern @25.78125, Hit ratio≤5E-5.
3. Measured with a PRBS 2^{31}-1 test pattern @25.78125 Gb/s, BER≤5E-5.
4. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

Electrical Characteristics

High-Speed Signal: **Compliant to CEI-28G-VSR**

Low-Speed Signal: **Compliant to SFF-8419**

Table5-Electrical Characteristics

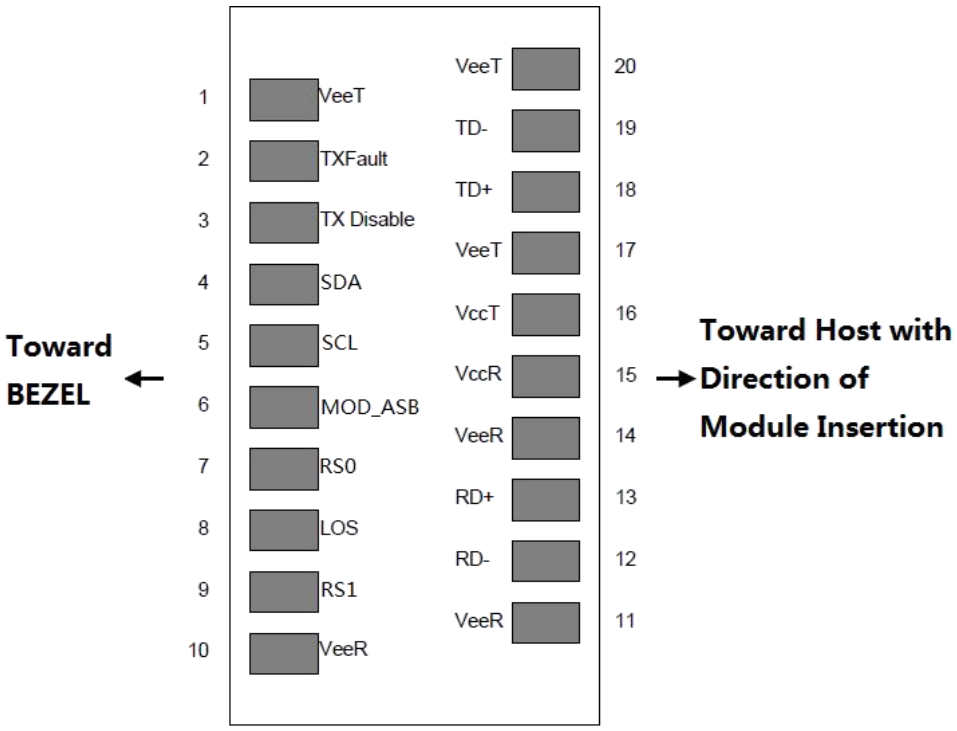
Transmitter (Module Input)							
Parameter		**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Differential Data Input Amplitude		$V_{IN,P-P}$	-	-	900	mVpp	
Differential Termination Mismatch			-	-	10	%	
Tx_Disable	Normal Operation	V_{IL}	-0.3	-	0.8	V	
	Laser Disable	V_{IH}	2.0	-	V_{CC}+0.3	V	
Receiver (Module Output)							
Parameter		**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Notes**
Differential Data Output Amplitude		$V_{OUT,P-P}$	-	-	900	mVpp	
Differential Termination Mismatch（1MHZ）			-	-	10	%	
Output Rise/Fall Time, 20%~80%		T_R	12	-	-	ps	
Rx_LOS	Normal Operation	V_{OL}	0	-	0.4	V	
	Lose Signal	V_{OH}	V_{CC}-0.5	-	V_{CC}+0.3	V	

Digital Diagnostics

Table 6-Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-40 to 85	±3	ºC	Internal
Voltage	0 to V_{CC}	0.1	V	Internal
Tx Bias Current	0 to 100	10%	mA	Internal
Tx Output Power	-7 to 2	±3	dBm	Internal
Rx Power	-13.3 to 2	±3	dBm	Internal

Pin Definitions



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Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground	1
2	Tx_Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx_Disable	Transmitter Disable – High or open disables the transmitter	
4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	3
6	MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	
7	RS0	Rate Select 0 – Not used, Presents high input impedance	5
8	RX_LOS	Receiver Loss of Signal(LVTTL-O). Logic 0 indicates normal operation	4
9	RS1	Rate Select 1 – Not used, Presents high input impedance	5
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O), AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground	1

Notes:

1. Module ground pins GND are isolated from the module case.
2. Tx_Fault is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on Host board.
3. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
4. LOS is open collector output. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
5. RS0 and RS1 pins are pulled low to GND with a resistor > 30KΩ in module.

Mechanical Dimension