25G SFP28 BiDi 20km Optical Transceiver
VS-25LR1xB2S-EA

Product Overview

The VS-25LR1xB2S-EA is a 25G SFP28 BiDi optical transceiver designed for up to 25.78Gbps data links and 20km transmission over single-mode fiber, utilizing 1330/1270nm DFB laser and PIN receiver technology. It features a metal enclosure for reduced EMI, a 2-wire interface with integrated digital diagnostic monitoring, and a hot-pluggable SFP28 form factor.

Features

- Up to 25.78Gbps Data Links
- Up to 20km transmission on SMF
- 1270nm/1330nm DFB Laser and PIN receiver
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP28 footprint
- Specifications compliant with SFF 8472
- Compliant with SFF-8402 with LC connector
- Single 3.3V power supply
- Power dissipation < 1.2W
- Case operating temperature
    - Commercial: 0°C to +70°C
    - Industrial: -40°C to +85°C
- Compliant with SFF-8472 &8431
- RoHS Compliant.

Applications

- 25GBASE-LR
- eCPRI and CPRI

Ordering Information

Part Number	Description
VS-25LR1CB2S-EA	25G SFP28 BiDi 20km SMF, 1330/1270nm, Simplex-LC, C-temp
VS-25LR1IB2S-EA	25G SFP28 BiDi 20km SMF, 1330/1270nm, Simplex-LC, I-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	T_s	-40		85	ºC	
Relative Humidity	R_H	5		95	%	
Power Supply Voltage (Maximum)	VCC	-0.3		4	V	
Signal Input Voltage	V_{SI}	Vcc-0.3		Vcc+0.3	V	
Case Operating Temperature	Tcase	0		70	ºC	Commercial
		-40		85	ºC	Industrial
Power Supply Voltage (Recommended)	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC			330	mA	Commercial
				360	mA	Industrial
Data Rate	BR		25.78		Gbps	TX Rate/RX Rate
Transmission Distance	TD		20		km	
Coupled fiber	Single mode fiber					9/125um SMF

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Average Launched Power	P_O	0		+6.0	dBm	
Average Launched Power (Laser Off)	Poff			-30	dBm	
Center Wavelengths Range	λ	1320		1340	nm	
Spectrum Bandwidth(-20dB)	Δλ			1	nm	
Side-mode suppression ratio (SMSR)	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	{0.31,0.4,0.45,0.34,0.38,0.4}					Measured with a PRBS 2^{31}-1 test pattern, @ 25.78Gb/s

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Center Wavelength Range	λ	1260		1280	nm	
Input Saturation Power (Overload)	Past	2.5			dBm	1
Receiver sensitivity	P_{Sens}			-13.3	dBm	1
Los Of Signal Assert	PA	-30			dBm	
Los Of Signal De-assert	PD			-15	dBm	
LOS -Hysteresis	PHys	0.5			dB	

1. Measured with Light source 1310nm; BER =<5x10-5 @PRBS=231-1 NRZ.

Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Input differential impedance	Rin		100		Ω	1
Single ended data input swing	Vin,pp	180		700	mV	
Transmitter Fault Output-High	VFaultH	2	-	Vcc+0.3	V	
Transmitter Fault Output-Low	VFaultL	0	-	0.8	V	
Transmitter Disable Voltage- High	VDisH	2	-	Vcc+0.3	V	
Transmitter Disable Voltage- low	VDisL	0	-	0.8	V	

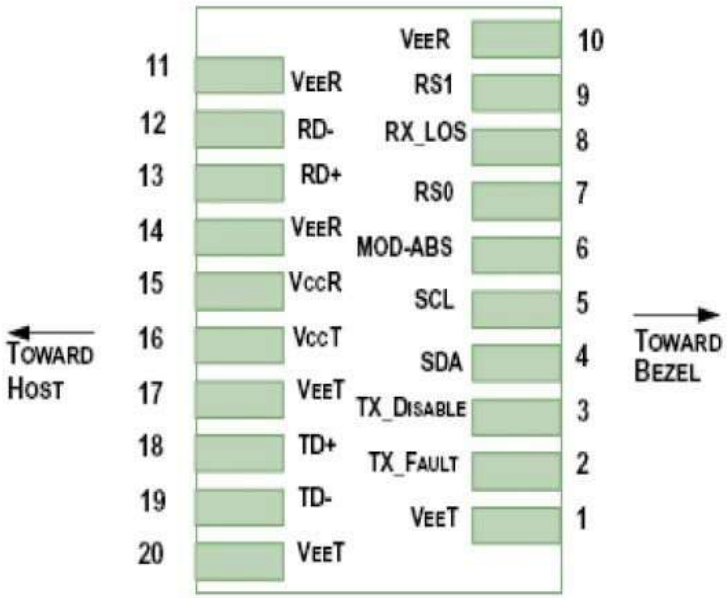
1. Connected directly to TX data input pins. AC coupled thereafter

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Differential data output swing	Vout,pp	300		850	mV	1
LOS Output Voltage-High	VLOSH	2		Vcc+0.3	V	
LOS Output Voltage-Low	VLOSL	0		0.8	V	

1. Into 100 ohms differential termination

Electrical Connector Layout

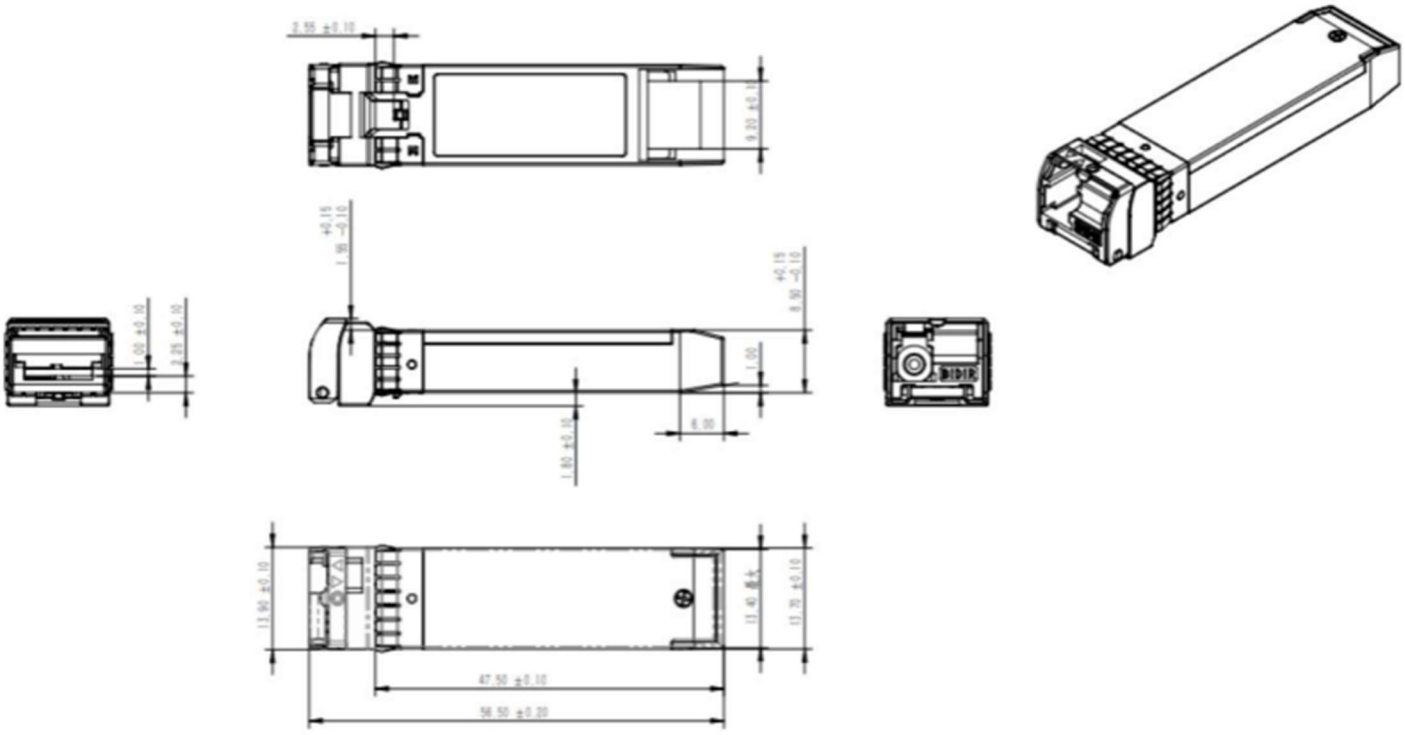


Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault.	2
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0, internal pull down	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	Rate Select 1, internal pull down	5
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

1. Circuit ground is internally isolated from chassis ground.
2. TFAULT is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V.A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on TDIS>2.0V or open, enabled on TDIS<0.8V.
4. Should be pulled up with 4.7kΩ- 10kΩ host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. Rate select can also be set through the 2-wire bus in accordance with SFF-8472. Rx Rate Select is set at Bit 3, Byte 110, Address A2h. Tx Rate Select is set at Bit 3, Byte 118, Address A2h.
6. LOS is open collector output. It should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

Mechanical Dimensions



Revision History

Date	Rev	Description
1/4/2019	1.0	Initial Release
2/21/2025	2.0	New branding guidelines

For more information

Vitex LLC

32 Mercer St.
Hackensack, NJ 07601

201-296-0145
info@vitextech.com
www.vitextech.com