
25G SFP28 LR Optical Transceiver

PN: VS-25LR1IS-AA

Product Overview

Vitex's VS-25LR1IS-AA is a high-performance optical transceiver. They are compliant with SFF-8472, 8431, providing a fast and reliable interface for 25G Ethernet applications. The product implements digital diagnostics via a 2-wire serial bus and is compliant with the SFF-8402 with LC standard.

Features

- Up to 25.78Gbps Data Links
- Up to 10km transmission on SMF
- DFB Laser and PIN receiver
- Build-in dual CDR with bypass control
- Metal enclosure, for lower EMI
- 2-wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP28 footprint
- Compliant with SFF-8402 with LC connector
- Single 3.3V power supply
- Power dissipation < 1.5 W
- Case operating temperature
 - Industrial: -40 °C to 85 °C
- Compliant with SFF-8472 & 8431
- RoHS Compliant

Applications

- 25GBASE-LR
- eCPRI & CPRI

Ordering Information

Part Number	Description
VS-25LR1IS-AA	25G SFP28, LR, 10km SMF, 1310nm, Duplex-LC, I-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	Ts	-40		85	°C	
Relative Humidity	RH	5		95	%	
Power Supply Voltage (Maximu)	VCC	-0.3		4	V	
Signal Input Voltage	VSI	Vcc-0.3		Vcc+0.3	V	
Rx Damage Threshold	PRdmg	3			dBm	
Case Operating Temperature	Tcase	-40		85	°C	
Power Supply Voltage (Recommended)	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC			450	mA	
Data Rate	BR		25.78		Gbps	
Transmission Distance	TD			10	km	
Coupled fiber	Single mode fiber (9/125um SMF)					

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Average Launched Power	PO	-7.0		+2.0	dBm	
Average Launched Power (Laser Off)	Poff			-30	dBm	
Center Wavelength Range	λ_C	1295	1310	1325	nm	
Spectrum Bandwidth(-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.0			dB	1
Output Eye Mask	{0.31,0.4,0.45,0.34,0.38,0.4}					

1. Measured with a PRBS 2³¹-1 test pattern, @25.78Gb/s

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Input Optical Wavelength	λ_{IN}	1295		1325	nm	
Receiver Sensitivity (Average power)	Psen			-10.3	dBm	1
Input Saturation Power (Overload)	PSAT	2.0			dBm	1
Los Of Signal Assert	PA	-30			dBm	
Los Of Signal De-assert	PD			-15	dBm	
LOS -Hysteresis	PHys	0.5		6	dB	

1. Measured with Light source 1310nm, ER=3.0dB; 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	

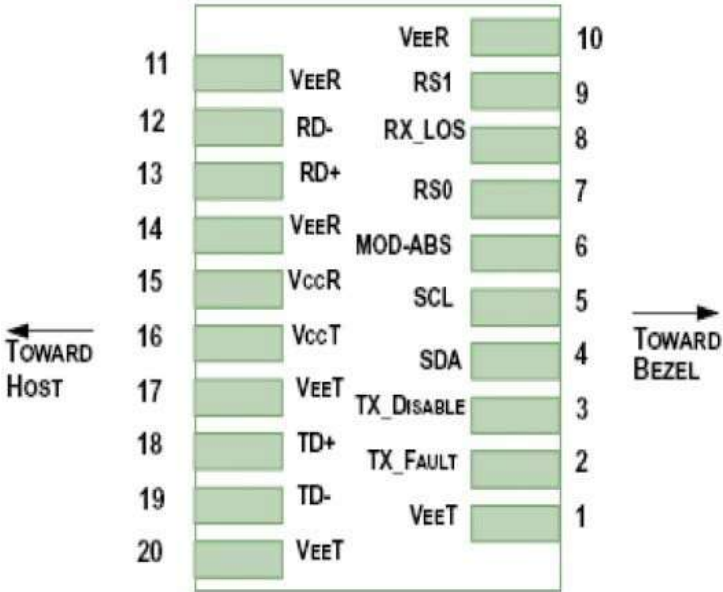
1. Connected directly to TX data input pins. AC coupled thereafter

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

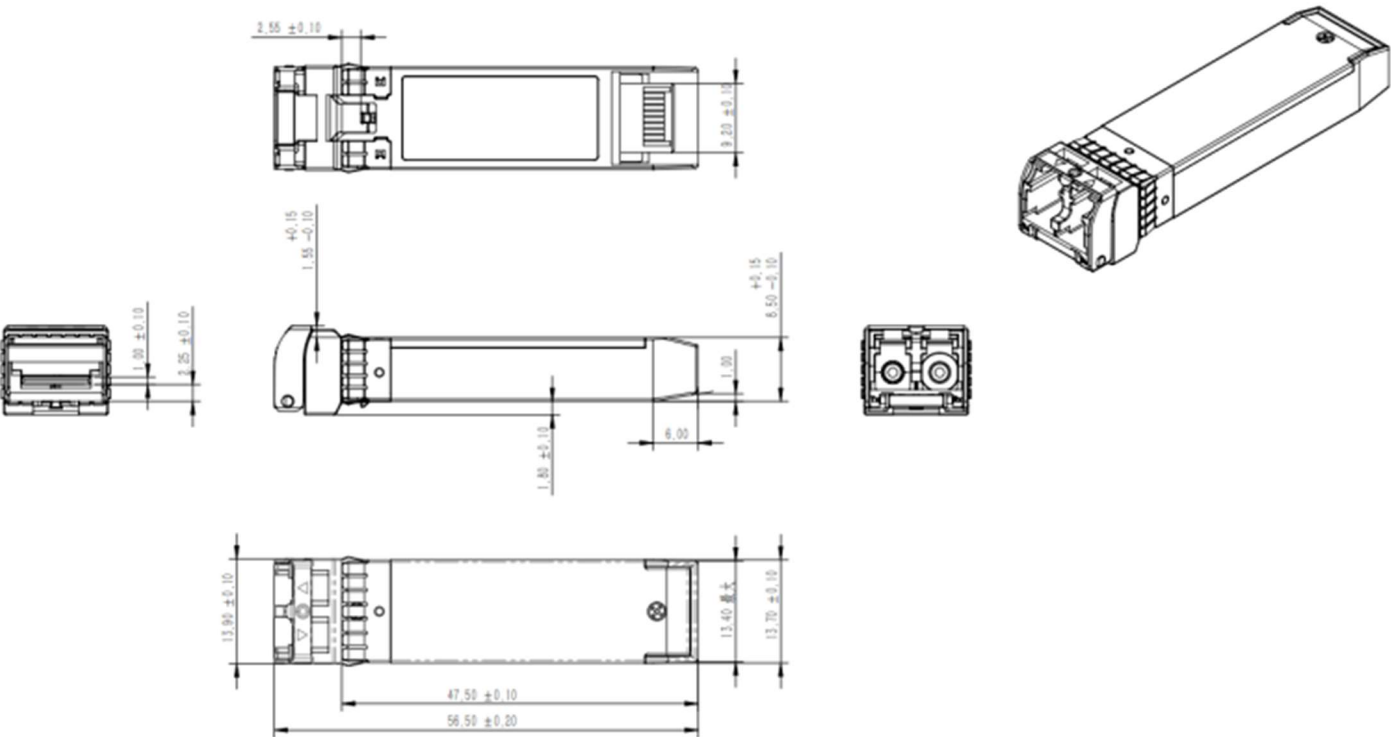


Electrical Pin Definition

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. T_{FAULT} 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 V_{cc} + 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 T_{DIS}>2.0V or open, enabled on T_{DIS}<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
1/4/2018	1.0	Initial Release
5/26/2020	1.1	Mechanical Dimensions update
2/4/2025	2.0	New branding guidelines
2/19/2025	2.1	Updated Specs

For more information

Vitex LLC
32 Mercer St.
Hackensack, NJ 07601

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

