25G SFP28 LR DWDM Optical Transceiver
PN: VS-25LR1xxx-EA

Product Overview

Vitex's VS-25R1xS-EA is a high-performance optical transceiver. They are compliant with SFF-8472 and 8431 standards, providing a fast and reliable interface for 25G Ethernet applications. With a hot pluggable design, and metal enclosure for EMI resistance, this SFP28 is capable of being used in applications of up to 15km.

Features

- Hot-pluggable SFP28 footprint
- Data rate from 24.33Gbps to 25.78Gbps
- Up to 15km reach with APD receiver
- 100GHz ITU, C Band DWDM Cooled EML laser
- Full Duplex LC connector
- Single 3.3V power supply
- Built-in digital diagnostic functions
- Power dissipation:
  - Commercial <1.8W
  - Industrial <2.0W
- Operating case temperature
  - Commercial: 0°C to +70°C
  - Industrial: -40°C to +85°C
- Compliant to SFF-8431
- Compliant to SFF 8472
- RoHS Compliant

Applications

- 25GBASE-ER
- eCPRI and eCPRI

Ordering Information

Part Number	Description
VS-25LR1Cxx-EA	25G SFP28 15km SMF, DWDM, C-Band, Duplex-LC, C-temp
VS-25LR1Ixx-EA	25G SFP28 15km SMF, DWDM, C-Band, Duplex-LC, I-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	Ts	-40		85	°C	
Relative Humidity	RH	0		85	%	
Power Supply Voltage (Maximum)	VCC	-0.3		4.00	V	
Case Operating Temperature	Tcase	0		70	°C	Commercial
		-40		85	°C	Industrial
Power Supply Voltage (Recommended)	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-		550	mA	Commercial
				600	mA	Industrial
Data Rate	BR		25.78		Gbps	TX Rate/RX Rate
Transmission Distance	TD		10		km	
Coupled fiber	Single mode fiber					9/125um SMF

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Wavelength	λ	1528.77		1563.05	nm	
Center Wavelength Spacing		100			GHz	
Average Launched Power	PO	0		5	dBm	
Extinction Ratio	ER	6			dB	
Average Launched Power(Laser Off)	Poff			-30	dBm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN $_{20}$ OMA			-130	dB/Hz	

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Center Wavelength	λ_{IN}	1260		1620	nm	
Receiver Overload	$P_{overload}$	-5			dBm	
Receiver Sensitivity @5E-5 BOL	P_{sen} BOL			-18.5	dBm	1
Receiver Sensitivity @5E-5 EOL	P_{sen} EOL			-18	dBm	1
Receiver Sensitivity @5E-5 EOL after 10km fiber transmission	P_{senl} EOL			-14	dBm	1
Los Of Signal Assert	PA	-35			dBm	
Los Of Signal De-assert	PD			-24	dBm	
LOS -Hysteresis	PHys	0.5		6	dB	

1. Measured at 5E-5, ER>6dB, PRBS 2^{31} -1

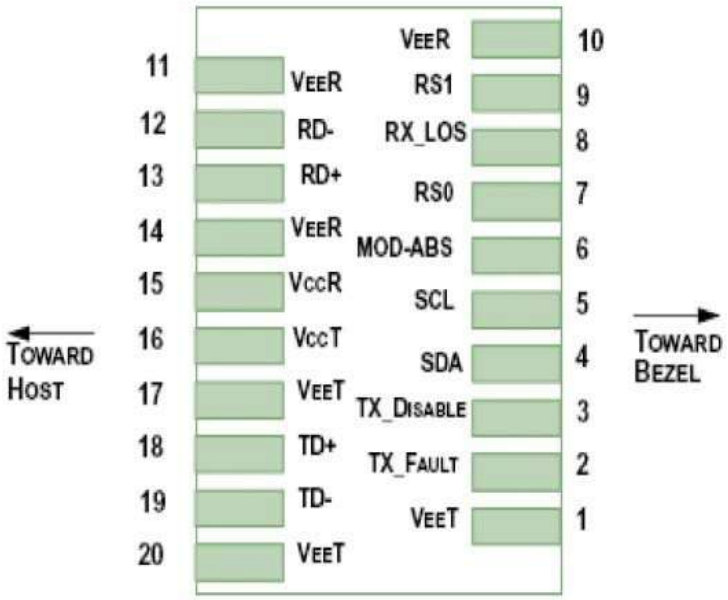
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Data Input Swing Differential	VIN	190		700	mV	
Differential line input Impedance	RIN	80	100	120	Ohm	
Transmitter Fault Output-High	VFaultH	2		Vcc+0.3	V	
Transmitter Fault Output-Low	VFaultL	VEE		VEE +0.8	V	
Transmitter Disable Voltage- High	VDisH	2		Vcc+0.3	V	
Transmitter Disable Voltage- low	VDisL	VEE		VEE +0.8	V	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Differential line Output Impedance	R_{OUT}	80	100	120	Ohm	
Differential Data Output Voltage	V_{DR}	350		850	mVp-p	
LOS Output Voltage-High	V_{LOSH}	2		Vcc+0.3	V	
LOS Output Voltage-Low	V_{LOSL}	VEE		VEE +0.8	V	
Cold-Start time	$T_{start-cooled}$			35	s	

Electrical Connector Layout

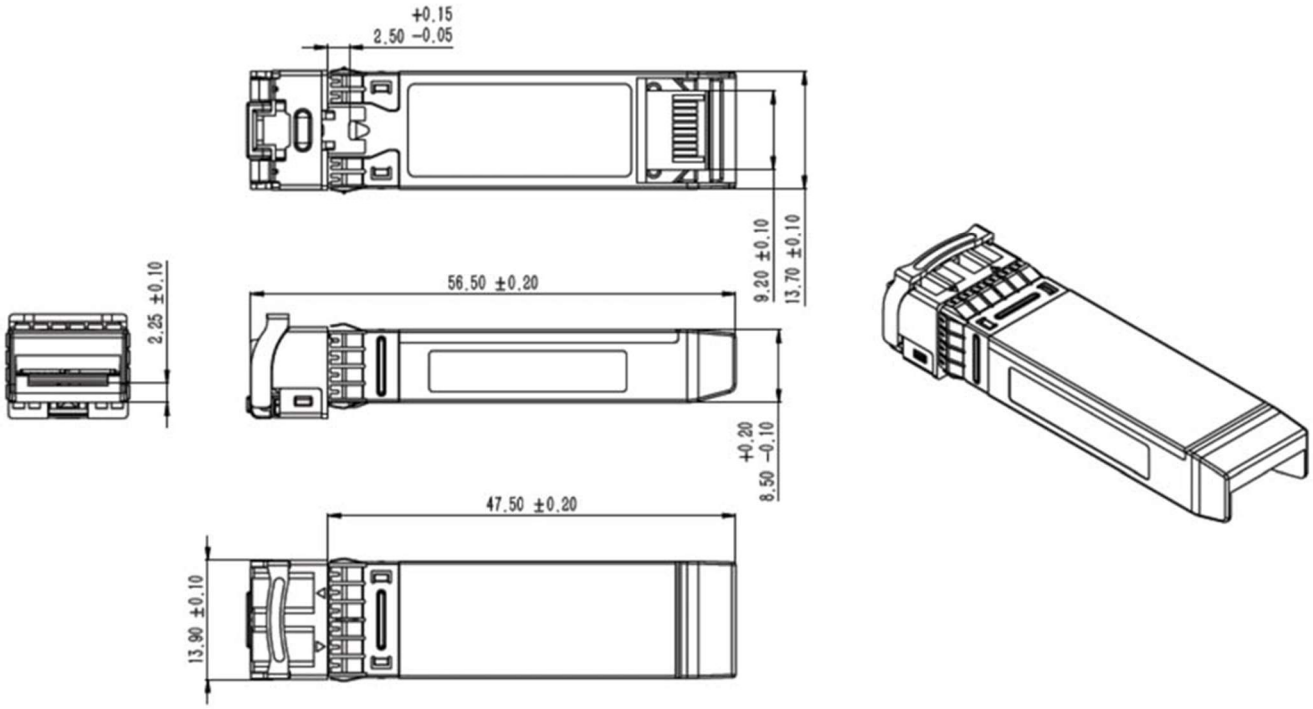


Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	2
3	TDIS	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	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	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	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	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	VEET	Transmitter Ground (Common with Receiver Ground)	1

1. Circuit ground is internally isolated from chassis ground.
2. If it is intended for use, it should be pulled up with a 4.7k – 10k Ohms resistor on the host board. The pull-up voltage should be between 2.0V and 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 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. Internally pulled down per SFF-8431 Rev 4.1.
6. LOS is an 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

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