25G SFP28 BiDi 40km Optical Transceiver

PN: VS-25ER1IBxS-AA

Product Overview

Vitex VS-25ER1IBxS-AA is designed for 40km reach applications from 24.33Gb/s to 25.78Gb/s BI-direction single mode fiber cables. It consumes low power, operates based on 3.3V DC power supply and is offered in the industrial temperature range. They are compliant with SFP28 MSA, SFF-8431 and SFF-8432 standards.

Features

- Operating data rate up to 25.78Gbps
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- Rate Adaptation
- LC simplex connector
- Hot pluggable 20pin connector
- Low power consumption < 1.5 W
- Single +3.3V ±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant
- Operating temperature range:
    - Industrial: -40°C to +85°C

Applications

- 25GE BASE-LR Ethernet
- CPRI Option 10/eCPRI

Ordering Information

Part Number	Description
VS-25ER1IB1S-AA	25G SFP28 BiDi 40km SMF, 1270/1330nm, Simplex-LC, I-temp
VS-25ER1IB2S-AA	25G SFP28 BiDi 40km SMF, 1330/1270nm, Simplex-LC, I-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	Ts	-40		85	°C	
Relative Humidity	RH	0		85	%	
Case Temperature	Tc	-40		85	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.46	V	
Bit Rate	BR		25.78		Gbps	
Bit Error Ratio	BER			$5*10^{-5}$		
Max Supported Link Length	L			40	km	

Optical – Transmitter

Parameter		Symbol	Min	Typical	Max	Unit	Notes
Center Wavelength	VS-25ER1IB1S-AA	λ	1260	1270	1280		
	VS-25ER1IB2S-AA	λ	1320	1330	1340		
Average Output Power		Pav	0		6	dBm	
Spectral Width (-20dB)		σ			1	nm	
Extinction Ratio		ER	3.5			dB	
Side Mode Suppression Ratio		SMSR	30			dB	
Average Launch Power of OFF Transmitter		POFF			-30	dBm	
Relative Intensity Noise		RIN			-128	dB/Hz	

Optical – Receiver

Parameter		Symbol	Min	Typical	Max	Unit	Notes
Center Wavelength	VS-25ER1IB1S-AA	λC	1320	1330	1340	nm	
	VS-25ER1IB2S-AA	λC	1260	1270	1280	nm	
Receiver Sensitivity (OMA)		RSENSE			-19	dBm	1
Receiver Overload (OMA)		Pmax	-5			dBm	
Receiver Reflectance					-12	dB	
LOS Assert		LOSA	-35			dBm	
LOS De-Assert LOS		LOSD			-21	dBm	
LOS Hysteresis			0.5			dB	

1. Measured at 25.78125Gb/s, ER>3.5dBm, PRBS 231-1 and BER better than or equal to 5E-5.

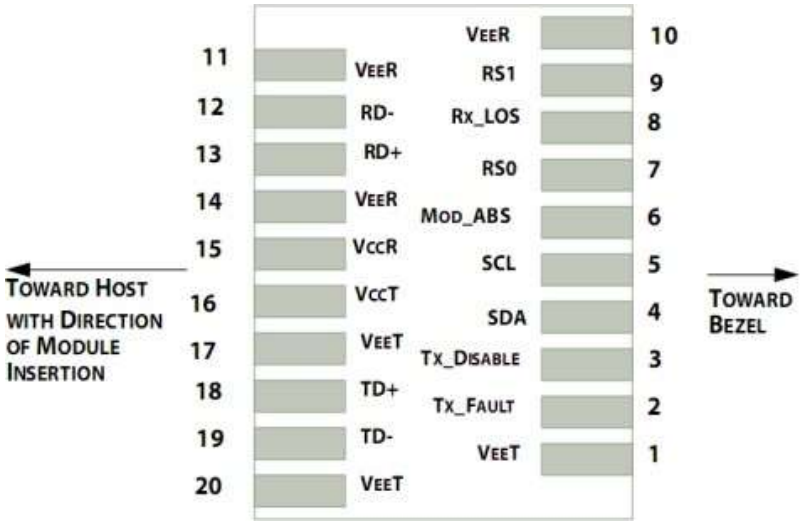
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Input Differential Impedance	RIN		100		Ω	
Single-ended Data Input Swing	VIN	90		450	mVp-p	
Transmit Disable Voltage	VDIS	2		V_{CCHOST}	V	
Transmit Enable Voltage	VEN	V_{EE}		V_{EE}+0.8	V	
Transmit Fault Assert Voltage	VFA	2		V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	VFDA	V_{EE}		V_{EE}+0.4	V	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Single-ended Data Output Swing	VOD	200		450	mVp-p	
LOS Fault	VLOSFT	2		V_{CCHOST}	V	
LOS Normal	VLOSNR	VEE		VEE+0.4	V	

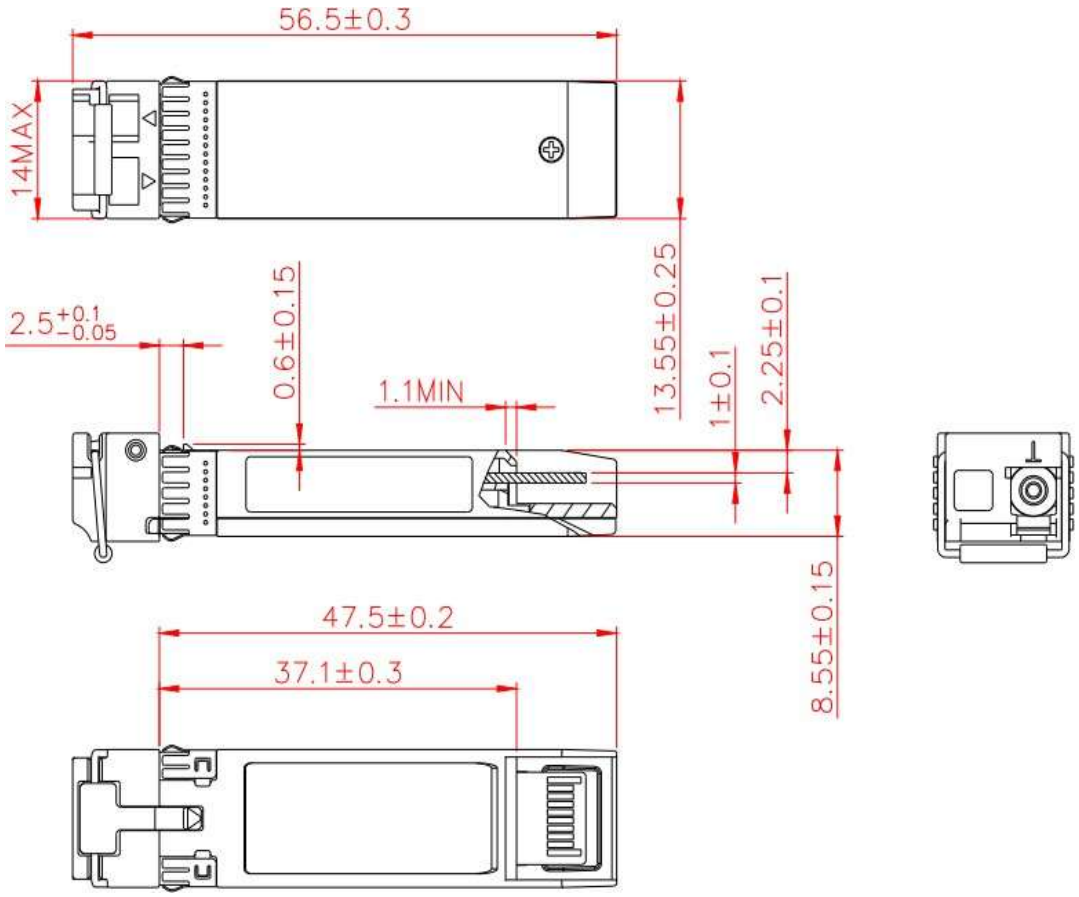
Electrical Connector Layout



Electrical Pin Definition

PIN #	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	Connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Module transmitter fault output.
3	TX Disable	Transmitter Disable In (LVTTL)	Module transmitter disable control.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	Rate select 0(Rx) :Low=CDR Bypass ; High=CDR Select Rate select 1(Tx):Low=CDR Bypass ; High=CDR Select
9	RS1		
8	LOS	Loss of Signal Out (OC)	Receiver loss of signal.
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out (CML)	Receiver non-inverted data output, internally AC coupled and terminated.
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply.
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply.
18	TD+	Transmitter Positive DATA In(CML)	Transmitter non-inverted data input, internally AC coupled and terminated.
19	TD-	Transmitter Negative DATAIn (CML)	Transmitter inverted data Input, internally AC coupled and terminated.

Mechanical Dimensions



Revision History

Date	Rev	Description
09/20/2023	1.0	Release version
02/17/2025	2.0	New branding guidelines

For more information

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