1G SFP 80Km
VS-01ZR1CS-AA

Product Overview

The VS-01ZR1CS-AA is a 1.25Gbps SFP ZR transceiver designed for long-distance single-mode fiber (SMF) communication up to 80km. It operates at 1550nm using a DFB laser transmitter and PIN-TIA receiver, features a duplex LC connector, and is hot-pluggable. It supports standard commercial operating temperatures (0 to 70°C) and uses a single 3.3V power supply.

Features

- 0 to 70°C operating case temperature
- SFP package with duplex LC Receptacle connector
- Hot-pluggable capability
- Single 3.3V power supply
- 1550nm DFB Laser Transmitter and High performance PIN-TIA Receiver
- Data links up to 1.25Gbps
- Up to 80km transmission distance with SMF
- Low power dissipation
- Digital diagnostic monitor interface
- Low EMI and excellent ESD protection
- Class I laser safety standard IEC-60825 compliant
- RoHS 6 compliance

Applications

- Gigabit Fiber Channel
- Gigabit Ethernet

Standards

- Complies with SFP MSA
- Complies with SFF 8472
- Complies with FCC 47 CFR Part 15, Class B
- Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Ordering Information

Part Number	Description
VS-01ZR1CS-AA	1.25G SFP ZR, 80km SMF, 1550nm, Duple- LC, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Ambient Temperature	T_{STG}	-40		85	ºC	
Operating Case Temperature	T_c	0		70	ºC	
Operating Humidity	OH	5		95	%	
Power Supply Voltage (Maximum)	V_{CC}	0		4	V	
Power Supply Voltage (Recommended)	V_{CC}	3.13	3.3	3.47	V	
Power Supply Current	I_{CC}			300	mA	
Date Rate			1.25		Gbps	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Center Wavelength	λc	1500	1550	1580	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	Po	-2		5	dBm	
Extinction Ratio	ER	9			dB	
Tx Disabled Average Output Power				-45	dBm	
Optical Rise/Fall Time	Tr/Tf			0.26	ns	
Relative Intensity Noise	RIN			-117	dB/Hz	
Output Optical Eye Diagram	Compatible with IEEE 802.3z					Measured with PRBS 2^7-1

Optical - Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Operating Wavelength	λc	1260		1580	nm	
Sensitivity	SEN			-26	dBm	Measured with PRBS 2^7-1, BER≤10^{-12}, 1.25Gpbs, ER=9dB
Saturation Optical Power	SAT	-3			dBm	
Loss of Signal De-Assert Level	LOSD			-27	dBm	
Loss of Signal Assert Level	LOSA	-36			dBm	
Hysteresis		0.5		5	dB	

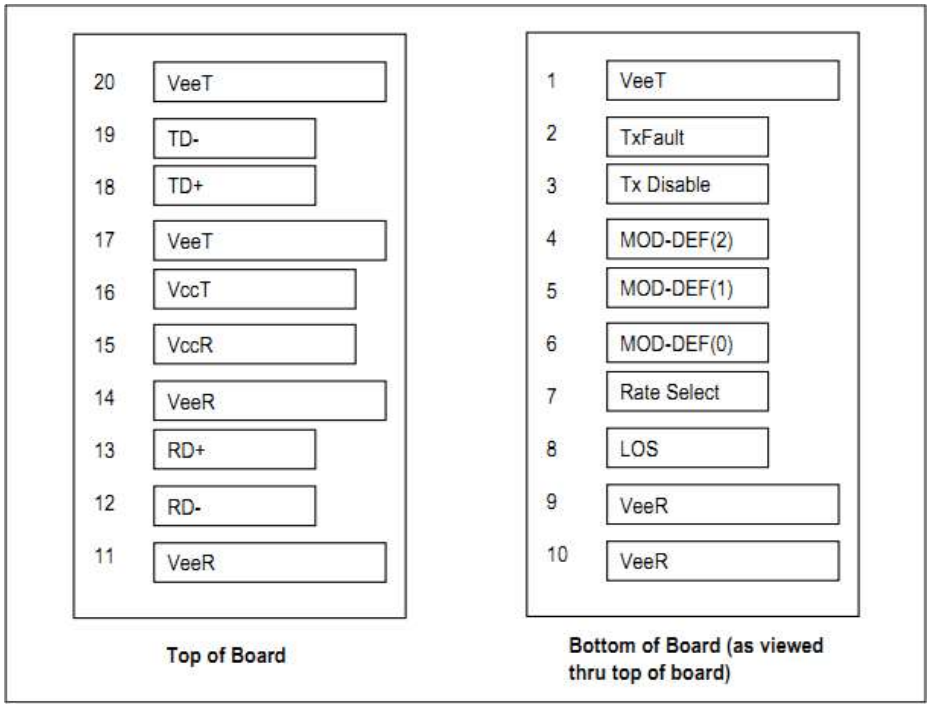
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Data Input Differential Swing		200		2000	mV	LVPECL, AC coupled
Input Differential Impedance		90	100	110	Ω	
Transmitter TxDisable Voltage - Low		-0.3		0.8	V	
Transmitter TxDisable Voltage - High		2.4		V_{CCHOST}	V	
TX Fault Voltage - Low		-0.3		0.4	V	
TX Fault Voltage - High		2.4		V_{CCHOST}	V	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Data Output Differential Swing		200		1600	mV	CML, AC coupled
Loss of Signal - Low		-0.3		0.4	V	
Loss of Signal - High		2.0		V_{CCHOST}	V	

Electrical Connector Layout



Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	$V_{EE}T$	Transmitter Ground	
2	TX Fault	Transmitter Fault Indication	High: abnormal; Low: normal
3	TX Disable	Transmitter Disable	High: transmitter disable; Low: transmitter enable
4	MOD-DEF2	Module Definition 2	The data line of two wire serial interface
5	MOD-DEF1	Module Definition 1	The clock line of two wire serial interface
6	MOD-DEF0	Module Definition 0	Connected to Ground in the transceiver
7	NC	NC	
8	LOS	Loss Of Signal	Low: when signal detected; High: when loss of signal;
9	$V_{EE}R$	Received Ground	
10	$V_{EE}R$	Receiver Ground	
11	$V_{EE}R$	Receiver Ground	
12	RD-	Inv. Receiver Data Out	CML logic output, AC coupled
13	RD+	Receiver Data Out	CML logic output, AC coupled
14	$V_{EE}R$	Received Ground	
15	$V_{CC}R$	Receiver Power	
16	$V_{CC}T$	Transmitter Power	
17	$V_{EE}T$	Transmitter Ground	
18	TD+	Transmit Data In	LVPECL logic input, AC coupled
19	TD-	Inv. Transmit Data In	LVPECL logic input, AC coupled
20	$V_{EE}T$	Transmitter Ground	

Revision History

Date	Rev	Description
07/15/2024	1.0	Release version
01/24/2025	1.1	New branding guidelines

For more information

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