
SFP Gigabit Ethernet Transceiver

VS-01SR1CS-AA

Product Overview

The VS-01SR1CS-AA is an SFP Gigabit Ethernet transceiver featuring Class I laser safety compliance, an operating temperature range of 0 to 70°C, and a single 3.3V power supply. It supports distances up to 550m on 50/125µm multimode fiber, with an operational data rate of up to 1.25Gb/s. The device is packaged in an SFP form factor with an LC receptacle connector, offers hot-pluggable capability, and utilizes an 850nm VCSEL-based transmitter.

Features

- 0 to 70°C operating case temperature
- Single 3.3V power supply
- Up to 550m on 50/125µm MMF
- Operation data rate: up to 1.25Gb/s
- SFP package with LC Receptacle connector
- Hot-pluggable capability
- 850nm VCSEL-based transmitter
- LVPECL compatible data input/output interface
- Low power dissipation
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- Class I laser product, RoHS compliance

Applications

- Gigabit Ethernet application: 1000Base-SX

Standards

- Complies with SFP MSA
- Complies with IEEE 802.3
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11, Class I
- Complies with FDA 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-01SR1CS-AA	1.25G SFP SR, 500m MMF, 850nm, Duplex-LC, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Ambient Temperature	TSTG	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Operating Humidity	OH	5		95	%	
Power Supply Voltage (Maximum)	VCC	-0.5		4.0	V	
Power Supply Voltage (Recommended)	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			300	mA	
Date Rate				1.25	Gbps	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Average Launch Optical Power	P _{OUT}	-9		-3	dBm	
Extinction Ratio	ER	9			dB	
Centre Wavelength	λ	820	850	860	nm	
Spectral Width (-20dB)	$\Delta\lambda$			0.85	nm	
Rise/Fall Time (20%~80%)	tr/ta			0.26	ns	Unfiltered PRBS2 ⁷ -1 @1.25Gbps
Total Jitter	TJ			0.431	UI	
Deterministic Jitter	DJ			0.2	UI	PRBS 2 ⁷ -1 @1.25Gbps
Eye Diagram	IEEE 802.3z and ANSI Fiber Channel Compatible					PRBS 2 ⁷ -1 @1.25Gbps

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical Center Wavelength	λ_c	760		860	nm	
Receiver Sensitivity				-17	dBm	PRBS 2 ⁷ -1@1.25Gbps BER $\leq 1 \times 10^{-12}$.
Receiver Overload		0			dBm	PRBS 2 ⁷ -1@1.25Gbps BER $= 1 \times 10^{-12}$.
Return Loss		12			dB	
Los Assert		-40			dBm	
Los De-assert				-20	dBm	
Total Jitter	TJ			0.749	UI	
Deterministic Jitter	DJ			0.462	UI	
Data Output Swing Differential	VOUT	400		1200	mV	
RX_Los Voltage	High	2.0		Vcc	V	
	Low	0		0.5	V	

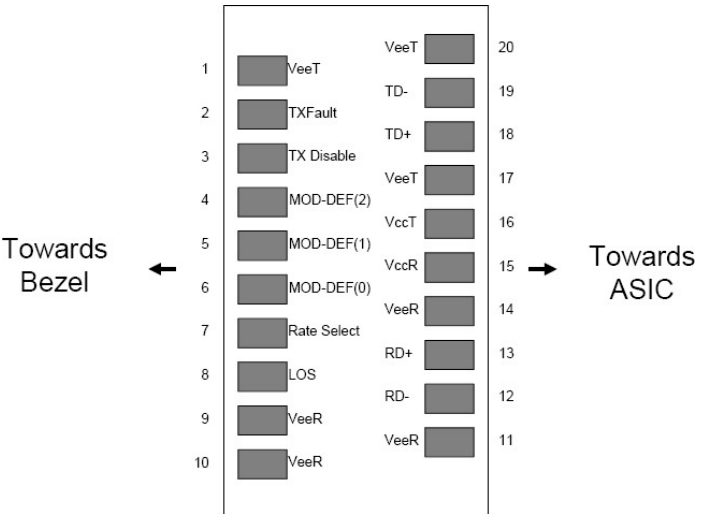
Electrical – Transmitter

Parameter		Symbol	Min	Typical	Max	Unit	Remarks
Data Input Swing Differential		VIN	90	100	110	Ω	
Input Differential Impedance		ZIN	500		2000	mV	
TX_Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX_Fault	Fault		2.0		Vcc	V	
	Normal		0		0.5	V	

Electrical – Receiver

Parameter		Symbol	Min	Typical	Max	Unit	Remarks
Optical Center Wavelength		λC	760		860	nm	
Receiver Sensitivity					-17	dBm	PRBS 2 ⁷ -1 @1.25Gbps BER ≤1×10 ⁻¹² .
Receiver Overload			0			dBm	PRBS 2 ⁷ -1 @1.25Gbps BER ≤1×10 ⁻¹² .
Return Loss			12			dB	
Los Assert			-40			dBm	
Los De-assert					-20	dBm	
Total Jitter		TJ			0.749	UI	
Deterministic Jitter		DJ			0.462	UI	
Data Output Swing Differential		VOUT	400		1200	mV	
RX_Los Voltage	High		2.0		Vcc	V	
	Low		0		0.5	V	

Electrical Connector Layout



Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	VeeT	Transmitter Ground	
2	TX Fault	Transmitter Fault	Low: normal; High: abnormal
3	TX Disable	Transmitter Disable	Low: transmitter on; High: transmitter off
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 GND in the transceiver
7	Rate Select	No connect	
8	LOS	Loss of Signal indication	Low: signal detected; High: loss of signal
9	VeeR	Receiver Ground	
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
12	RD-	Inverted Received Data Out	AC-coupled
13	RD+	Non-inverted Received Data Out	AC-coupled
14	VeeR	Receiver Ground	
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	
18	TD+	Non-Inverted Transmit Data in	AC-coupled
19	TD-	Inverted Transmit Data in	AC-coupled
20	VeeT	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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