

10G SFP+ ZR BiDi DWDM Tunable Optical Transceiver

PN: VS-10ZR1CZS-AA

Product Overview

VS-10ZR1CZS-AA is a hot pluggable 3.3V Small-Form-Factor pluggable and tunable SFP+ transceiver module for use in 9.95Gb/s to 11.3Gb/s applications. It is designed for high-speed communication applications that support SONET OC-192, SDH STM-64 over 80/100km of G.652 single mode fiber. Digital diagnostic functions are available via the 2-wire serial interface, as specified in SFF-8431 standards.

Features

- Supports 9.95 to 11.3Gb/s
- Support 80 km link distances
- 50GHz ITU-based channel spacing (C-Band) with a wavelength locker
- Monolithic MZM Tunable TOSA
- APD receiver with limiting amplifier
- Duplex LC connector
- Low power consumption: <1.8W
- Positive power supply lines: 3.3 V
- Operating case temperature range: 0 to 70°C
- RoHS 6 compliant
- Compliant with SFF-8431 / SFF-8690

Applications

- DWDM 10Gb/s SONET/SDH
- DWDM 10Gb/s Ethernet
- DWDM 10Gb/s SONET/SDH w/FEC

Ordering Information

Part Number	Description
VS-10ZR1CZS-AA	10G SFP+ ZR, 80km SMF, C-band, tunable, 50GHz grid, DWDM, Duplex-LC, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	Tstg	-40		85	°C	
Relative Humidity - Storage	RHO	5		95	%	
Relative Humidity - Operating	RHS	5		85	%	
Power Supply (Maximum)	VCC	-0.5		3.6	V	
Case Operating Temperature		0	25	70	°C	
DC Supply Voltage (Recommended)	VCC	3.14		3.46	V	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Average Output Power	POUT	-1		4	dBm	
Optical Wavelength	λ	As per ITU-T 694.1, 50GHz Spacing 1529.16 to 1567.13			nm	191.30GHz to 196.05GHz
Center Wavelength	λ_{c_BOL}	z-1.5	z	Z+1.5	GHz	
Center Wavelength	λ_{c_EOL}	z-2.5	z	Z+2.5	GHz	
Center Wavelength Spacing			50		GHz	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Output Power (Laser Off)	POFF			-30	dBm	
Dispersion Penalty	DP			3	dB	
Extinction ratio	ER	8.2			dB	
Relative Intensity Noise	RIN			-130	dB/Hz	
Optical Return Loss Tolerance	ORLT			20	dB	

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Center Wavelength		1260		1600	nm	
Received Sensitivity	PIN			-24	dBm	1
Optical Power Overload	POL	-7			dBm	
Receiver Reflectance	RFL			-27	dB	
Rx_LOS of Signal Assert	PA	-36			dBm	
Rx_LOS of Signal De-assert	PD			-25	dBm	
Rx_LOS of Signal Hysteresis	PHY	0.5		6	dB	

1. Measured with RPBS 2^31-1 test pattern @10.3125Gb/s, ER=8.2dB, BER=1E-12

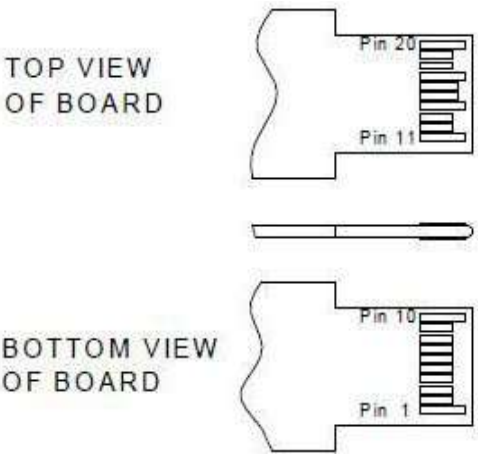
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Differential Data input Swing	VIN			900	mV	Refer to CEI- 28G_VSR
Input Differential Impedance	Zin		100		Ω	
Transmitter Disable Voltage	VD	2.0		Vcc	V	
Transmitter Enable Voltage	VEN	0		0.8	V	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Differential Data Output Swing	VouT	450	600	750	mV	
Output Differential Impedance	Zout		100		Ω	
LOS Assert Voltage	VLOSA	2.0		Vcc	V	
LOS De-assert Voltage	VLOSD	0		0.8	V	

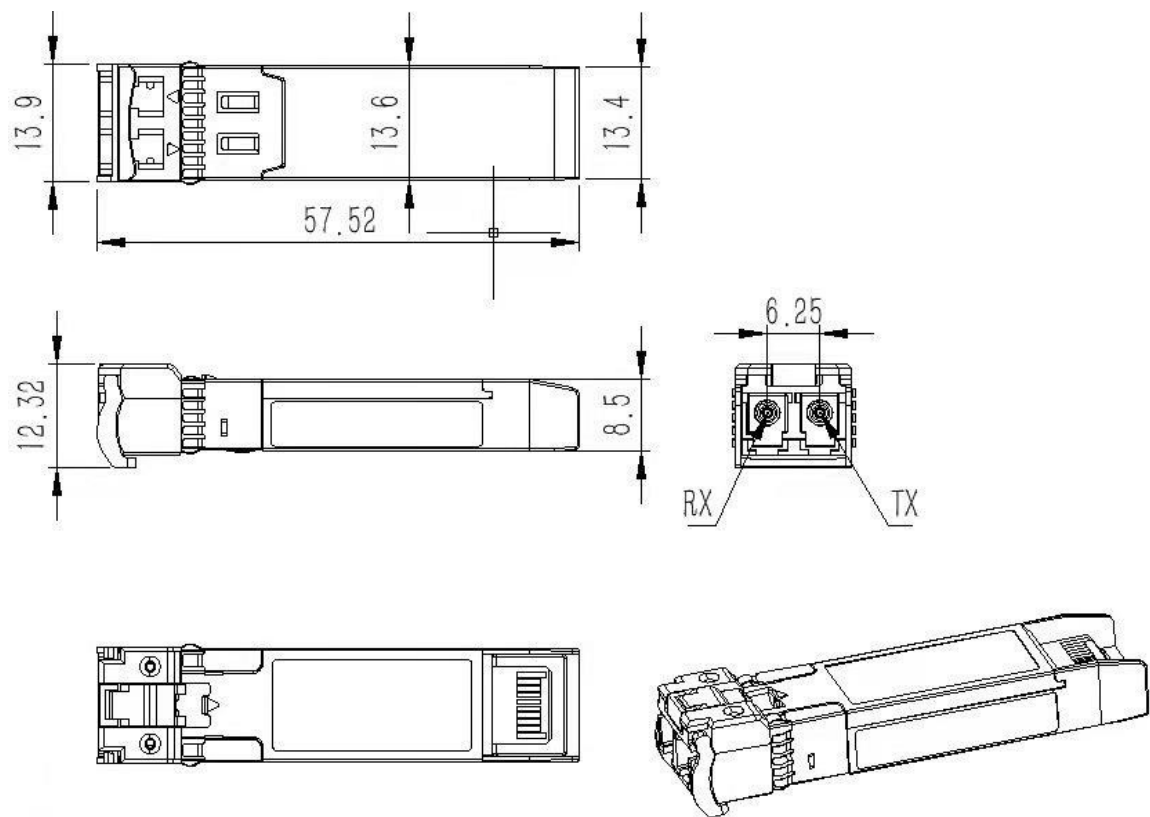
Electrical Layout



Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	Veet	Transmitter Ground (Common with Receiver Ground)	
2	TxFault	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	
4	SDA	2-wire Serial Interface Data Line	
5	SCL	2-wire Serial Interface Clock Line	
6	MOD_ABS	Module Absent. Grounded within the module	
7	RS0	Rate Select 0	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	
9	RS1	No connection required	
10	VEER	Receiver Ground (Common with Transmitter Ground)	
11	VEER	Receiver Ground (Common with Transmitter Ground)	
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)	
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	
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)	

Mechanical Dimensions



Revision History

Date	Rev	Description
03/21/2024	1.0	Initial Release
02/17/2025	2.0	New branding guidelines
3/10/2025	3.0	New Part Number assigned (old PS : VS-10ZRICDS-AA)

For more information

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