
SFP+ DWDM 40KM Transceiver

VS-10ER1IyyS-AA

Product Overview

The VS-10ER1IyyS-AA is an SFP+ DWDM transceiver designed for 40km reach, supporting bit rates from 9.95Gb/s to 11.1Gb/s. It operates with a 3.3V power supply, utilizes a duplex LC connector, and adheres to the 100GHz ITU Grid, C Band. This transceiver features a temperature-stabilized 1550nm DWDM EML transmitter and a high-performance APD receiver, and is rated for an Industrial temperature range of -40°C to 85°C.

Features

- Supports 9.95Gb/s to 11.1Gb/s bit rates
- Maximum link length of 40km
- 3.3V power supplies required
- SFP+ package with Duplex LC connector
- 100GHz ITU Grid, C Band
- Temperature-stabilized 1550nm DWDM EML transmitter and High performance APD receiver
- Industrial temperature range: -40°C to 85°C
- Built-in CDR, Digital diagnostic monitor interface
- RoHS-6 Compliant
- SFI electrical interface

Applications

- DWDM Network
- OTN
- 10GBASE-ER/EW
- 10Gb/s Fiber Channel

Standards

- Compliant with IEEE 802.3ae, Compliant with ITU-T G.691
- Complies with SFP+ MSA (SFF-8431), 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-10ER1IyyS-AA	10G SFP+ ER, 40km SMF, C-band, fixed, 100GHz grid, DWDM, Duplex-LC, I-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Ambient Temperature	T_{STG}	-40		95	°C	
Operating Case Temperature	T_C	-40		85	°C	
Operating Humidity	OH	5		95	%	
Power Supply Voltage (Maximum)	V_{CC}	0		3.6	V	
Power Supply Voltage (Recommended)	V_{CC}	3.13	3.3	3.47	V	
Power Supply Current	I_{CC}			650	mA	
Date rate			10.31	11.3	Gbps	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Average Launch Optical Power	P_{OUT}	-1		4	dBm	
Extinction Ratio	ER	9			dB	
Centre Wavelength space			100		GHz	
Centre Wavelength (BOL)	λ	X-25	X	X+25	pm	
Centre Wavelength (EOL)	λ	X-100	X	X+100	pm	
Spectral Width (-20dB)	$\Delta\lambda$			0.3	nm	
Side Mode Suppression Mode	SMSR	30			dB	
Transmitter Dispersion Penalty (@ 800 ps/nm)	TDP			2	dB	

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Optical Center Wavelength	λ_C	1270	-	1600	nm	
Receiver Sensitivity (BOL)				-24	dBm	RATE:10.3G BER<1E-12
Receiver Overload		-7			dBm	
LOS De-Assert				-29	dBm	
LOS Assert		-36			dBm	
LOS Hysteresis		0.5		5	dB	

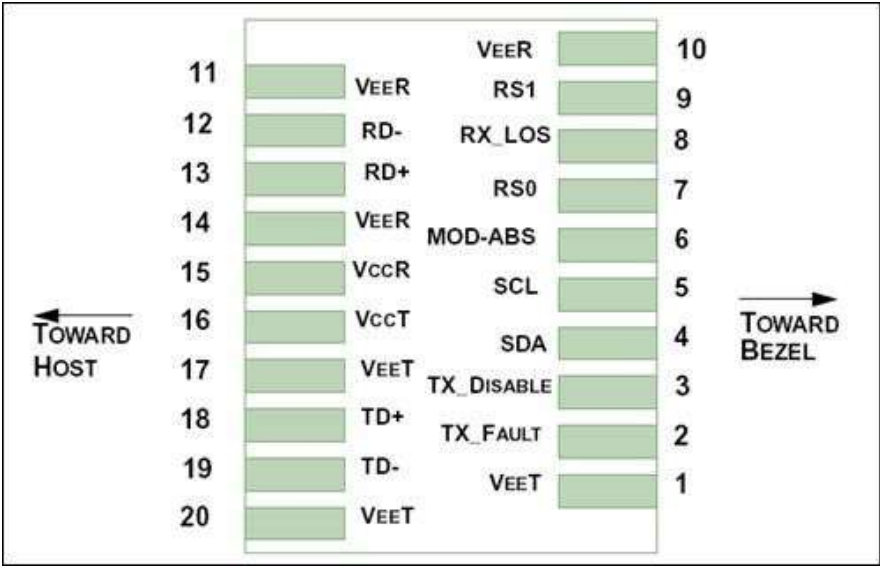
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Input Differential Impedance	ZIN	90	100	110	Ω	
Data Input Swing Differential	VIN	120		820	mV	
Transmit Disable Voltage	V _D	2		VCC	V	
Transmit Enable Voltage	V _{EN}	-0.3		0.8	V	
Transmit Fault – Normal Voltage		-0.3		0.4	V	
Transmit Fault – Fault Voltage		2.4		VCC _{HOST}	V	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Differential data output swing	Vout	340	650	850	mV	
Rx_LOS Output Voltage - High	High	2.4		VCC _{HOST}	V	
Rx_LOS Output Voltage - Low	Low	-0.3		0.4	V	

Electrical Connector Layout

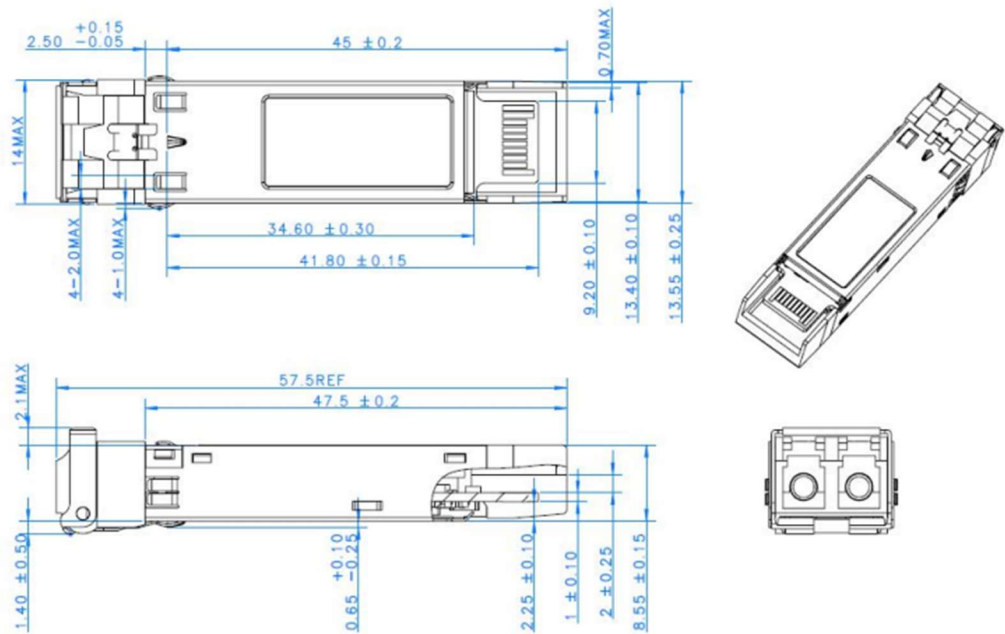


Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	V _{EE} T	Transmitter Ground	
2	TX_Fault	Transmitter Fault Indication	Low: normal; High: abnormal
3	TX_Disable	Transmitter Disable	Low: transmitter on; High: transmitter off
4	SDA	SDA	The data line of two wire serial interface
5	SCL	SCL	The clock line of two wire serial interface
6	MOD_ABS	Module Absent	Connected to V _{EE} T or V _{EE} R in the module
7	RS0	Not Connected	
8	RX_LOS	Loss of Signal	Low: signal detected; High: loss of signal
9	RSI	Not Connected	
10	V _{EE} R	Receiver Ground	
11	V _{EE} R	Receiver Ground	
12	RD-	Inv. Received Data Out	AC-coupled, CML
13	RD+	Received Data Out	AC-coupled, CML
14	V _{EE} R	Receiver Ground	
15	V _{CC} R	Receiver Power	
16	V _{CC} T	Transmitter Power	
17	V _{EE} T	Transmitter Ground	
18	TD+	Transmit Data In	AC-coupled, CML
19	TD-	Inv. Transmit Data In	AC-coupled, CML
20	V _{EE} T	Transmitter Ground	

1. Module ground pins Gnd are isolated from the module case and chassis ground within the module.
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Mechanical Diagram





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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