

10G SFP+ ER CWDM 1270~1450nm Optical Transceiver

Part Number: VS-10ER1Cyy-AA

VS-10ER1Cyy-AA is a high performance SFP+ transceiver module for 10 Gigabit Ethernet data links over single-mode fiber.

Features

- Supports 8.5 to 11.3Gb/s bit rates
- Hot pluggable SFP+ footprint
- Compliant with SFF 8472 and IEEE802.3ae
- Transmission distance of 40km over single mode fiber
- 1270~1450nm CWDM DFB transmitter
- PIN Receiver
- Duplex LC connector
- 2-wire interface for management and diagnostic monitor
- Single Power 3.3V supply voltages
- Temperature range 0°C to 70°C
- Power dissipation: <1.5W
- RoHS Compliant Part

Applications

- 10GBASE-ER/EW Ethernet
- 40km 10G Fiber channel
- SONET OC-192/SDH STM-64
- CWDM Networks

Ordering Information

Part Number	Data Rate	Link Length	Laser	Detector	Fiber Type	Temperature
VS-10ER1Cyy-AA	10G	Up to 40km	1270 ~ 1450 nm CWDM DFB	PIN ROSA	SMF	0 – 70°C

xx-channel refers to the following table:

Channel (xx)	Part Number	Center Wavelength (nm)		
		Min.	Typ.	Max.
80	VS-10ER1C80-AA	1263.5	1270	1276.5
81	VS-10ER1C81-AA	1283.5	1290	1296.5
82	VS-10ER1C82-AA	1303.5	1310	1316.5
83	VS-10ER1C83-AA	1323.5	1330	1336.5
84	VS-10ER1C84-AA	1343.5	1350	1356.5
85	VS-10ER1C85-AA	1363.5	1370	1376.5
86	VS-10ER1C86-AA	1383.5	1390	1396.5
87	VS-10ER1C87-AA	1403.5	1410	1416.5
88	VS-10ER1C88-AA	1423.5	1430	1436.5
89	VS-10ER1C89-AA	1443.5	1450	1456.5

Product Overview

Vitex **VS-10ER1Cyy-AA** is a 10Gb/s CWDM transceiver module designed for optical communication applications compliant to Ethernet 10GBASE-ER/EW standard.

The SFP+ Module is compliant with SFF-8431, SFF-8432 and IEEE 802.3ae 10GBASE-ER. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T _s	-40	85	°C
Power Supply Voltage	V _{CC}	-0.5	4	V

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T _c	0		70	°C
Power Supply Voltage	V _{CC}	3.135		3.465	V
Supply Current	I _{CC}			400	mA

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Power Consumption	P			1.5	W
Electrical Transmitter Characteristics					
Input differential impedance ¹	R _{IN}		100		Ω
Differential data input swing ²	V _{IN PP}	180		700	mV
Transmit disable voltage ³	V _D	2		V _{CC}	V
Transmit enable voltage	V _{EN}	V _{EE}		V _{EE} +0.8	V
Electrical Receiver Characteristics					
Differential data output swing	V _{OUT PP}	300		850	mV
Data output rise/fall time ⁴	t _r /t _f	30			ps
LOS Fault ⁵	V _{LOS f}	2		V _{CC HOST}	V
LOS Normal ⁵	V _{LOS n}	V _{EE}		V _{EE} +0.8	V

Note:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
2. Per SFF-8431 Rev 3.0
3. Into 100 ohms differential termination.
4. 20%~80%
5. LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ _c	λ-6.5		λ+6.5	nm
Spectral width	Δλ			1	nm
Average Optical Power ¹	P _{avg}	-0.5		+5.5	dBm
Laser Off Power	P _{off}			-30	dBm
Extinction Ratio	ER	3.5			dB
Transmitter Dispersion Penalty ²	TDP			3.2	dB
Relative Intensity Noise ³	R _{in}			-128	dB/Hz
Optical Return Loss Tolerance		20			dB

Note:

1. Average power figures are informative only, per IEEE802.3ae
2. TWDP figure requires the host board to be SFF-8431 compliant. TWDP is calculated using the MATLAB code provided in clause 68.6.6.2 of IEEE802.3ae.
3. 12dB reflection.

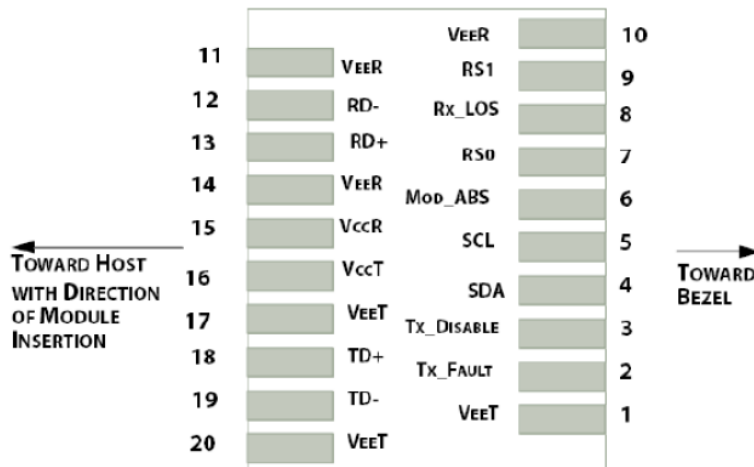
Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ_r	1260		1460	nm
Receiver Sensitivity	Sen			-15	dBm
Stressed Sensitivity (OMA)	Sen _{ST}			-13	dBm
Los Assert	LOS _A	-30		-	dBm
Los De-assert	LOS _D			-17	dBm
Los Hysteresis	LOS _H	0.5			dB
Overload	Sat	0			dBm
Receiver Reflectance	Rrx			-12	dB

Note:

1. Conditions of stressed receiver tests per IEEE802.3ae. CSRS testing requires the host board to be SFF-8431 compliant.
2. Receiver overload specified in OMA and under the worst comprehensive stressed condition.

Electrical Connector Layout

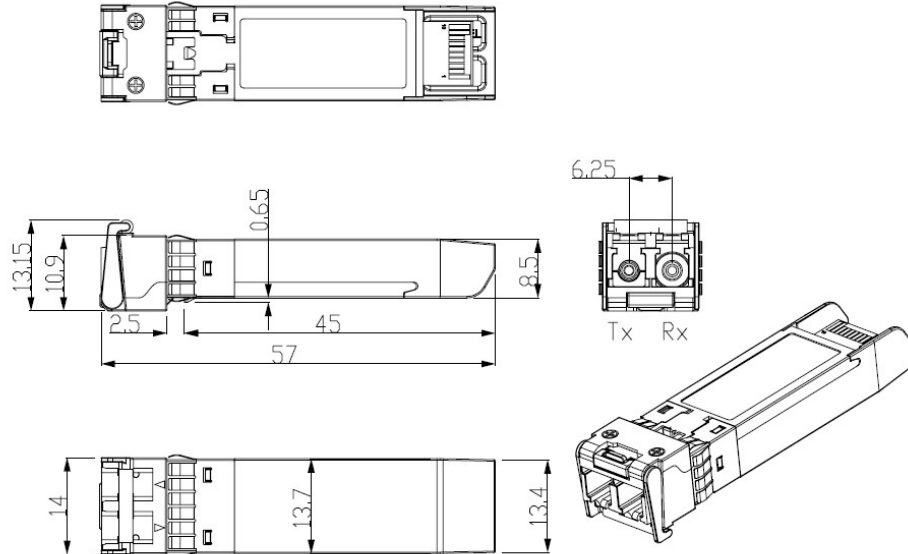


Electrical Pin Definition

Pin	Symbol	Name/Description
1	V _{EET}	Transmitter ground (common with receiver ground) ¹
2	TX_FAULT	Transmitter Fault ²
3	TX DISABLE	Transmitter Disable. Laser output disabled on high or open ³
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 ²
7	RS0	No connection required
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation ⁴
9	RS1	No connection required
10	V _{EER}	Receiver ground (common with transmitter ground) ¹
11	V _{EER}	Receiver ground (common with transmitter ground) ¹
12	RD-	Receiver Inverted DATA out. AC coupled
13	RD+	Receiver Non-inverted DATA out. AC coupled
14	V _{EER}	Receiver ground (common with transmitter ground) ¹
15	V _{CCR}	Receiver power supply
16	V _{CCT}	Transmitter power supply
17	V _{EET}	Transmitter ground (common with receiver ground) ¹
18	TD+	Transmitter Non-Inverted DATA in. AC coupled
19	TD-	Transmitter Inverted DATA in. AC coupled
20	V _{EET}	Transmitter ground (common with receiver ground) ¹

Note:

1. The module ground pins shall be isolated from the module case
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7k – 10kΩ to Host_Vcc on the host board
3. This pin shall be pulled up with 4.7k – 10kΩ to VccT in the module
4. This pin is an open collector/drain output pin and shall be pulled up with 4.7k – 10kΩ to Host_Vcc on the host board

Mechanical Dimensions

ALL DIMENSIONS ARE $\pm 0.2\text{mm}$ UNLESS OTHERWISE SPECIFIED

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