

10G SFP+ LR CWDM Optical Transceiver

Part Number: VS-10LR1Cyy-AA

VS-10LR1Cyy-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
- Duplex LC connector
- 1270 ~ 1610nm CWDM DFB transmitter, PIN photo-detector
- SMF links up to 10km
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface
- Power Supply: +3.3V
- Power consumption < 1.5W
- Temperature Range: 0°C - 70°C
- RoHS compliant

Applications

- 10GBASE-LR/LW Ethernet
- SONET OC-192/SDH STM-64
- 10G Fiber Channel 1200-SM-LL-L

Ordering Information

Part Number	Data Rate	Link Length	Laser	Detector	Fiber Type	Temperature
VS-10LR1Cyy-AA	10G	Up to 10km	1270 ~ 1610nm 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-10LR1C80-AA	1263.5	1270	1276.5
81	VS-10LR1C81-AA	1283.5	1290	1296.5
82	VS-10LR1C82-AA	1303.5	1310	1316.5
83	VS-10LR1C83-AA	1323.5	1330	1336.5
84	VS-10LR1C84-AA	1343.5	1350	1356.5
85	VS-10LR1C85-AA	1363.5	1370	1376.5
86	VS-10LR1C86-AA	1383.5	1390	1396.5
87	VS-10LR1C87-AA	1403.5	1410	1416.5
88	VS-10LR1C88-AA	1423.5	1430	1436.5
89	VS-10LR1C89-AA	1443.5	1450	1456.5
90	VS-10LR1C90-AA	1463.5	1470	1476.5
91	VS-10LR1C91-AA	1483.5	1490	1496.5
92	VS-10LR1C92-AA	1503.5	1510	1516.5
93	VS-10LR1C93-AA	1523.5	1530	1536.5
94	VS-10LR1C94-AA	1543.5	1550	1556.5
95	VS-10LR1C95-AA	1563.5	1570	1576.5
96	VS-10LR1C96-AA	1583.5	1590	1596.5
97	VS-10LR1C97-AA	1603.5	1610	1616.5

Product Overview

Vitex **VS-10LR1Cyy-AA** is a 10Gb/s CWDM transceiver module designed for optical communication applications compliant to Ethernet 10GBASE-LR/LW standard.

The SFP+ Module is compliant with SFF-8431, SFF-8432 and IEEE 802.3ae 10GBASE-LR. 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}			380	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 input voltage 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 output voltage 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
Data Rate		8.5	10.3125	11.3	Gbps
Optical Wavelength	λ	λ-6.5	λ	λ+6.5	nm
Average output power ¹	P _o	-4		+4	dBm
Optical Extinction Ratio ¹	ER	3.5			dB
Spectral Width (RMS)	Δλ			1	nm
Optical Modulation Amplitude	OMA	-5.2			dBm
Side Mode Suppression Ratio	SMSR	30			dB
Dispersion penalty				3.2	dB

Optical Eye Mask		IEEE802.3-2005 Compliant Compliant with ITU-T G.691 and GR-253-CORE	
------------------	--	---	--

Note:

1. Measured at 10.3125Gb/s with PRBS 2³¹ – 1 NRZ test pattern

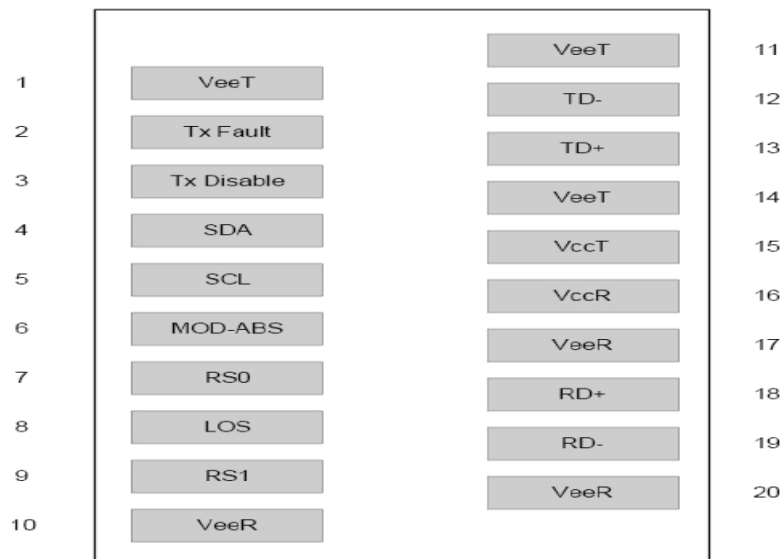
Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit
Date Rate		8.5	10.3125	11.3	Gb/s
Optical Wavelength	λ	1260		1610	nm
Receiver Sensitivity ¹	R			-14	dBm
Stressed Receiver Sensitivity ¹	R1			-10.3	dBm
Maximum Input Power	P _{MAX}	0.5			dBm
LOS De-Assert	LOSD			-15	dBm
LOS Assert	LOSA	-25			dBm
LOS Hysteresis		0.5		4	dB
Receiver Reflectance	R _{rx}			-12	dB

Note:

1. Under the ER worst case, measured at 10.3125 Gb/s with PRBS 2³¹ – 1 NRZ test pattern for BER < 1x10⁻¹²

Electrical Connector Layout



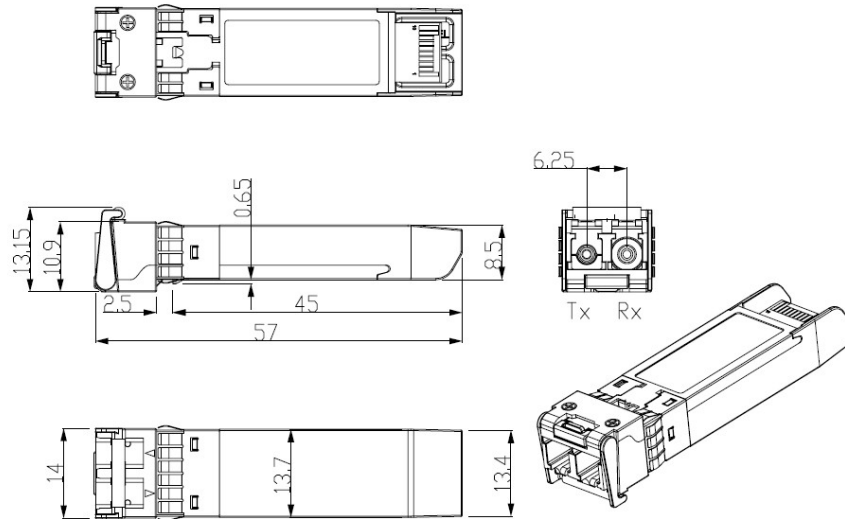
Electrical Pin Definition

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 ± 0.2 mm UNLESS OTHERWISE SPECIFIED

Contact Information

Vitex LLC

210 Sylvan Ave, Suite 25
Englewood Cliffs, NJ 07632
201-296-0145 | info@vitextech.com
www.vitextech.com