SFP-1GB-HD1-51U-80-C-C

Cisco® Compatible TAA 1000Base-CWDM HD1 SFP Transceiver (SMF, 1510nm LTx/HRx, 80km, LC, DOM)

Features:

- INF-8074 and SFF-8472 Compliance
- Simplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- Gigabit Ethernet over CWDM
- 1x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Cisco® compatible SFP transceiver provides 1000Base-CWDM HD1 throughput up to 80km over single-mode fiber (SMF) at a bidirectional wavelength of 1510nm LTx/HRx via an LC connector. It can operate at temperatures between 0 and 70C. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Cisco®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

TAA COMPLIANT

Rev. 100225

CWDM Available Wavelengths

Wavelength	Min.	Typ.	Max.
27	1264.5	1271	1277.5
29	1284.5	1291	1297.5
31	1304.5	1311	1317.5
33	1324.5	1331	1337.5
35	1344.5	1351	1357.5
37	1364.5	1371	1377.5
39	1384.5	1391	1397.5
41	1404.5	1411	1417.5
43	1424.5	1431	1437.5
45	1444.5	1451	1457.5
47	1464.5	1471	1477.5
49	1484.5	1491	1497.5
51	1504.5	1511	1517.5
53	1524.5	1531	1537.5
55	1544.5	1551	1557.5
57	1564.5	1571	1577.5
59	1584.5	1591	1597.5
61	1604.5	1611	1617.5

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	+3.135	+3.30	+3.465	V	
Power Supply Current	Icc			500	mA	1
Power Supply Noise Rejection	PSNR			100	mVp-p	2
Operating Temperature	Tc	-40		+85	°C	3
Storage Temperature	Tstg	-40		+85	°C	4
Power Supply Storage	Vcc		< +4.0		V	
Ambient Humidity	AH	5		95	%	5

Notes:

1. Cooled type.
2. From 100Hz to 1MHz.
3. Case with airflow.
4. Ambient.

5. Without dew.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Data Rate		DRT	1.0625		1.25	Gbps	
Differential Input Voltage		VIN,pp	150		1000	mV	
Differential Input Impedance		ZIN	90	100	110	Ω	
Tx_Disable	**Input_Low**	VIL	0		0.8	V	1
	Input_High	VIH	2.0		3.465	V	
	Assert Time	tOFF			10	us	2
	Negate Time	tON			1	ms	3
Tx_Disable to Reset		treset	10			us	4
Time to Initialize_Cooled (Including Reset of Tx_Fault)		tInit_cooled			10	sec	5
Tx_Fault	**Output_Low**	VFOL	0		0.8	V	6
	Output_High	VFOH	2.0		Vcc+0.3	V	
Receiver							
Data Rate		DR	1.0625		1.25	Gbps	
Differential Output Voltage		VOUT	300		850	mV	-
Differential Output Impedance		ZOUT	90	100	110	Ω	-
Rx_LOS (Loss of Signal)	**Output_Low**	VLOSL	0		0.8	V	6
	Output_High	VLOSH	2		Vcc+0.3	V	
	Assert Time	tLOS-ON			100	us	7
	De-Assert Time	tLOS-OFF			100	us	8

Notes:

1. LVTTL, normal at low, high is shutdown (Poff).
2. Assert time tOFF: high.
3. Negate time tON: low.
4. Tx_Disable to reset treset: high.
5. Cooled version, for wavelength stabilization at worst-case (low & high temperatures).
6. LVTTL, low is normal.
7. Assert time tLOS-ON: low → high.
8. De-assert time tLOS-OFF: high → low.

Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Optical Transmit Power		Pf	-2.5		2.0	dBm	
Transmitter Disable (Off) Power		Poff			-35	dBm	2
Peak Wavelength		λP	λC-6.5 ~ λC-1.5			nm	1
Spectral Width		Δλ			1.0	nm	3
Side-Mode Suppression Ratio		SMSR	30			dB	
$RIN_{12}OMA$		RIN			-117	dB/Hz	
Dispersion Penalty		DP			1.5	dB	
Extinction Ratio		ER	8.2			dB	4
Eye Pattern Mask		IEEE802.3/2008 Section 3 Figure 38-2					
Receiver							
Optical Sensitivity		S			-26.5	dBm	5
Optical Overload		OL	2.0			dBm	5
Operating Wavelength		λo	λC+2.0 ~ λC+6.5			nm	1
Rx_LOS (Loss of Signal)	**Assert**	PA	-38.0			dBm	6
	De-Assert	PD			-26.5	dBm	
	Hysteresis	PA-PD	0.5	2.0	5.0	dB	
Receiver Reflectance					-27	dB	7
RSSI Calibration		RCAL	Internally Calibrated				

Notes:

1. CWDM, DFB-LD, λC = 1271, 1291, 1311, 1331, 1351, 1371, 1391, 1411, 1431, 1451, 1471, 1491, 1511, 1531, 1551, 1571, 1591, and 1611nm.
2. At Tx_Disable = high.
3. At -20dB.
4. At 1.25Gbps, PRBS 2^7-1, Figure 1.
5. PRBS2^7-1, BER1x10^{-12}, and ER=8.2dB.
6. Squelch function enabled.
7. At λO.

Pin Descriptions

Pin	Symbol	Name/Description	Plug Sequence	Notes
1	VeeT	Module Ground.	1	
2	Tx_Fault	Status Out.	3	
3	Tx_Disable	Control In.	3	
4	MOD_DEF(2)	Input/Output (SDA, I^2C Data).	3	
5	MOD_DEF(1)	Input/Output (SCL, I^2C Clock).	3	
6	MOD_DEF(0)	Indicates that the module is present. Grounded internally.	3	
7	Rate Select	Rate Select In. Not Used.	3	1
8	Rx_LOS	Status Out.	3	
9	VeeR	Module Ground.	3	
10	VeeR	Module Ground.	1	
11	VeeR	Module Ground.	1	
12	Rx_Data-	Data Out Negative.	3	
13	Rx_Data+	Data Out Positive.	3	
14	VeeR	Module Ground.	1	
15	Rx_Vcc	Power.	2	
16	Tx_Vcc	Power.	2	
17	VeeT	Module Ground.	1	
18	Tx_Data+	Data In Positive.	3	
19	Tx_Data-	Data In Negative.	3	
20	VeeT	Module Ground.	1	

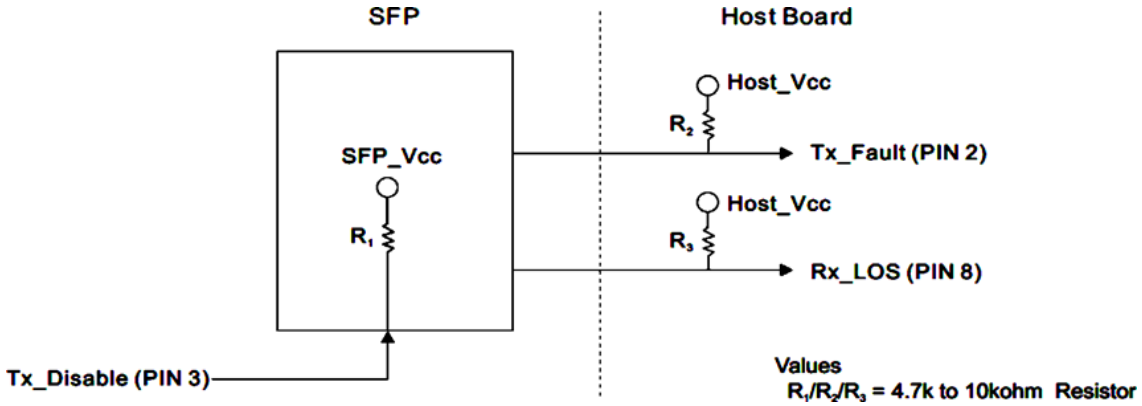
Notes:

1. Internally pulled down with >51kΩ resistor.

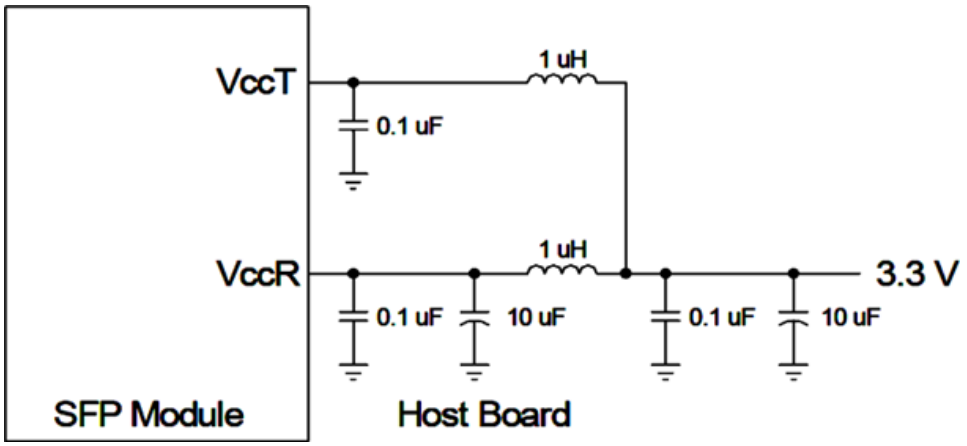
Recommended Circuit Schematic

Tx_Disable: Transmitter Disable, logic high, 4.7k to 10kΩ pull-up to the Vcc on the SFP.
Tx_Fault: Transmitter Fault, logic high, 4.7k to 10kΩ pull-up to the Vcc on the host.
Rx_LOS: Receiver Loss of Signal, logic high, 4.7k to 10kΩ pull-up to the Vcc on the host.

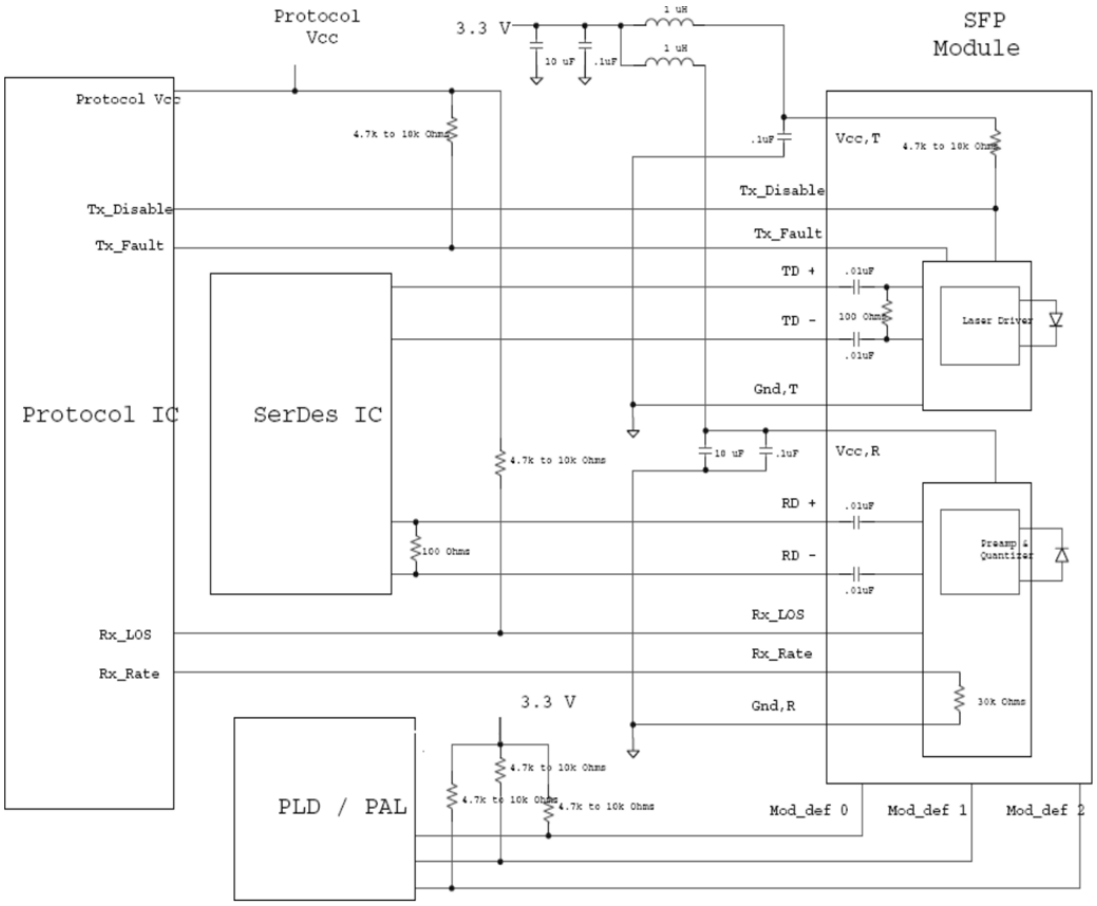
Signal Definitions



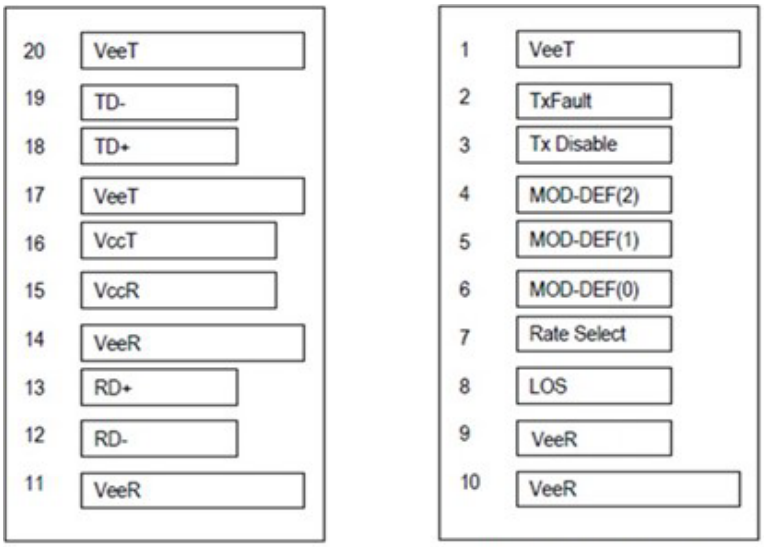
Power Coupling



SFP Host Board Schematic



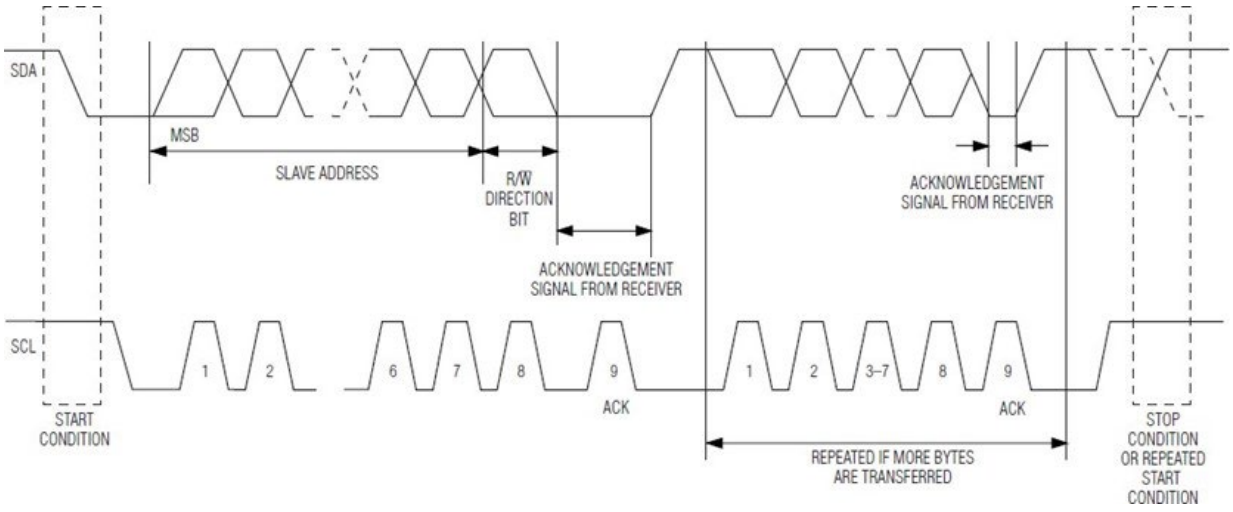
20-Pin Connector



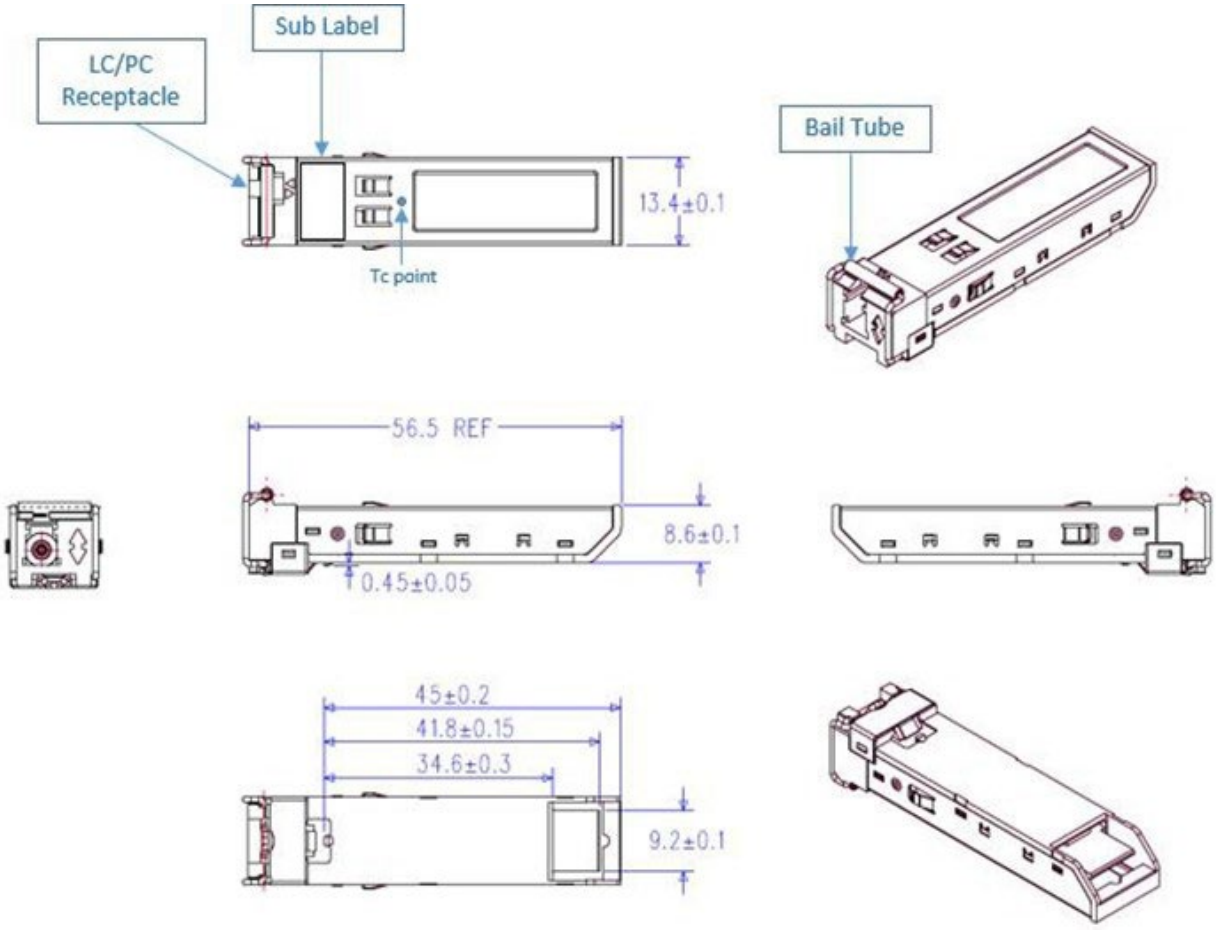
Top of Board

Bottom of Board (as viewed thru top of board)

2-Wire Data Transfer Protocol



Mechanical Specifications



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

Contact Information

ProLabs US

Email: sales@prolabs.com
Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com
Telephone: +44 1285 719 600