CWDM-SFP10G-1270-10-I-C

Cisco® Compatible TAA 10GBase-CWDM SFP+ Transceiver (SMF, 1270nm, 10km, LC, DOM, -40 to 85C)

Features:

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Temperature-stabilized EML transmitter and PIN receiver
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 10x Gigabit Ethernet over CWDM
- Access and Enterprise

Product Description

This Cisco® SFP+ transceiver provides 10GBase-CWDM throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1270nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. 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

CWDM Available Wavelengths

Wavelengths	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
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Temperature	Tc	-40		85	°C
Operating Relative Humidity	RH			85	%
Power Supply Current	Icc			545	mA
Data Rate	DR		9.953/10.3125		Gbps

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.15	3.3	3.45	V	
Transmitter							
Differential CML Inputs		VIN	150		1200	mVp-p	1
Input AC Common-Mode Voltage			0		25	mV	2
Differential Input impedance		ZIN	85	100	115	Ω	3
Tx_Disable	**High**		2		Vcc	V	
	Low		0		0.8	V	
Tx_Fault	**High**		2		Vcc+0.3	V	4
	Low		0		0.5	V	5
Receiver							
Differential CML Outputs		VOUT	350		700	mVp-p	6
Differential Output Impedance		ZOUT	85	100	115	Ω	
Rx_LOS	**High**		2		Vcc+0.3	V	4
	Low		0		0.8		5
MOD_DEF(0.2)		VOH	2.5			V	7
		VOL	0		0.5		

Notes:

1. AC Coupled Inputs.
2. RMS.
3. RIN>100kΩ @DC.
4. 1o = 400μA (Host_Vcc).
5. 1o = -4.0mA.
6. AC Coupled Outputs.
7. With Serial ID.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λC	λC-6.5	λC	λC+6.5	nm	
Spectral Width (RMS)	Δλ			1	nm	
Output Average Power (DFB)	POUT	0		5	dBm	1
Output Average Power (EML)	POUT	-2		4	dBm	1
Extinction Ratio	ER	3.5			dB	
Average Power of Off Transmitter	Poff			-30	dBm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter Dispersion Penalty	TDP			3 (1271 – 1451nm)	dB	
				5 (1471 – 1531nm)	dB	
				6 (1551 – 1551nm)	dB	
				3 (1571 – 1611nm)	dB	
Tx_Disable Assert Time	T_off			10	us	
Receiver						
Center Wavelength	λC	1260		1620	nm	
Receiver Sensitivity (DFB)	Pmin			-14.4	dBm	
Receiver Sensitivity (EML)	Pmin			-16	dBm	
Receiver Overload	Pmax	0			dBm	
LOS De-Assert	LOSD			-17	dBm	
LOS Assert	LOSA	-28			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Output power is power coupled into a 9/125µm single-mode fiber.
2. Average received power: BER is less than $1E^{-12}$ with a PRBS 2^{31}-1 test pattern.

Pin Descriptions

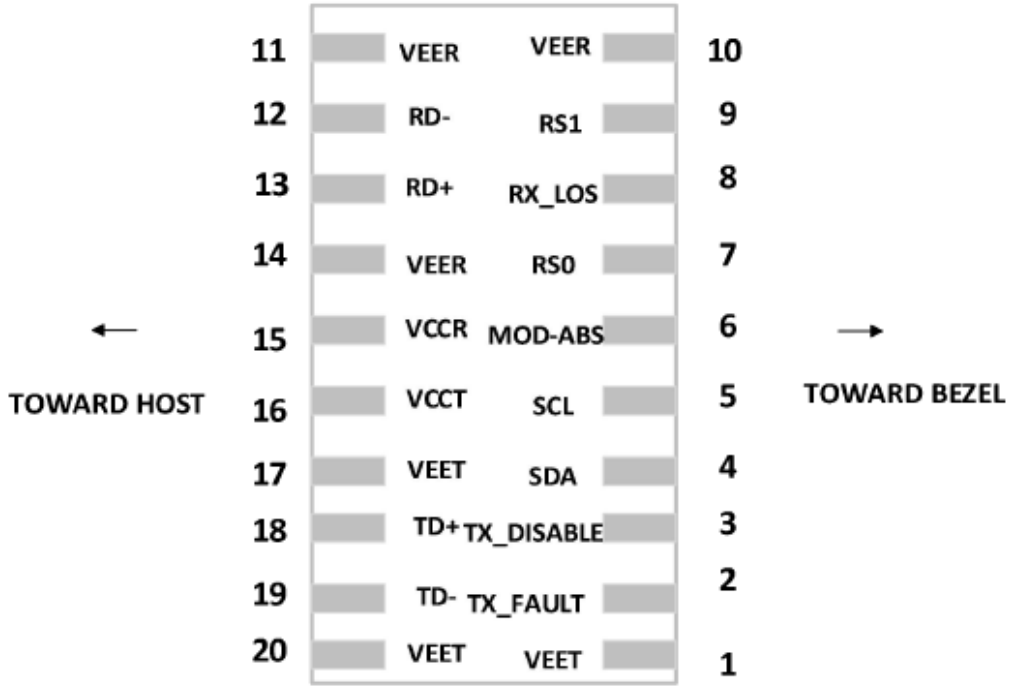
Pin	Symbol	Name/Description	Plug Sequence	Notes
1	VeeT	Transmitter Ground.	1	5
2	Tx_Fault	Transmitter Fault Indication.	3	1
3	Tx_Disable	Transmitter Disable. Module disables on “high” or “open.”	3	2
4	SDA	Transmitter Disable. 2-Wire Serial ID Interface.	3	3
5	SCL	Module Definition 2. 2-Wire Serial ID Interface.	3	3
6	MOD_ABS	Module Definition 1.	3	3
7	RSO	Rx Rate Select (LVTTL).	3	9
8	LOS	Loss of Signal.	3	4
9	RS1	Tx Rate Select (LVTTL).	1	10
10	VeeR	Receiver Ground.	1	5
11	VeeR	Receiver Ground.	1	5
12	RD-	Inverse Received Data Out.	3	6
13	RD+	Receiver Data Out.	3	6
14	VeeR	Receiver Ground.	1	5
15	VccR	3.3 ± 5% Receiver Power.	2	7
16	VccT	3.3 ± 5% Transmitter Power.	2	7
17	VeeT	Transmitter Ground.	1	5
18	TD+	Transmitter Data In.	3	8
19	TD-	Inverse Transmit Data In.	3	8
20	VeeT	Transmitter Ground.	1	5

Notes:

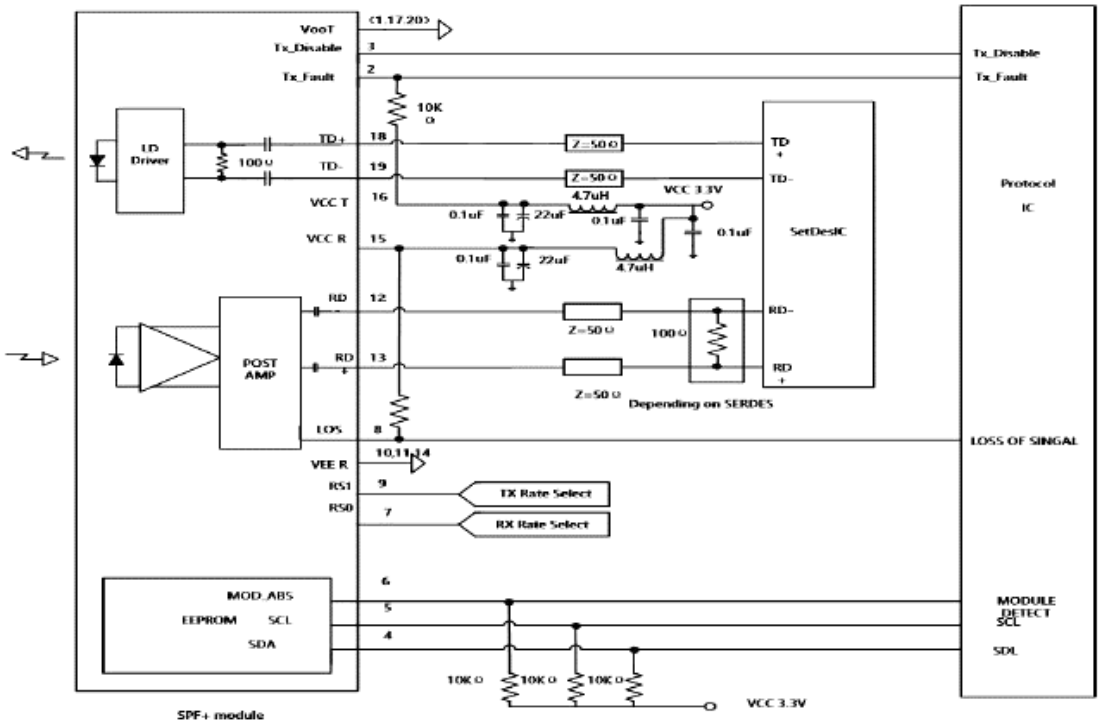
1. Tx_Fault is an open collector/drain output that should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” output indicates a laser fault of some kind. "Low" indicates normal operation. In the "low" state, the output will be pulled to <0.8V.
2. Tx_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7kΩ to 10kΩ resistor. Its states are:
   Low (0V – 0.8V): Transmitter On
   (>0.8V, <2.0V): Undefined
   High (2.0V – 3.465V): Transmitter Disabled
   Open: Transmitter Disabled.
3. Modulation Absent. Connected to the VeeT and VeeR in the module.
4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up with a 4.7kΩ to 10kΩ resistor. Pull-up voltage between 2.0V and VccT/R+0.3V. When “high,” this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). "Low" indicates normal operation. In the "low" state, the output will be pulled to <0.8V.

5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC-coupled 100Ω differential lines that should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 400mV and 2000mV differential (200mV –1000mV single-ended) when properly terminated.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V±5% at the SFP connector pin. The maximum supply current is 545mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module.
9. Rate Select 0. Optionally controls the SFP+ module receiver. This pin is pulled low to the VeeT with a >30K resistor.
10. Rate Select 1. Optionally controls the SFP+ module transmitter. This pin is pulled low to the VeeT with a >30K resistor.

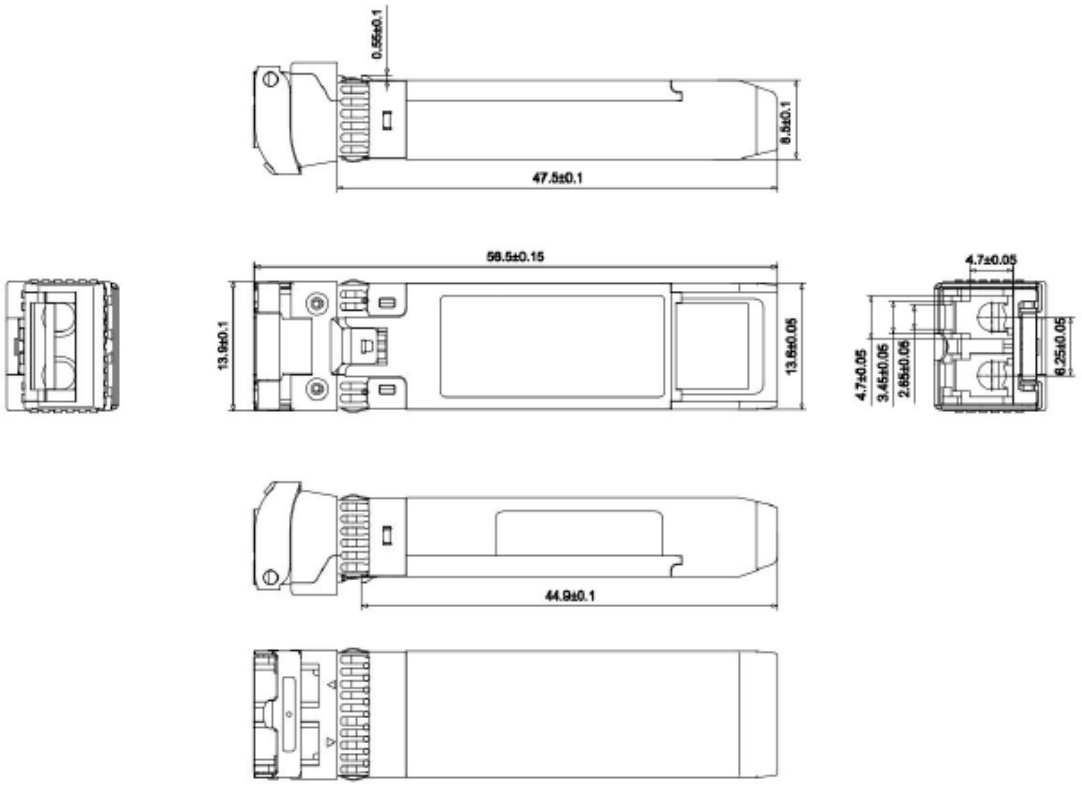
Electrical Pin-Out Details



Recommended Circuit Schematic



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.

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