100-03789-BXD-HD1-C

Calix® 100-03789-BXD-HD1 Compatible TAA Compliant 1000Base-CWDM HD1 SFP Transceiver (SMF, 1470nm HTx/LRx, 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 Calix® 100-03789-BXD-HD1 compatible SFP transceiver provides 1000Base-CWDM HD1 throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1470nm HTx/LRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Calix® 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's 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."

Rev. 090321

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Conditions
Storage Temperature	T_{stg}	-40	+85	℃	Ambient
Power Supply Voltage	V_{CC}		< +4.0	V	
Ambient Humidity	H_{op}	5	95	%	w/o dew
Operating Temperature	T_C	0	70	℃	Case, w/airflow

Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.135	3.30	3.465	V	
Power Supply Current		Icc			500	mA	Cooled type
Power Supply Noise Rejection		PSNR			100	mV_{p-p}	from 100Hz to 1MHz
Transmitter							
Data Rate		DR_T	1.0625		1.25	Gb/s	
Differential Input Voltage		V_{INpp}	150		1000	mV	
Differential Input Impedance		Z_{IN}	90	100	110	ohm	
TX_Disable	**Input Low**	V_{IL}	0		0.8	V	LVTTL,Normal at Low, High is Shutdown(P_{off})
	Input high	V_{IH}	2.0		3.465	V	
	Assert Time	t_{OFF}			10	us	High
	Negate Time	t_{ON}			1	ms	Low
Tx Disable to reset		t_{reset}	10			us	High
Time to Initialize Cooled Including reset of Tx_Fault		t_{Init_cooled}			10	sec	1
TX_Fault	**Output Low**	V_{FOL}	0		0.8	V	LVTTL, Low is Normal
	Output High	V_{FOH}	2.0		Vcc+0.3	V	
Receiver							
Data Rate		DR_R	1.0625		1.25	Gb/s	
Differential Output Voltage		V_{out}	480		1080	mV	
Differential Output Impedance		Z_{out}	90	100	110	ohm	
Rx_LOS (Loss of Signal)	**Output Low**	V_{LOSL}	0		0.8	V	LVTTL, Low is normal
	Output High	V_{LOSH}	2		Vcc+0.3	V	
	Assert time	t_{LOS-ON}			100	us	Low -> High
	Deassert time	$t_{LOS-OFF}$			100	us	High -> Low

Notes:

1. Cooled version, for wavelength stabilization at worst case (Low & High temperature)

Optical Characteristics

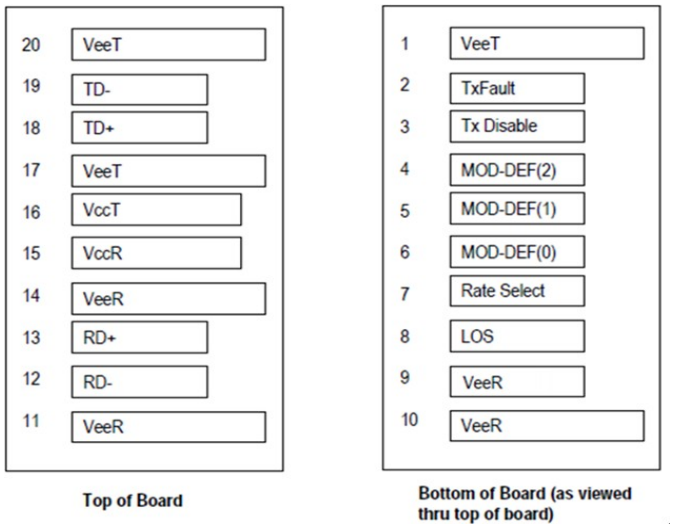
Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Transmitter							
Optical Transmit Power		Pf	-2.5		2.0	dBm	
Transmitter Disable (Off) Power		P_{off}			-35	dBm	@Tx_Diable is High
Peak Wavelength		λ_p	λ_c + 2.0 ~ λ_c + 6.5			nm	CWDM, DFB-LD, Note1
Spectral Width		$\Delta\lambda$			1.0	nm	@-20 dB
Side Mode Suppression Ratio		SMSR	30			dB	
RIN12OMA		RIN			-117	dB/Hz	
Dispersion Penalty		DP			1.5	dB	
Extinction Ratio		ER	8.2			dB	@1.25Gb/s,PRBS 2^7 -1
Eye pattern Mask		IEEE802.3/2008					@1.25Gb/s,PRBS 2^7 -1
Receiver							
Optical Sensitivity		S			-26.5	dBm	Note 2
Optical Overload		OL	2.0			dBm	Note 2
Operating wavelength		λ_o	λ_c - 6.5 ~ λ_c - 1.5			nm	Note 1
Rx_LOS (Loss of signal)	**Assert**	P_A	-38.0			dBm	Squelch function enable
	De-assert	P_D			-26.5	dBm	
	Hysteresis	P_A-P_D	0.5	2.0	5.0	dB	
Receiver Reflectance					-27	dB	@ λ_o
RSSI Calibration		R_{CAL}	Internal Calibrated (The host side can be read by an external way)				

Notes:

1. λ_C=1271,1291,1311,1331,1351,1371,1391,1411,1431,1451,1471,1491,1511,1531,1551,1571,1591,1611nm
2. PRBS2^7-1,BER1x10^{-12}, Source ER=8.2[dB]

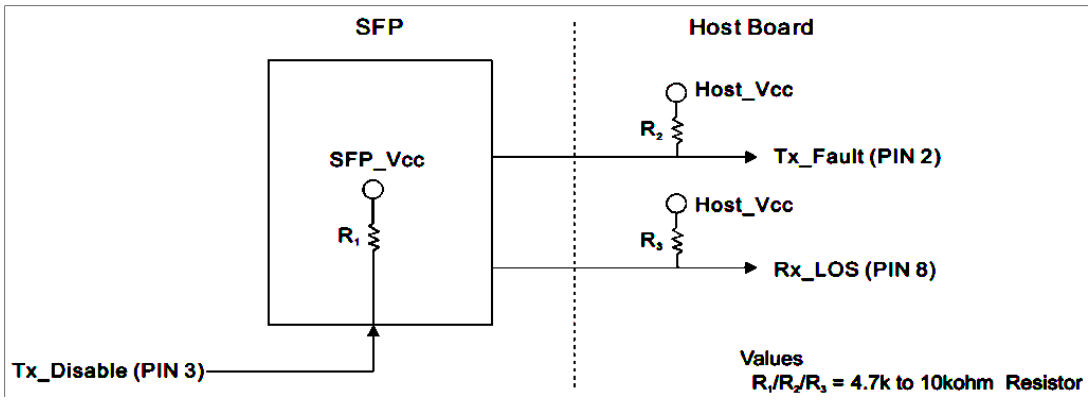
Pin Descriptions

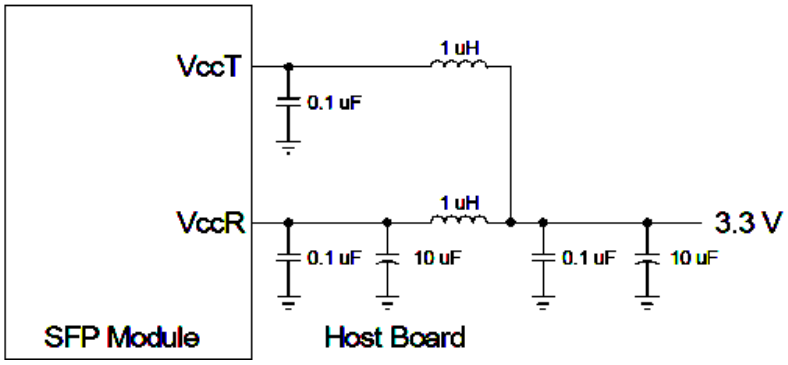
Pin	Symbol	Name/Descriptions	Ref.
1	TGND(VeeT)	Ground	1
2	TX_Fault	Status Out	3
3	TX_Disable	Control In	3
4	MOD_DEF(2)	Input/Output(SDA, I^2C data)	3
5	MOD_DEF(1)	Input/Output(SCL, I^2C clock)	3
6	MOD_DEF(0)	Indicates that the module is present,Grounded internally	3
7	Rate Select	Rate Select In(NC)	3
8	RX_LOS	Status Out	3
9	RGND(VeeR)	Ground	3
10	RGND(VeeR)	Ground	1
11	RGND(VeeR)	Ground	1
12	Rx_Data bar	Data Out Negative	3
13	Rx_Data	Data Out Positive	3
14	RGND(VeeR)	Ground	1
15	Rx_Vcc(VccR)	Power.	2
16	Tx_Vcc(VccR)	Power	2
17	TGND(VeeT)	Ground	1
18	Tx_Data	Data In Positive	3
19	Tx_Data bar	Data In Negative	3
20	TGND(VeeT)	Ground	1

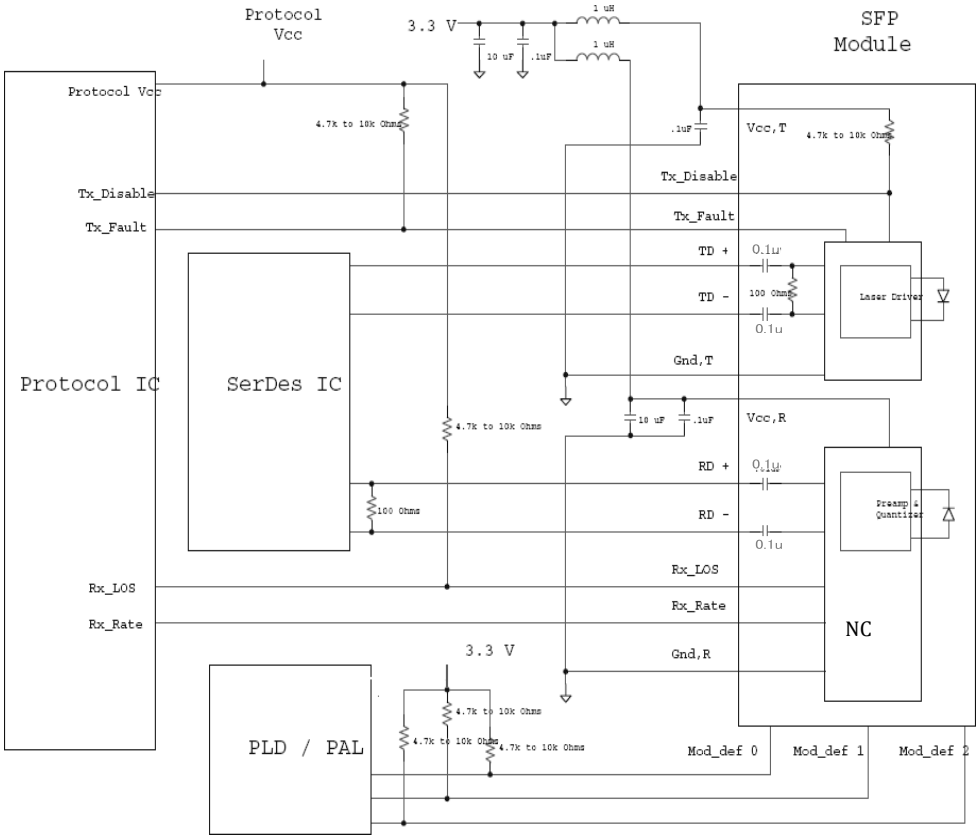


Pin-out of connector Block on Host board

Recommended Circuit Schematic

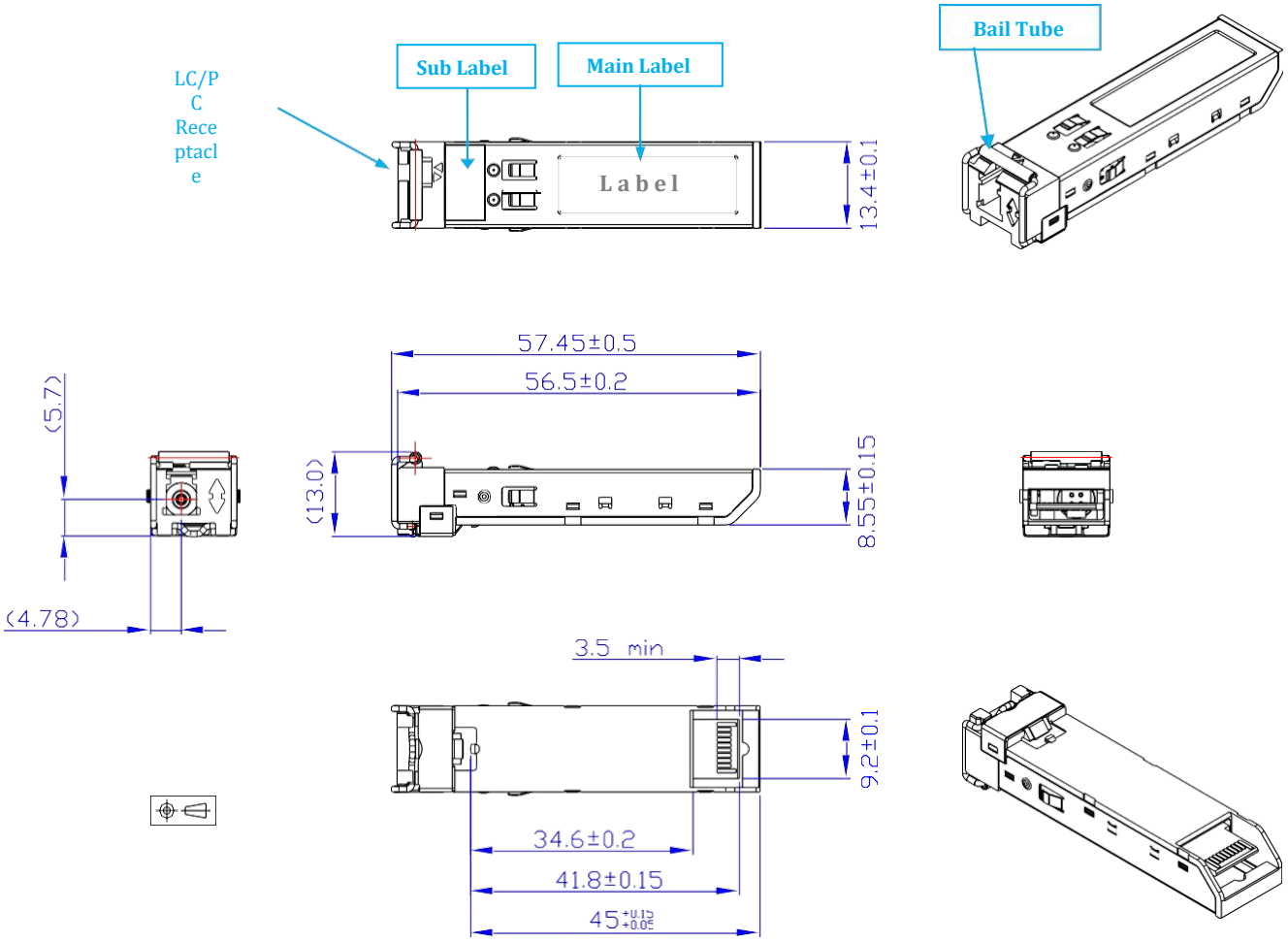






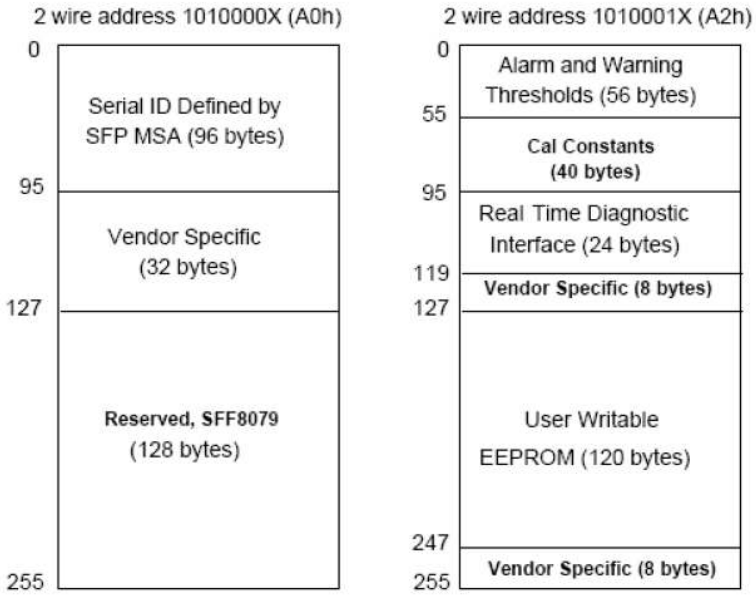
Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).

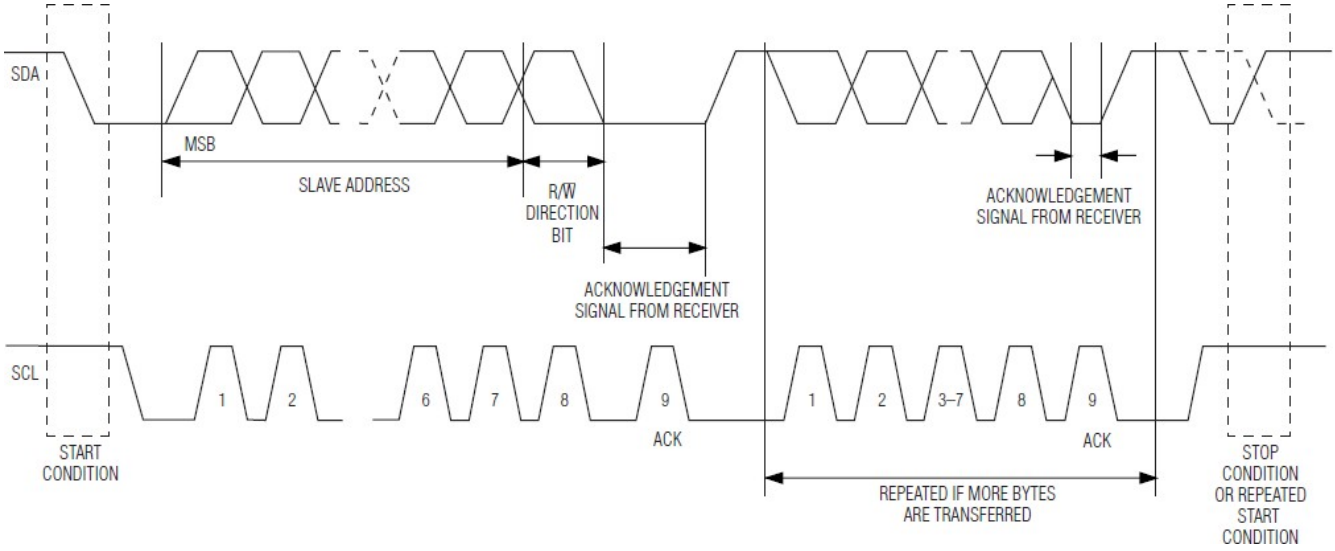


EEPROM Information

EEPROM memory map specific data field description is as below:



2-Wire Data Transfer Protocol



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