

1442548F1-C

ADTRAN® 1442548F1 Compatible 10GBase-N1 EPON OLT XFP Transceiver (SMF, 1577nMTx/1270nMRx, SC, 20km, DOM)

Features:

- Single fiber bi-directional data links TX 9.953Gbps, Burst Mode RX 9.953G/2.488Gbps application
- Complies with INF-8077i
- Complies with ITU G.987.2, ITU G.9807.1
- 3.3V power supply
- XFP package with SC Receptacle connector
- Hot Pluggable
- High power 1577nm EML LD & High sensitivity 1270nm APD
- Single-mode Fiber
- SD indication
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- Operating Temperature: 0C to 70C



Applications:

- EPON OLT
- Access and Enterprise

Product Description

This ADTRAN® 1442548F1 compatible XFP transceiver provides 10GBase-B+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx via a SC connector. It is guaranteed to be 100% compatible with the equivalent ADTRAN® 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. 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."

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	VCC3	-0.5		3.6	V
Storage Ambient Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Humidity	OH	5		85	%
Date Rate			9.953 2.488		Gbps

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc3	3.13	3.3	3.47	V	
Power Supply Current	Icc3			1000	mA	
Power Consumption	P			3	W	
Transmitter						
Data Input Differential Swing		120		850	mV	1
Input Differential Impedance		90	100	110	Ω	
Transmitter Enable Voltage - Low		0		0.8	V	
Transmitter Disable Voltage - High		2.0		VCC	V	

Notes:

1. CML input, AC coupled

Optical Characteristics

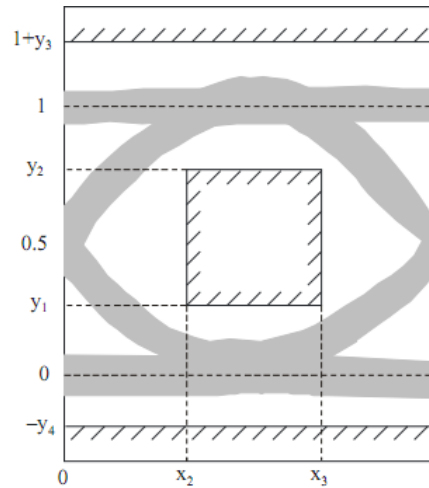
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Center Wavelength	λ_C	1575		1580	nm	
Optical Spectrum Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Wavelength Diagram	Compliant with ITU G.987.2					1
Average Launch Optical Power (BOL)	AOP2	+4.5		+8	dBm	2
Average Launch Optical Power (EOL)		+4		+8	dBm	
Power-OFF Transmitter Optical Power				-39	dBm	2
Extinction Ratio	ER	8.2			dB	3
Total Jitter	TJ			0.39	UI	3
RIN ₁₅ OMA				-128	dB/Hz	
Transmitter Reflectance				-10	dB	
Transmitter and Dispersion Penalty	TDP			1	dB	4
10G PON Receiver						
Operating Wavelength		1260		1280	nm	
Max Optical input				0	dBm	5
Sensitivity	SEN			-28	dBm	6
Saturation Optical Power	SAT	-7			dBm	6
SD Assert Level				-29	dBm	
SD De-assert Level		-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	
2.5G PON Receiver						
Operating Wavelength		1260		1280	nm	
Max Optical input				0	dBm	5
Sensitivity	SEN			-29.5	dBm	7
Saturation Optical Power	SAT	-9			dBm	7
SD Assert Level				-30	dBm	
SD De-assert Level		-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-20	dB	

Notes:

1. Eye mask figure below, Mask Margin >5%

2. Launched into SMF
3. PRBS $2^{31}-1$ @9.953Gbps
4. Transmit on 20km SMF
5. Input without incurring damage
6. PRBS $2^{31}-1$ @9.953Gbps BER $\leq 1 \times 10^{-3}$
7. PRBS $2^{23}-1$ @2.488Gbps BER $\leq 1 \times 10^{-4}$

Transmitter Eye Mask Definitions and Test Procedure



X3-X2	Y1	Y2	Y3	Y4	Unit
0.2	0.25	0.75	0.25	0.25	UI

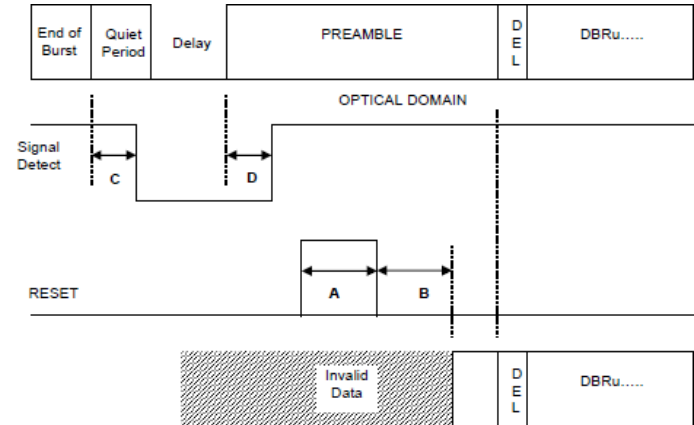
Timing Parameter Definitions in Burst Mode Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
RSSI Trigger-Low		0		0.8	V	
RSSI Trigger-High		2.0		V _{cc}	V	
Data Output Differential Swing		340		850	mV	1
Reset-Low		0		0.8	V	
Reset-High		2.0		V _{cc}	V	
SD Voltage-Low		0		0.4	V	
SD Voltage-High		2.4		V _{cc}	V	
Reset Width	A	TBD			ns	
Reset to Valid Data Delay	B	TBD			ns	
SD De-assert Time	C			TBD	ns	
SD Assert Time	D			TBD	ns	
Data recovery time				400	ns	2
				400	ns	3

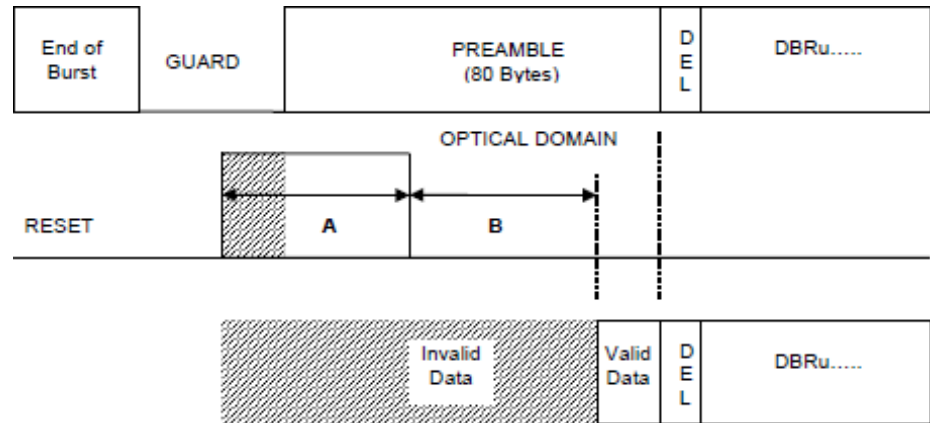
Notes:

- 1. CML output, DC coupled
- 2. PRBS 2²³-1@2.488Gbps
- 3. PRBS 2³¹-1@9.95Gbps

Reset Signal Timing Diagram in Normal Mode



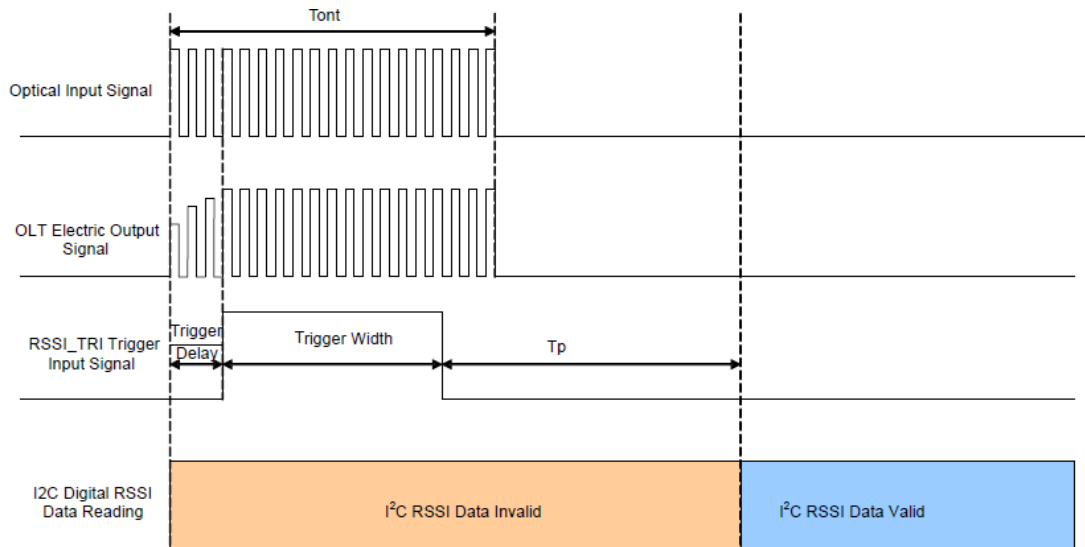
Reset Signal Timing Diagram in Ranging Mode



RSSI Timing Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Optical Signal During Time	Tont	1200			ns	
RSSI Trigger width	TW	500			ns	
RSSI Trigger Delay	TD	150			ns	
I ² C Access Prohibited Time		500			μs	

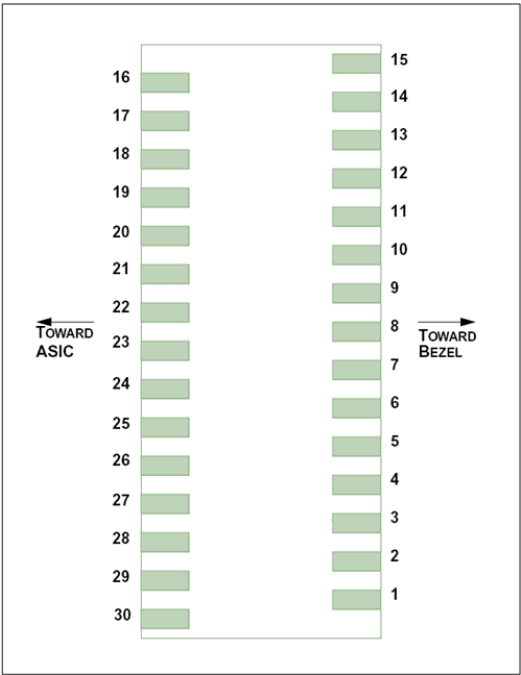
Timing Parameter Definitions in RSSI Trigger



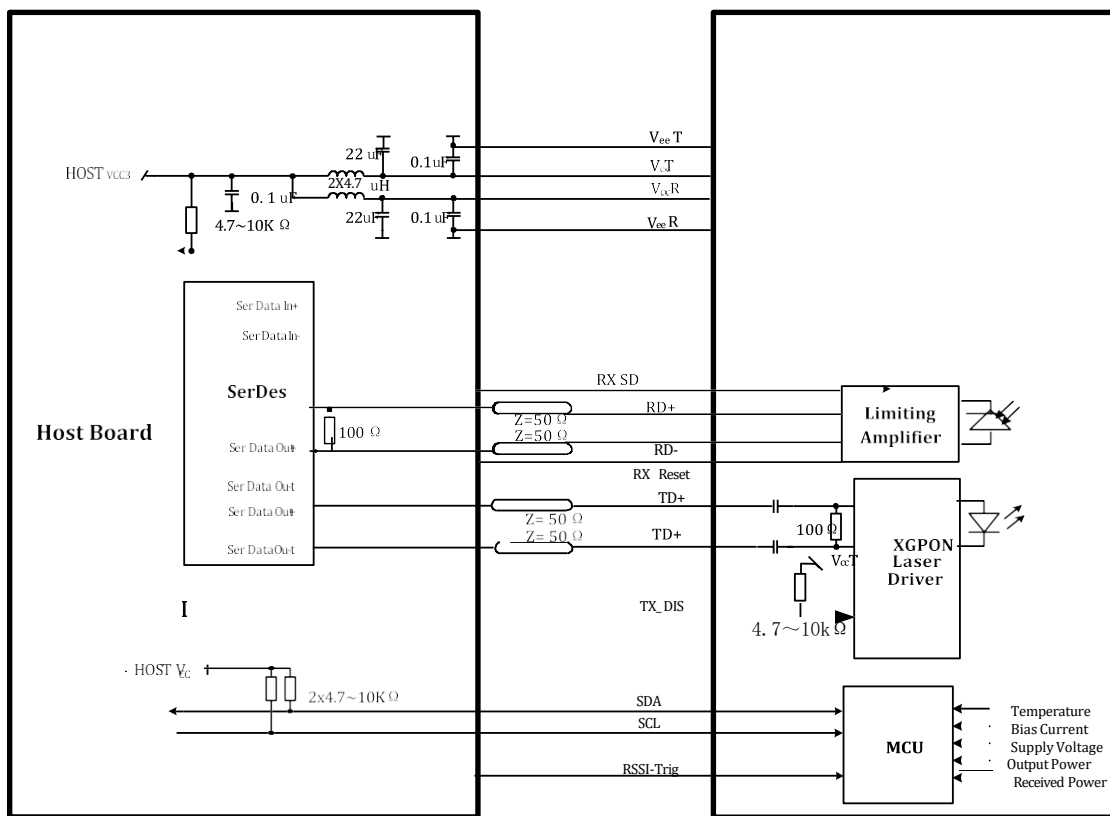
Pin Descriptions

Pin	Name	Descriptions	Notes
1	GND	Module Ground	
2	TX_FAULT	Transmitter Status Indication	Low : Normal; High: Abnormal
3	NC	Not Connected	
4	NC	Not Connected	
5	TX_DIS	Transmitter Disable	LVTTTL Input by 10k pull up resistor, Low : transmitter on
6	NC	Not Connected	
7	GND	Module Ground	
8	VCC3_TX	Transmitter 3.3V Pow er Supply	
9	VCC3_RX	Receiver 3.3V Pow er Supply	
10	SCL	The clock line	The clock line of tw o w ire serial interface
11	SDA	The data line	The data line of tw o w ire serial interface
12	MOD_ABS	Indicates Module is not present.	Grounded in the Module
13	RX_Reset	Burst Receiver Reset	LVTTTL, High level Reset
14	SD	SD Indication	LVTTTL output, active LOW when the receiver lost signal
15	GND	Module Ground	
16	GND	Module Ground	
17	RD_N	Inverted Received Data Out	CML output, DC coupled; No squelch function
18	RD_P	Non-inverted Received Data Out	CML output, DC coupled; No squelch function
19	GND	Module Ground	

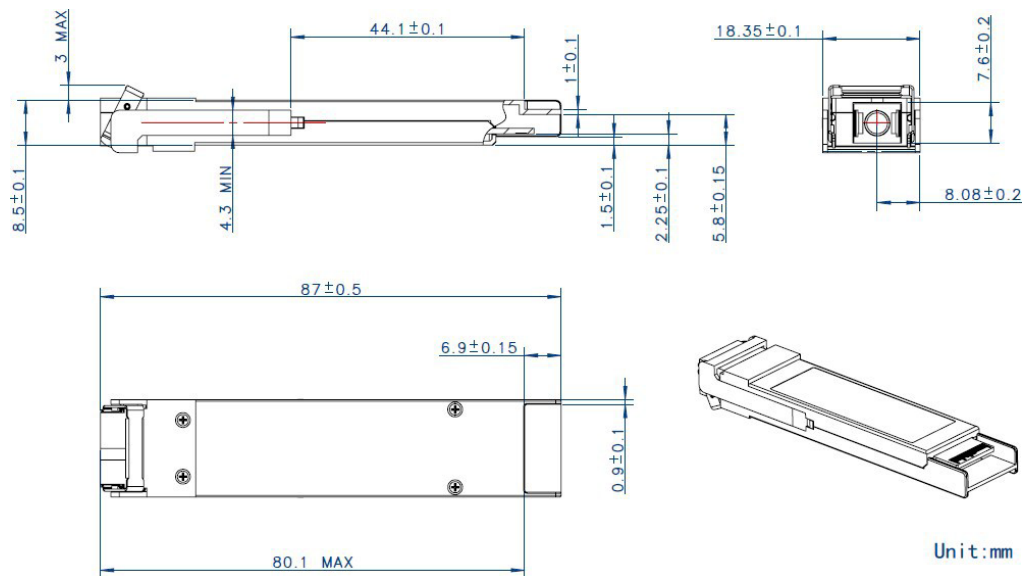
20	NC	Not Connected	
21	RSSI_TRIG	RSSI Trigger for Transceiver	High value indicates start RSSI measurement
22	NC	Not Connected	
23	GND	Module Ground	
24	NC	Not Connected	
25	NC	Not Connected	
26	GND	Module Ground	
27	GND	Module Ground	
28	TX_N	Inverted Transmit Data in	CML input, AC coupled
29	TX_P	Non-Inverted Transmit Data in	CML input, AC coupled
30	GND	Module Ground	



Typical Interface Circuit

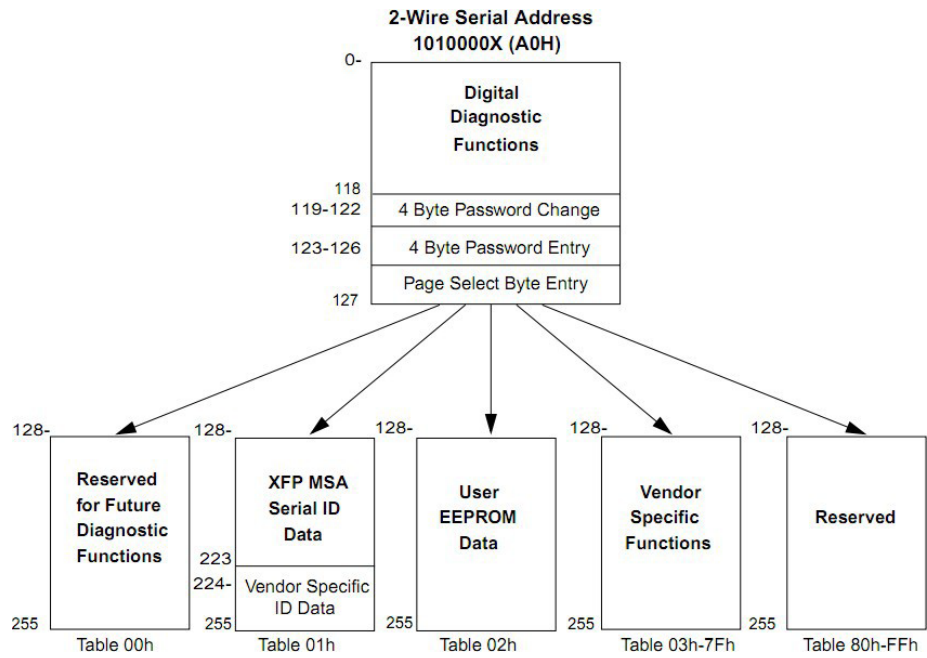


Mechanical Specifications



EEPROM Information

EEPROM memory map specific data field description is as below:



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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