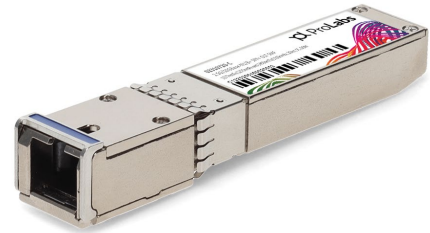


02310720-C

Huawei® 02310720 Compatible 2.5G/10GBase-N2/C+ SFP+ OLT Transceiver (SMF, 1577nmTx/1270nmRx and 1490nmTx/1310nmRx, 20km, SC, DOM)

Features:

- Single-fiber bi-directional transmission
- SFP+ Package
- 2x11 SFP+ Electrical interface
- Hot pluggable
- Typical power consumption 2.5W
- SC receptacle optical connector
- 3.3V power supply
- ODN Class C+
- ITU-T G.9807.1 compliant
- ITU-T G.984.2 compliant
- ITU-T G.984.5 compliant
- Operating Temperature: 0°C to 70°C
- RoHS-6 compliant



Applications:

- 10 Gigabits Access networks
- FTTH
- FTTC
- FTTB
- XGS-PON and GPON Combo Access networks

Product Description:

This Huawei® 02310720 Compatible TAA Compliant 1G/10GBase-N2/C SFP+ OLT transceiver provides 2.5G/10GBase-N2/C+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx and 1490nmTx/1310nmRx via a SC connector. It is built to meet or exceed Huawei® standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. 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."



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.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	VCC		3.3	3.6	V	
Maximum Input Voltage	Vin	0		3.6	V	
Storage Temperature	Ts	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Relative Humidity	RH	0		85	%	1
Maximum Input Power	Pmax	-3			dBm	
Data Rate		TX:9.953& 2.488 RX: 9.953/2.488&1.244			Gbps	
ODN Class		C+				
Link distance with G.652		0.002		20	km	

Notes:

1. Non-condensing

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes	
Supply Voltage	VCC	3.135	3.3	3.465	V		
Supply Current	Icc			0.91	A	Steady state	
Power Dissipation	P		2.5		W		
Maximum Peak Current	Ipc			1.1	A		
Input Differential Impedance	Zin	80	100	120	Ω		
Differential data input swing	XGS-PON input	VIN	120		820	mV	AC Couple
	GPON input		200		1600	mV	
Differential data output swing	XGS-PON output	VOUT	340	600	850	mV	AC Couple, CML
	GPON output		600	900	1600	mV	DC Couple, LVPECL
Tx Disable input Voltage	VIL	0		0.8	V		
	VIH	2		3.3	V		
SD output voltage	Fault	0		0.4	V		
	Normal	2		3.3	V		

GPON Optical Characteristics

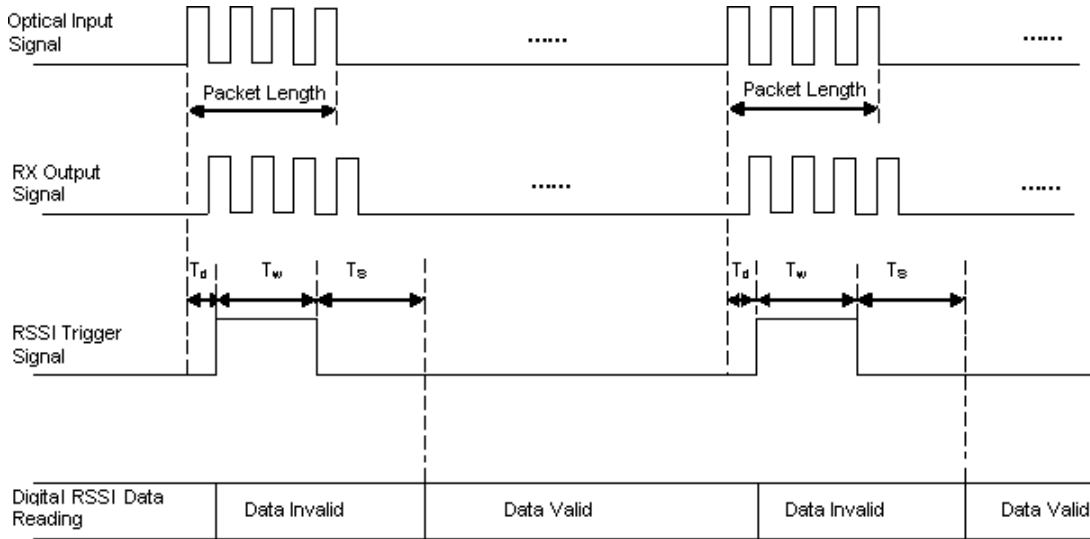
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Laser type		DFB				
Nominal bit rate	BR	2.48832			Gbit/s	
Output average power (EOL)		+3		+7	dBm	
Center wavelength	λ_C	1480	1490	1500	nm	
Spectral width (-20 dB width)	$\Delta\lambda_C$			1.0	nm	
Extinction ratio	ER	8.2			dB	
Eye Mask Margin (1000 consecutive snapshots at typical rate and room temperature)	EMM	10% (ITU-T G.984.2 compliant)			%	
Side-Mode Suppression Ratio	SMSR	30			dB	
Optical Power at Tx disable				-39	dBm	
Receiver						
Receive wavelengths	λ_{RX}	1290	1310	1330	nm	
Sensitivity @Condition (BER=1*10 ⁻⁴ , 1.244Gbps, PRBS 2 ²³ -1, NRZ)				-32	dBm	
Saturation power (Full temperature, EOL)		-12			dBm	
Max Input power		-3			dBm	
SDA				-33	dBm	
SDD		-45			dBm	
Receiver reflectance	RRX			-20	dB	
Optical Return Loss tolerance	ORL	10			dB	

XGS-PON Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Laser type		EML				
Nominal bit rate	BR	9.95328			Gbit/s	
Output average power (EOL)		+5		+9	dBm	
Center wavelength	λ_C	1575	1577	1580	nm	
Spectral width (-20 dB width)	$\Delta\lambda_C$			1.0	nm	
Extinction ratio	ER	8.2			dB	
Eye Mask Margin (1000 consecutive snapshots at typical rate and room temperature)	EMM	5%(ITU-T G.987.2 compliant)			%	
Side-Mode Suppression Ratio	SMSR	30			dB	
Optical Power at Tx_disable				-39	dBm	
Receiver						
Receive wavelengths	λ_{RX}	1260	1270	1280	nm	
Sensitivity @Condition (BER=1*10 ⁻³ , 2.488Gbps, PRBS 2 ²³ -1, NRZ)				-30.5	dBm	
Saturation power (2.488Gbps,Full temperature, EOL)		-10			dBm	
Sensitivity @Condition (BER=1*10 ⁻³ , 9.953Gbps, PRBS 2 ³¹ -1, NRZ)				-29	dBm	
Saturation power (9.953Gbps,Full temperature, EOL)		-9			dBm	
Max Input power		-3			dBm	
SDA@ 9.953Gbps				-30	dBm	
SDA@2.488Gbps				-31.5	dBm	
SDD		-45			dBm	
Receiver reflectance	RRX			-20	dB	
Optical Return Loss tolerance	ORL	10			dB	

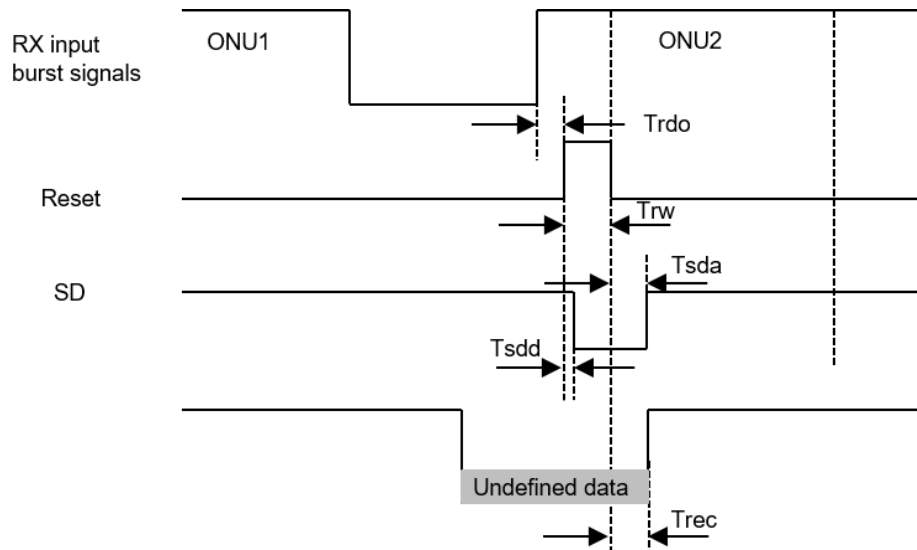
RSSI Timing Requirement

GPON and XGS-PON



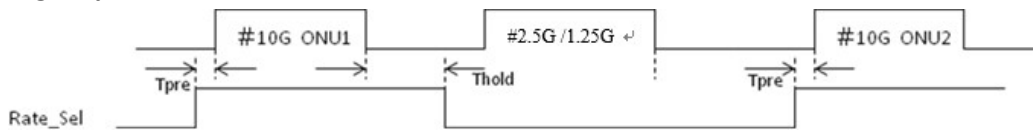
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Trigger delay	Td	1600			ns	
Trigger width	Tw	600		800	ns	
I2C read time	TI2C	500			us	

SD Timing Requirement



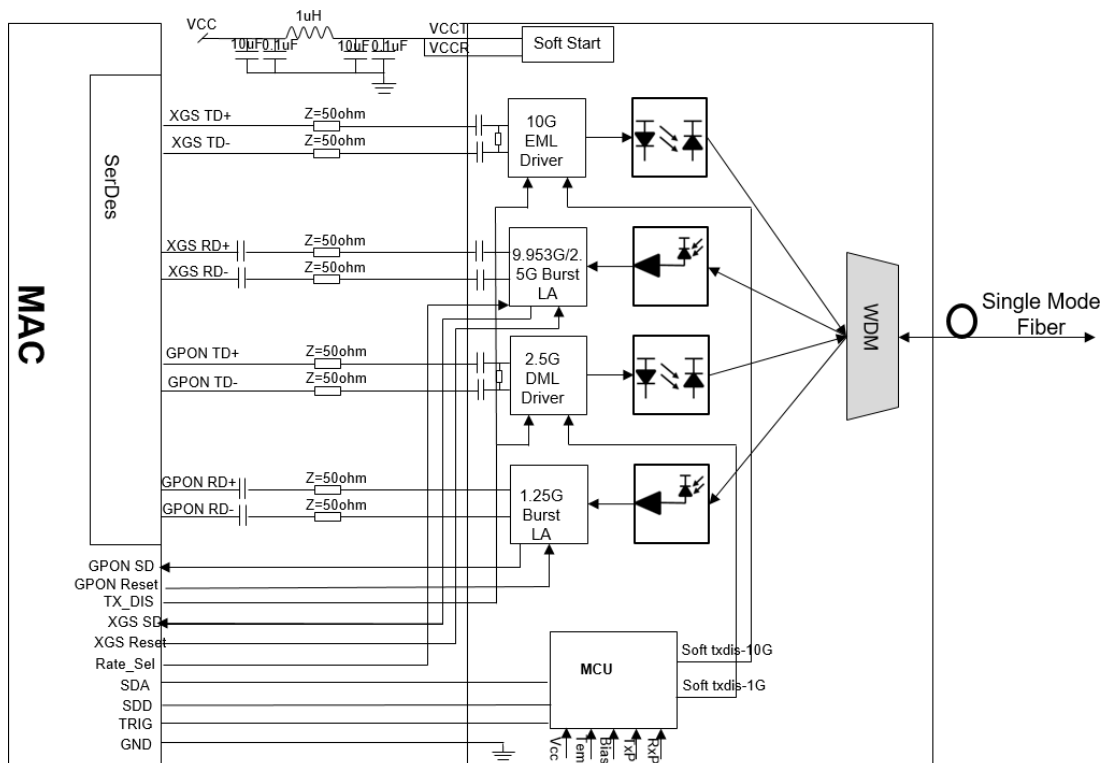
Parameter	Symbol	Min	Typ	Max	Unit	Notes
GPON SD Assert Time	Tsda1			50	ns	
GPON SD De-assert Time	Tsdd1		12.8	25.6	ns	
XGS-PON SD Assert Time	Tsda2			50	ns	
XGS-PON SD De-assert Time	Tsdd2		12.8	25.6	ns	
Data Recovery Time	Trec		25.6	50	ns	
Reset Width	Trw	25.6			ns	
Reset Delay Time during Operating	Trdo	0			ns	

Rate_Sel Timing Requirement



Parameter	Symbol	Min	Typ	Max	Unit	Notes
Rate_Sel Preset Time	Tpre	12.8			ns	
Rate_Sel Hold Time	Thold	12.8			ns	

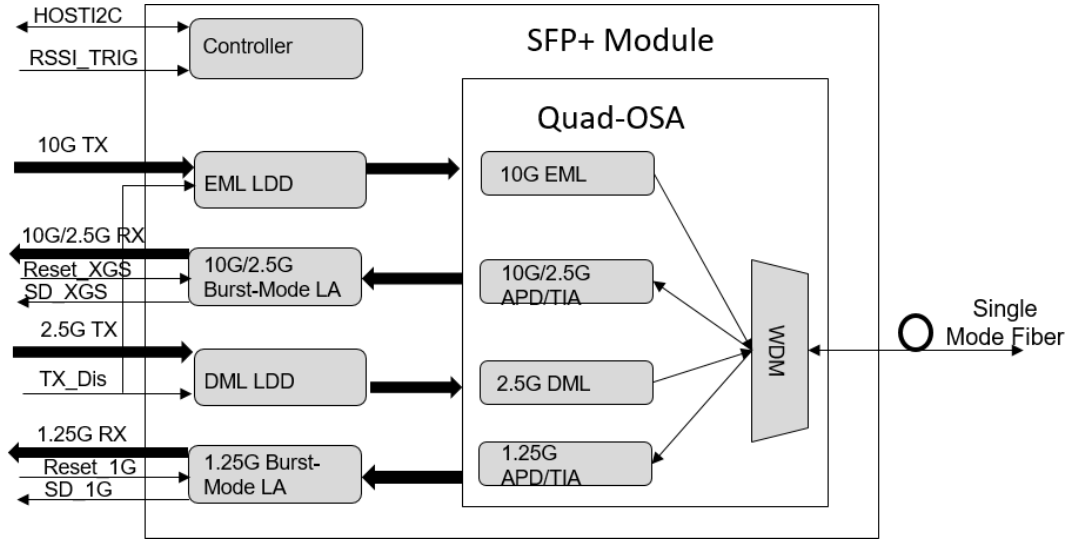
Electrical Interface



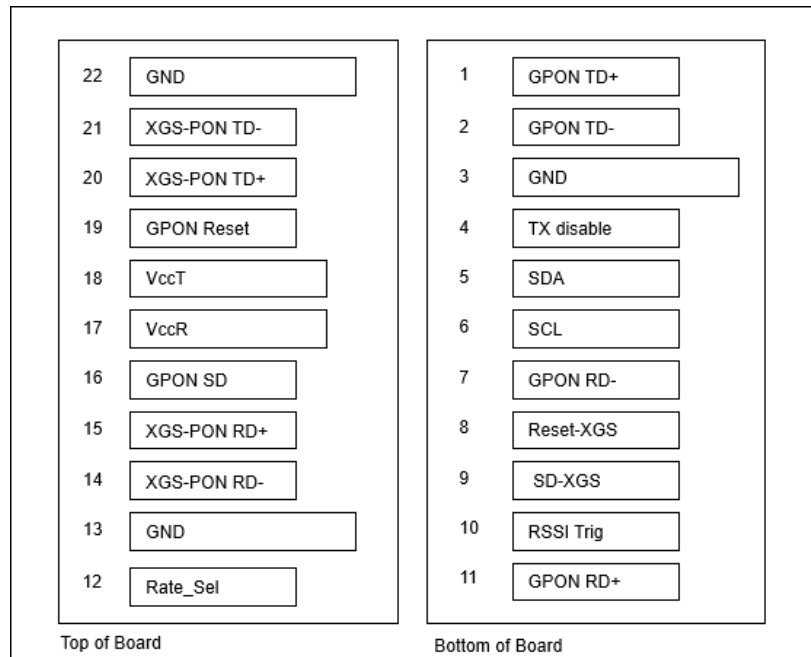
Timing Requirement of Control and Status I/O

Parameter	Symbol	Min	Typ	Max	Unit	Notes
TX Disable Assert Time	t_off			100	us	
TX Disable Negate Time	t_on			2	ms	
Time to initialize	t_init			300	ms	

Transceiver Block Diagram



Pin-out Definitions



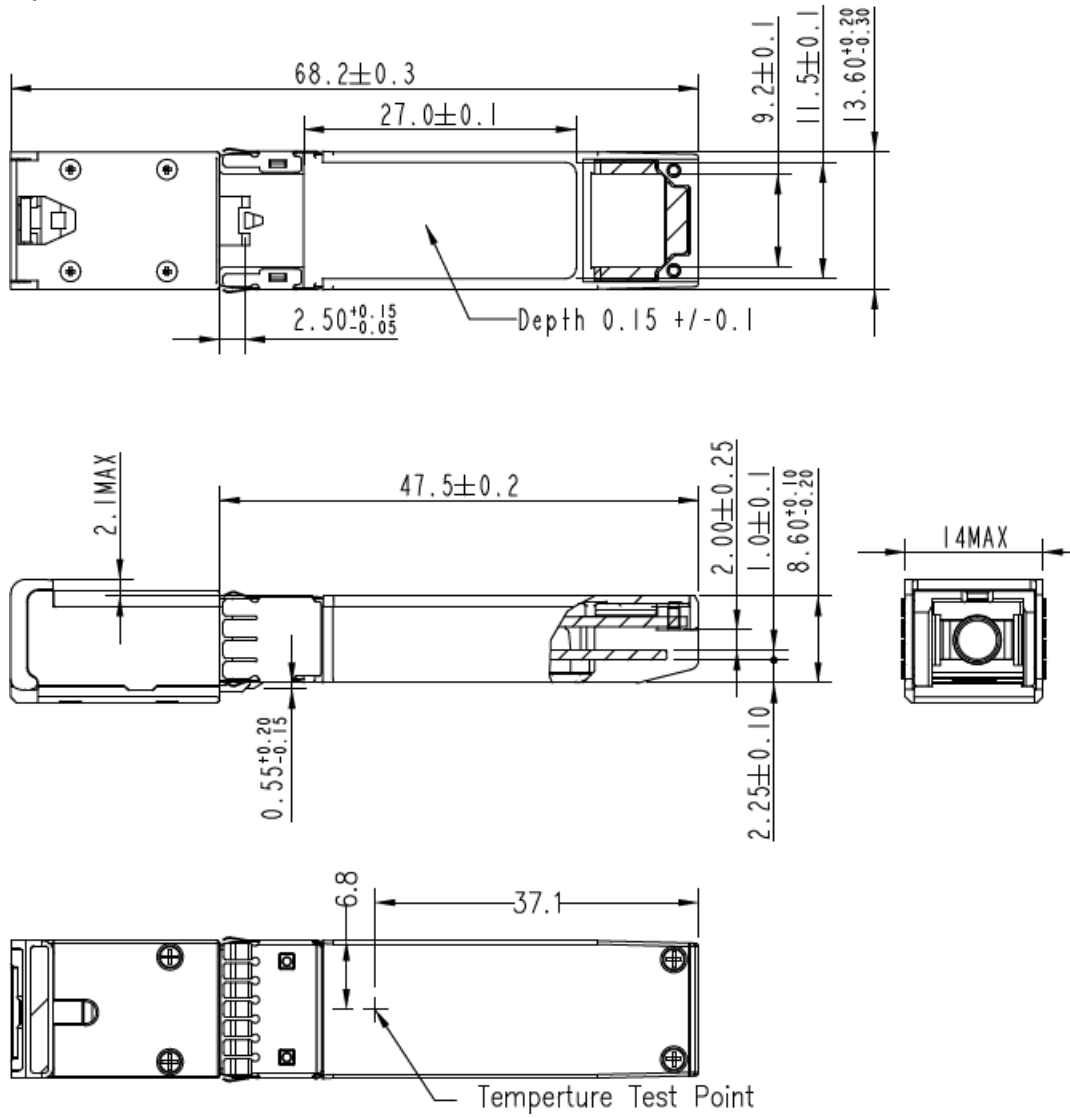
Pin Descriptions

Pin	Symbol	Description	Notes
1	GPON TD+	Transmit Data Input	1
2	GPON TD-	Inv. Transmit Data Input	1
3	GND	Ground	Ground
4	TX Disable	Transmitter Disable	2
5	SDA	2 wire serial ID interface, SDA	3
6	SCL	2 wire serial ID interface, SCL	3
7	GPON RD-	GPON Inv. Received DataOutput	4
8	XGS-PON Reset	Reset for XGS-PON receiver	
9	XGS-PON SD	Signal Detect	
10	RSSI Trig	RSSI Trigger input	5
11	GPON RD+	GPON Received Data Output	4
12	Rate_Sel	Rate select Control input	H-XGS; L-XG
13	GND	Ground	
14	XGS-PON RD-	Inv. Received Data Output	1
15	XGS-PON RD+	Received Data Output	1
16	GPON SD	GPON RX Signal Detect	
17	VccR	Receiver Power	3.3V± 5%
18	VccT	Transmitter Power	3.3V± 5%
19	GPON Reset	Reset for GPON receiver	
20	XGS-PON TD+	Transmit Data Input	1
21	XGS-PON TD-	Inv. Transmit Data Input	1
22	GND	Ground	

Notes:

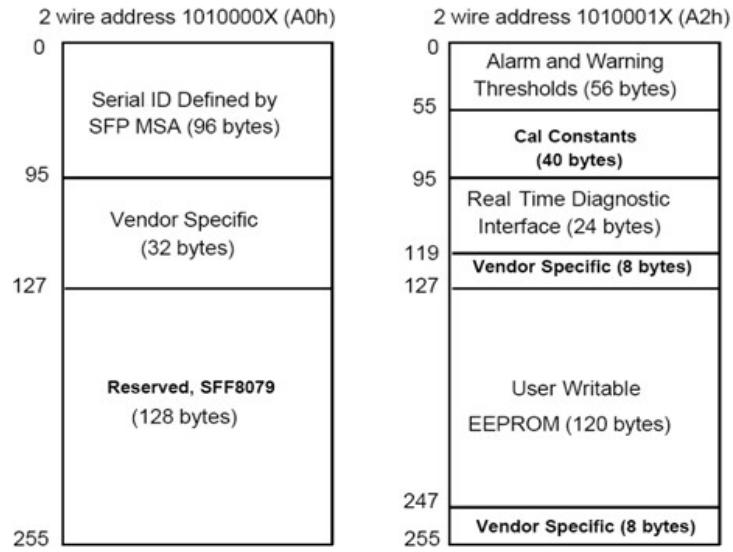
1. AC-coupled, differential lines with 100Ω differential termination inside the module.
2. TX Disable control both XGS-PON and GPON transmitter
3. Should be pulled up with a 4.7K~10Kohm resistor to VCC on the host board.
4. LVPECL, DC-coupling in module, pull down offset resistor and coupling capacitor on board.
5. RSSI trigger control both XGS-PON and GPON receiver and select GPON or XGS-PON channel by IIC programming. For register setting, see A2 byte 110, bit 3.

Mechanical Specifications

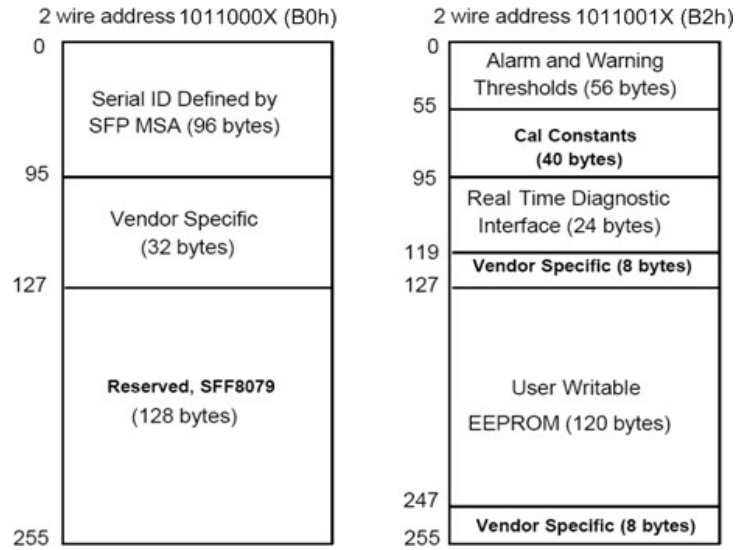


Digital Diagnostic Memory Map

XGPON Digital Diagnostic Memory Map



GPON Digital Diagnostic Memory Map



Digital Diagnostic Monitoring Functions

Mode	Parameter	Range	Unit	Notes
XGS-PON	Temperature	A2[00]: 96-97	+/-3°C	Floating/256; Note 1, 2
	Vcc Voltage	A2[00]: 98-99	< 3%	Unit 1mV; Note 2
	Bias Current	A2[00]: 100-101	< 10%	Unit 4uA; Note 2
	TX Power	A2[00]: 102-103	< 3 dB	Unit 0.2uW; Note 2
	RX Power	A2[00]: 104-105	< 3 dB	Unit 0.1uW; Note 2, 3
GPON	Temperature	Refer to A2[00]: 96-97	+/-3°C	Floating/256; Note 1, 2
	Vcc Voltage	Refer to A2[00]: 98-99	< 3%	Unit 1mV; Note 2
	Bias Current	B2[00]: 100-101	< 10%	Unit 4uA; Note 2
	TX Power	B2[00]: 102-103	< 3 dB	Unit 0.2uW; Note 2
	RX Power	B2[00]: 104-105	< 3 dB	Unit 0.1uW; Note2, 3

Notes:

1. An actual temperature test point is fixed on the module case around the laser array.
2. Full operating temperature range
3. RSSI DDM working range is between -12 to -32dBm.

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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