

XGSPON&GPON Combo OLT SFP+ Transceiver PCS96-B542320

FEATURES

- Single fiber bi-directional data links with downstream 9.953Gbps and 2.488Gbps
- Single fiber bi-directional data links with upstream 9.953G/2.488Gbps and 1.244Gbps
- 0 to 70°C operating case temperature
- 3.3V power supply
- SFP+ package with SC Receptacle connector
- Hot-pluggable capability
- High power 1577nm EML and 1490nm DFB transmitter
- High sensitivity 1270nm/1310nm APD-TIA
- Support 20km transmission distance with SMF
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- RoHS compliance

APPLICATIONS

- XGS-COMBO PON OLT SFP+ C+/C+'

STANDARDS

- Complies with INF-8472
- Complies with ITU G.9807.1
- Complies with ITU G.984.2
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	T _{stg}	-40	85	°C	Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
DC Supply Voltage	VCC	0	3.6	V	
Relative Humidity - Operating	RHO	5	85	%	
Receiver Damaged Threshold			-3	dBm	

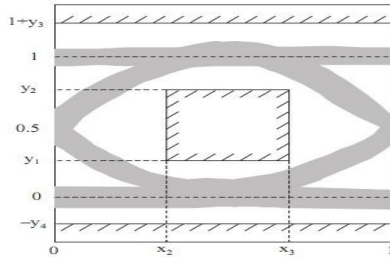
RECOMMENDED OPERATING CONDITION

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Operating Case Temperature	T _c	0		70	°C	
Power Supply Voltage	V _{cc}	3.1 3	3.3	3.47	V	
Power Supply Current				800	mA	
Operating Relative Humidity		5		85	%	
Data Rate(TX/RX)	TX		9.953 2.488		Gbps	
	RX		9.953/2.4 88 1.244		Gbps	
Data Rate Drift		- 100		+100	ppm	

9.953G TRANSMITTER OPTICAL SPECIFICATION

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter Type		1577nm EML Continuous Mode				
Data Rate	Tx		9.953		Gbps	
Centre Wavelength	λ_c	1575	1577	1580	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launched Power (BOL)	P _{out}	5.5		9	dBm	Room Temperature
Average Launched Power (EOL)		5		9	dBm	Over Temperature
Mean Launched Power (TX Off)	P _{off}			-39	dBm	
Extinction Ratio	ER	8.2			dB	PRBS2 ³¹ -1

						@9.953Gbps
Transmitter dispersion Penalty	TDP			1	dB	Transmit on 20km SMF
Eye Diagram		Compliant with ITU G.9807.1				Figure 1, Mask Margin > 10%



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

Figure 1 XGSPON Transmitter Eye Mask Definitions

2.488G TRANSMITTER OPTICAL SPECIFICATION

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter Type		1490nm DFB Continuous Mode				
Data Rate	Tx		2.488		Gbps	
Centre Wavelength	λ_c	1480	1490	1500	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launched Power (BOL)	Pout	5		8.5	dBm	Room Temperature
Average Launched Power (BOL)		4.5		8.5	dBm	Over Temperature
Mean Launched Power (TX Off)	Poff			-39	dBm	
Extinction Ratio	ER	8.2			dB	PRBS2 ²³ -1 @2.488Gbps
Transmitter dispersion Penalty	TDP			1	dB	Transmit on 20km SMF
Eye Diagram		Compliant with ITU G.984.2				Figure 2, Mask Margin > 10%

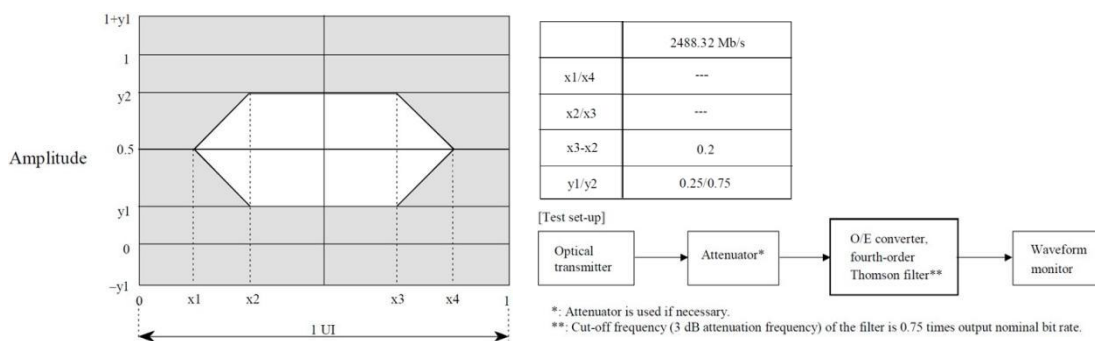


Figure 2 GPON Transmitter Eye Mask Definitions

9.953Gbps RECEIVER OPTICAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Receiver Type		1270nm Burst-mode APD/TIA				
Data Rate	Rx		9.953		Gbps	
Receive Wavelength	λ_c	1260	1270	1280	nm	
Sensitivity(BOL)	SEN			-29.5	dBm	PRBS 2 ³¹ -1@9.953Gbps BER $\leq 1 \times 10^{-3}$
Sensitivity(EOL)				-29		
Overload	SAT	-8			dBm	
RX Loss of Signal De-assert level				-31	dBm	
RX Loss of Signal Assert level		-44			dBm	

2.488Gbps RECEIVER OPTICAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Receiver Type		1270nm Burst-mode APD/TIA				
Data Rate	Rx		2.488		Gbps	
Receive Wavelength	λ_c	1260	1270	1280	nm	
Sensitivity(BOL)	SEN			-31	dBm	PRBS 2 ²³ -1@2.488Gbps BER = 10^{-4}
Sensitivity(EOL)	SEN			-30.5	dBm	
Overload	SAT	-10			dBm	
RX Loss of Signal De-assert level				-31	dBm	
RX Loss of Signal Assert level		-44			dBm	

1.244Gbps RECEIVER OPTICAL SPECIFICATIONS

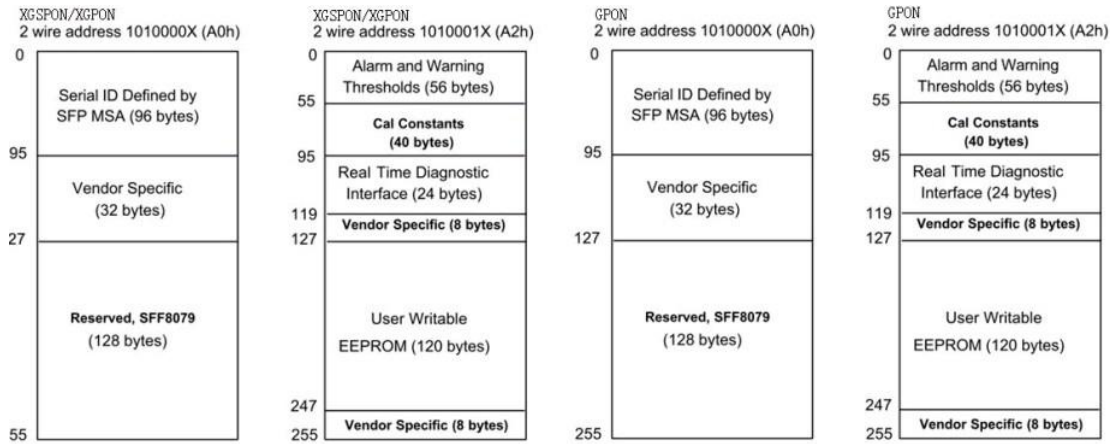
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Receiver Type		1310nm Burst-mode APD/TIA				
Data Rate	Rx		1.244		Gbps	

Receive Wavelength	λ_c	1290	1310	1330	nm	
Sensitivity(BOL)	SEN			-32	dBm	PRBS 2 ²³ -1@1.244Gbps BER =10 ⁻¹⁰
Sensitivity(EOL)	SEN			-31	dBm	
Overload	SAT	-12			dBm	
RX Loss of Signal De-assert level				-32	dBm	
RX Loss of Signal Assert level		-44			dBm	

RECEIVER ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Notes
Signal Detect Voltage-Low		0		0.4	V	
Signal Detect Voltage-High		2.4		V _{cc}	V	
RSSI Trigger-Low		0		0.8	V	
RSSI Trigger-High		2.0		V _{cc}	V	
XGS Reset width	Trw	25.6			ns	Reset in preamble

EEPROM INFORMATION



DIGITAL DIAGNOSTIC MONITORING INTERFACE

Parameter	Range	Accuracy	Calibration	Notes
Temperature	0 to 70°C	±3°C	Internal	1LSB = 1/256°C
Voltage	3.0 to 3.6V	±3%	Internal	1LSB = 0.1mV
Bias Current	0 to 131mA	±10%	Internal	1LSB = 4uA
TX Power	3 to 8dBm	±2dB	Internal	1LSB = 0.2uW
RX Power monitor	-30 to -8dBm	±2dB	Internal	1LSB = 0.1uW

THMPRS6277CGE-DM PIN ASSIGNMENT

Pin	Name	Description	Notes
1	GPON TD+	GPON Transmit Data in	AC coupled, LVPECL
2	GPON TD-	GPON Inverted Transmit Data in	AC coupled, LVPECL
3	GND	Module Ground	
4	SDA	2-Wire Serial Interface Data	Pull Up With a 4.7K-10KΩ Resistor On The Host Board
5	SCL	2-Wire Serial Interface Data	
6	GPON RD-	GPON Inverted Received Data Out	DC coupled, LVPECL output
7	Reset/Rate_sel		Trilevel signal
8	XGSPON_BSD	XGS Signal Detect	Low: Lost Signal

9	RSSI_TRIGGE R/Dis	RSSI Trigger	A2H 118 Control
10	GPON RD+	GPON Received Data Out	DC coupled, LVPECL output
11	GND	Module Ground	
12	XGSPON RD-	XGS Inverted Received Data Out	DC coupled, CML output
13	XGSPON RD+	XGS Received Data Out	DC coupled, CML output
14	GPON_BSD	GPON Signal Detect	Low: Lost Signal, LVTTTL
15	VCC3_RX	Receiver 3.3V Power Supply	
16	VCC3_TX	Transmitter 3.3V Power Supply	AC coupled ,CML input
17	GPON_Reset		LVTTTL
18	XGSPON TD+	XGS Transmit Data in	AC coupled ,CML input
19	XGSPON TD-	XGS Inverted Transmit Data in	AC coupled ,CML input
20	GND	Module Ground	GND

MECHANICAL SPECIFICATIONS(Unit: mm)

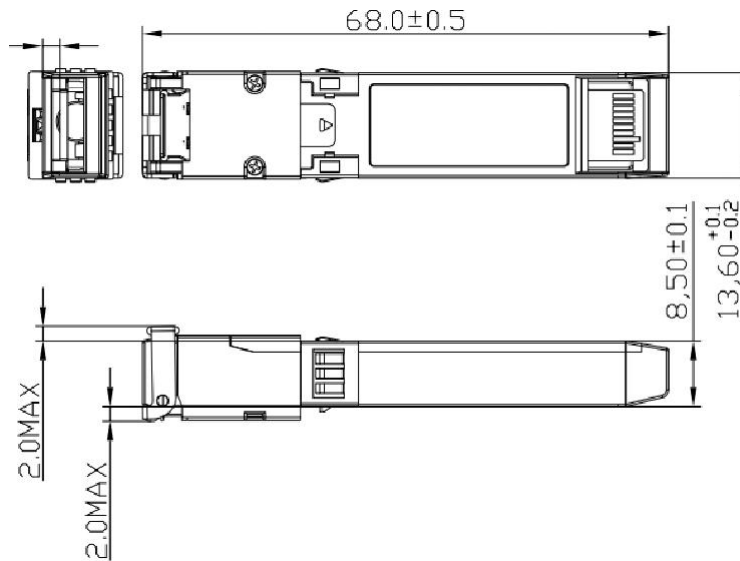


Figure 5 Mechanical Outline Drawing

ORDER INFORMATION

Part Number	Product Description
PCS96-B542320	XGS-COMBO PON OLT SFP+ C+/C+', SC/UPC receptacle connector, 0~70°C

REMARK

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

12.Contact Information

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