

XGSPON/XGPON/GPON Combo OLT SFP+ transceiver

Up to 20KM, Tx1490/1577nm/Rx1270/1310nm

XG(S)PON Combo OLT SFP+ N2/C+



10/2.5/1.25G SFP+
XG(S)GPON OLT
transceiver

Tx1490/1577nm
Rx1270/1310nm

Up to 20KM

0°C~+70°C

SC/UPC
Connector

DDM
Function

XG(S)-PON OLT N2
GPON OLT C+

Hot
Pluggable

Overview

The XG(S)PON Combo OLT SFP+ Transceiver module is designed for triple play use, supporting XGS-PON, XG-PON and GPON transmissions up to a 20km distance. It incorporates a High power 1577nm EML LD and High power 1490nm DFB LD and High sensitivity 1270nm/1310nm APD . This makes that the module can work at bi-directional data links with a TX of 9.953Gbps and a Burst Mode of RX 9.953G/2.488Gbps, as well as bi-directional data links with a TX of 2.488Gbps and a Burst Mode of RX 1.244Gbps. This offers more options and connectivity in combination with the AirLive XGSPON OLT-8XGS OLT for which this module is recommended.

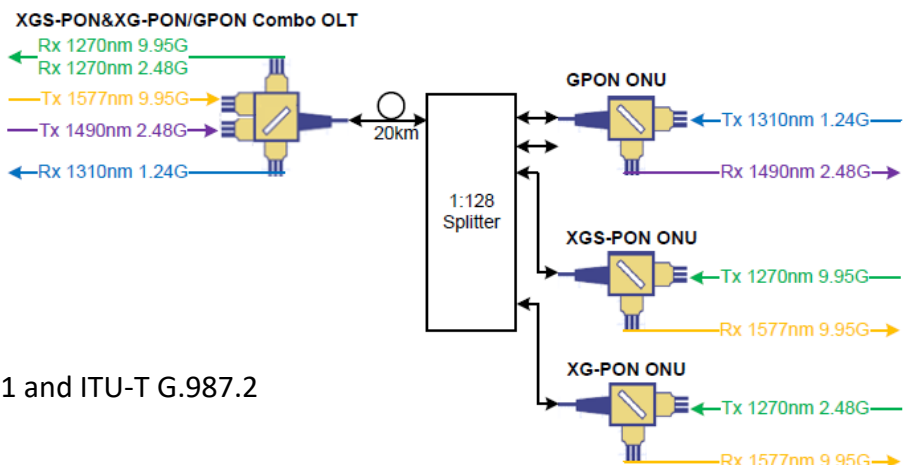
The transceiver combines a GPON OLT SFP Class C+ module + a XG(S)-PON SFP+ N2 module + WDM1R all into one. Offering more flexibility in the applications which can be used with the module.

Features

- Single fiber bi-directional data links TX 9.953Gbps, Burst Mode RX 9.953G/2.488Gbps application
- Single fiber bi-directional data links TX 2.488Gbps, Burst Mode RX1.244Gbps application
- 0 to 70°C operating case temperature
- 3.3V power supply
- SFP+ with SC/UPC connector
- Hot-pluggable capability
- High power 1577nm EML LD and High power 1490nm DFB LD
- High sensitivity 1270nm/1310nm APD
- Support 20km transmission distance with SMF
- SD indication
- Low EMI and excellent ESD protection
- DDM Supported

Standards

- Complies with SFF-8472
- Complies with ITU-T G.9807.1 and ITU-T G.987.2
- Complies with ITU-T G.984.2



Model Information

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	Tc	0		70	°C
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
RX Data Rate			9.953 2.488 1.244		Gbps
TX Data Rate			9.953 2.488		Gbps

XGS-PON Transmitter Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Optical Wavelength	λ_c	1575		1580	nm	
Optical Spectrum Width (-20dB)	$\Delta\lambda$	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launch Optical Power	AOP	+4		+7	dBm	Launched into SMF
Power-OFF Transmitter Optical Power				-39	dBm	Launched into SMF
Extinction Ratio	ER	8.2			dB	PRBS 2 ³¹ -1 @9.953Gbps
Optical Waveform Diagram	Compliant with ITU-T G.9807.1					Mask Margin>5%
Tolerance to Transmitter Incident Light		-15			dB	
Transmitter and Dispersion Penalty	TDP			1	dB	Transmit on 20km SMF

XGS-PON Transmitter Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Input Differential Swing	Vin	100		850	mV	CML input, AC coupled
Input Differential Impedance	Zin	90	100	110	Ohm	
TX Disable	Disable	VD	2	VCC+0.3	V	
	Enable	VEN	0	0.8	V	
TX Fault	Fault	VF	2.4	VCC+0.3	V	
	Normal	VNO	0	0.4	V	

Model Information

GPON Transmitter Optical Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Optical Wavelength	λ_c	1480		1500	nm	
Optical Spectrum Width (-20dB)	$\Delta\lambda$	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launch Optical Power	AOP	+4		+7	dBm	Launched into SMF
Power-OFF Transmitter Optical Power				-39	dBm	Launched into SMF
Extinction Ratio	ER	8.2			dB	PRBS 2 ²³ -1+72CID @2.488G
Optical Waveform Diagram	Compliant with ITU-T G.984					Mask Margin>5%
Tolerance to Transmitter Incident Light		-15			dB	
Transmitter and Dispersion Penalty	TDP			1	dB	Transmit on 20km SMF

GPON Transmitter Electrical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Input Differential Swing	V _{in}	100		850	mV	CML input, AC coupled
Input Differential Impedance	Z _{in}	90	100	110	Ohm	
TX Disable	Disable	V _D	2	VCC+0.3	V	
	Enable	V _{EN}	0	0.8	V	
TX Fault	Fault	V _F	2.4	VCC+0.3	V	
	Normal	V _{NO}	0	0.4	V	

XGS-PON Receiver Optical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Wavelength	λ_c	1260		1280	nm	
Sensitivity	SEN			-28.0	dBm	ER≥6dB, PRBS 2 ³¹ @9.953Gbps
Minimum Overload		-7			dBm	
Max Optical input				0	dBm	BER ≤1×10 ⁻³
SD Assert Level	SDA			-28.5	dBm	
SD De-Assert Level	SDD	-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	

XG-PON Receiver Optical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Wavelength	λ_c	1260		1280	nm	
Sensitivity	SEN			-29.5	dBm	ER≥6dB, PRBS 2 ²³ @2.488Gbps
Minimum Overload		-9			dBm	
Max Optical input				0	dBm	BER ≤1×10 ⁻⁴
SD Assert Level	SDA			-30.0	dBm	
SD De-Assert Level	SDD	-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	

Model Information

XG/XGS-PON Receiver Electrical Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	
Guard Time	Tg	50	100	0	ns	
Reset Pulse Width	Tr	25.6	-	-	ns	
Receiver Threshold Settling Time	Tsettling			100	ns	
Data Output Differential Swing		400		800	mV	DC Coupled, CML output
Output Differential Impedance	Zout	90	100	100	Ohm	
SD Assert Level Time				100	ns	
SD DE-Assert Level Time				100	ns	
SD Voltage - Low		0		0.4	V	
SD Voltage - High		2.4		VCC+0.3	V	

GPON Receiver Optical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Wavelength	λ_c	1290	1310	1330	nm	
Sensitivity	SEN			-32.0	dBm	ER \geq 10dB, PRBS 2 ²³ @1.244Gbps BER \leq 1 \times 10 ⁻¹⁰
Minimum Overload		-12			dBm	
Max Optical input				0	dBm	
SD Assert Level	SDA			-32.5	dBm	
SD De-Assert Level	SDD	-45			dBm	
Hysteresis		0.5		6	dB	
CID		72		-12	bit	

GPON Receiver Electrical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Guard Time	Tg	25.6	50	0	ns	
Reset Pulse Width	Tr	12.8	-	-	ns	
Receiver Threshold Settling Time	Tsettle		25.6		ns	
Data Output Differential Swing		600		1600	mV	LVPECL output, DC coupled
Output Differential Impedance	Zout	90	100	100		
SD Assert Level Time	Ta			24	ns	
SD DE-Assert Level Time				25.6	ns	
SD Voltage - Low		0		0.4	V	
SD Voltage - High		2.4		VCC+0.3	V	

Model Information

Reset/RateSel Function

Reset/Ratesel	Voltage V	Function
High	1.9~3.3V	Reset
Middle	1.2~1.6V	Rate=2.488G
Low	0~0.9V	Rate=9.953G

Reset/RateSel Timing Diagram

Parameter	Symbol	Min.	Typ.	Max.	Unit
Setup Time	TSetup	5			ns
Reset Rise Time	TRise			3	ns
Reset Fall Time	TFall			3	ns
Reset New Burst Time	TReset new burst			0	n

RSSI Timing Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit
Optical Signal Duration time	TOpt	1200			ns
RSSI Trigger width	TW	550			ns
RSSI Trigger Delay	TD	150			ns
RSSI Trigger-Low		0		0.8	V
RSSI Trigger-High		2.0		VCC	V
I ² C Access Prohibited Time	TS	500			μs
I ² C Bus Frequency		0	100	200	KHz
I ² C High		2.4		3.6	V
I ² C Low		0			

Model	AirLive XG(S)PON Combo OLT SFP+ N2/C+
<p>Hardware</p> <ul style="list-style-type: none">• Power Supply Voltage: 3.13V~3.47V Typical Power Supply Voltage: 3.3V• Standard Complies with SFF-8472 Complies with ITU-T G.9807.1 and ITU-T G.987.2 Complies with ITU-T G.984.2 Complies with FCC 47 CFR Part 15, Class B Complies with FDA 21 CFR 1040.10 and 1040.11• Transmitter (Electrical - Optical) Optical Center Wavelength XGS-PON:<ul style="list-style-type: none">- Min.:1575nm- Max.: 1580nmOptical Center Wavelength GPON:<ul style="list-style-type: none">- Min.:1480nm- Max.: 1500nmReceiver –(Optical, Electrical) Operating Wavelength XG/XGS-PON:<ul style="list-style-type: none">- Min. 1260nm- Max. 1280nmOperating Wavelength GPON:<ul style="list-style-type: none">- Min. 1290nm- Typ. 1310nm- Max. 1330nmRSSI Timing Specification Optical Signal During Time: Min 1200ns RSSI Trigger width: Min 550ns, RSSI Trigger Delay: Min 150ns I²C Access Prohibited Time: 500us	<p>Environment</p> <ul style="list-style-type: none">• Operating Temperature: 0°C to +70°C• Storage Temperature: -45°C to +85°C• Operating Relative Humidity: 5%~85%, non-condensing• Storage Relative Humidity: 5%~85%, non-condensing <p>Standard package of SFP</p> <ul style="list-style-type: none">• Product size: 67.5x 14.0 x 8.55 mm(L*W*H)• Package size: TBD mm(L*W*H)• Package Weight: N.W: TBD kgs; G.W:TBD KGS• Package content: 1 x Module <p>Standard carton package</p> <ul style="list-style-type: none">• Quantity: 10 pcs / 1 Blister• Dimensions TBD mm(L*W*H)• Weight TBD kgs <p>Ordering Information</p> <ul style="list-style-type: none">• Model: AirLive XG(S)PON Combo OLT SFP+ N2/C+• Name: XGSPON&XGPON/GPON Combo OLT SFP+ Transceiver Optical Module 10G/2.5G/1.25G 20KM Tx1490/1577nm/Rx1270/1310nm

* Specification will be changed without prior notice

