

XGSPON-ONU-C

XGSPON ONU SFP+ N1/N2 Transceiver



Product Features

- ❖ Single fiber bi-directional data links asymmetric TX 9.953Gbps/RX9.953Gbps application
- ❖ Single 3.3V power supply
- ❖ SFP+ package with SC/UPC Receptacle connector
- ❖ Hot-pluggable capability
- ❖ High power 1270nm DML DFB LD and high sensitivity 1577nm APD
- ❖ Support 20km transmission distance with SMF
- ❖ CML compatible data input/output interface

- ❖ Low power dissipation
- ❖ Low EMI and excellent ESD protection
- ❖ Digital diagnostic monitor interface
- ❖ RoHS-6 compliance
- ❖ 0 to 70°C operating case temperature

Applications

- ❖ 10-Gigabit-capable passive optical networks

Standards

- ❖ Complies with SFP+ MSA (SFF-8431)
- ❖ Complies with ITU-T G.9807
- ❖ Complies with SFF-8472
- ❖ Complies with FCC 47 CFR Part 15, Class B
- ❖ Complies with FDA 21 CFR 1040.10 and 1040.11, Class I
- ❖ Complies with FDA 21 CFR 1040.10 and 1040.11

Absolute Maximum Rating

Parameter	Symbol	Min	Max	Unit	Notes
Storage Ambient Temperature	T _{STG}	-40	85	°C	
Operating Case Temperature	T _C	0	70	°C	
Operating Humidity	OH	5	95	%	
Power Supply Voltage	V _{CC}	0	3.6	V	

Recommended Operating Condition

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T _c	0		70	°C
Power Supply Voltage	V _{CC}	3.15	3.3	3.45	V
Power Supply Current	I _{CC}			600	mA
Nominal Upstream Line Rate			9.953		Gbps
Nominal Downstream Line Rate			9.953		Gbps
Max Input Power					dBm

Transmitter Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Average Launch Optical Power	P _{OUT}	4		9	dBm	EOL, ver temperature, Launched into 9/125μm single mode fiber
		5		9	dBm	BOL, Room temperature, Launched into 9/125μm single mode fiber
Extinction Ratio	ER	6	-	-	dB	
Center Wavelength	λ	1260	1270	1280	nm	
Spectrum Width (-20dB)	Δλ	-	-	1	nm	
Side Mode Suppression Mode	SMSR	30			dB	
Burst on Time	T-on			50	ns	
Burst off Time	T-off			50	ns	
Tx-SD Assert	SD-on			350	ns	
Tx-SD De-Assert	SD-off			350	ns	
Transmitter and Dispersion Penalty	TDP			3	dB	Transmit on 20km SMF
Transmitter Tolerance To Reflected Optical Power		-15			dB	
Eye Diagram	Compliant with ITU-T G.987.2					PRBS 2 ³¹ -1 test pattern @9.953Gbit/s

Transmitter Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Input Differential Impedance	ZIN	90	100	110	Ω	
Data Input Swing Differential	VIN	200	-	1600	mV	
Burst Disable		2.0	-	V _{CC}	V	
Burst Enable		0	-	0.8	V	
Tx-Fault Voltage - Low		0		0.4	V	
Tx-Fault Voltage - High		2.4		V _{CC}	V	

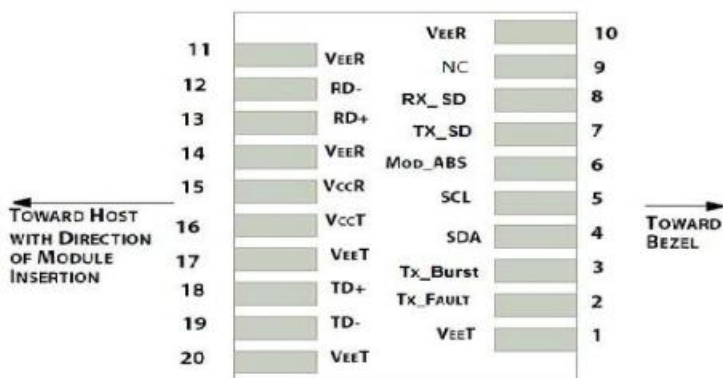
Receiver Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Center Wavelength	λ_c	1575	1577	1580	nm	
Receiver Sensitivity (EOL, Over Temperature)	SEN			-28	dBm	Measured with PRBS 2 ³¹ -1 test pattern @9.953Gbit/s, BER $\leq 1 \times 10^{-3}$
Receiver Sensitivity (BOL, Room Temperature)	SEN			-29	dBm	
Receiver Overload		-8			dBm	Measured with PRBS 2 ³¹ -1 test pattern @9.953Gbit/s, BER $\leq 1 \times 10^{-3}$
Receiver Reflectance				-12	dB	
Optical Return Loss Tolerance				-15	dB	
SD Assert	SDA			-29	dBm	
SD De-Assert	SDD	-45			dBm	
SD Hysteresis		0.5		5	dB	
Data Output Swing Differential	V _{OUT}	340	-	850	mV	
SD	High	2.4	-	V _{CC}	V	
	Low	0	-	0.4	V	

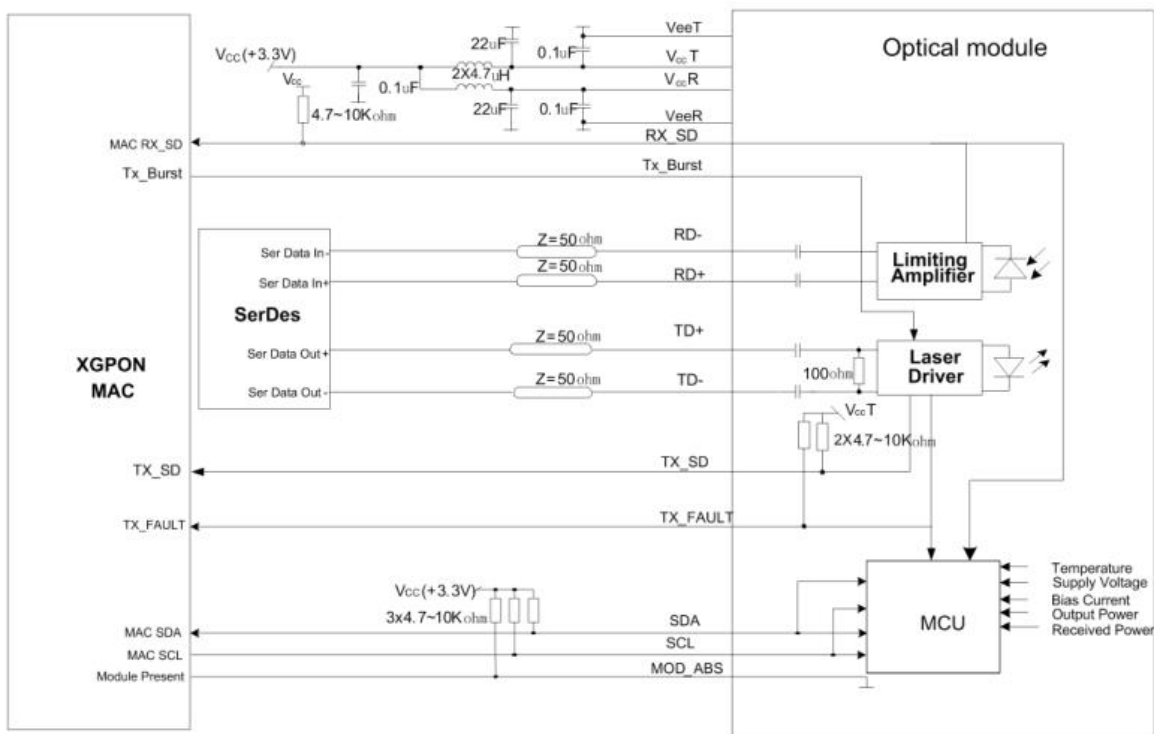
Pin Description

PIN	Name	Description	Notes
1	V _{EE} T	Module Transmitter Ground	
2	Tx_Fault	Module Transmitter Fault	Low: normal; High: abnormal
3	Tx_ BURST	Transmitter Burst Enable	TTL Input, Low: transmitter on
4	SDA	Module Definition 2	2 wire serial ID interface, SDA
5	SCL	Module Definition 1	2 wire serial ID interface, SCL
6	Mod_ABS	Module Absent	Connected to V _{ee} T or V _{ee} R in the module
7	TX_SD	Tx Transmitter State Indication	TX_Indication Assert When Transmitter on
8	Rx_SD	Receiver Signal Indication	Low: signal detected; High: loss of signal
9	NC	NC Connect	NC
10	V _{ee} R	Module Receiver Ground	
11	V _{ee} R	Module Receiver Ground	
12	RD-	Inverted Received Data Out	AC-coupled
13	RD+	Non-inverted Received Data Out	AC-coupled
14	V _{ee} R	Module Receiver Ground	
15	VCCR	Module Receiver 3.3 V Supply	
16	VCCT	Module Transmitter 3.3 V Supply	
17	V _{ee} T	Module Transmitter Ground	
18	TD+	Non-inverted Transmit Data in	AC-coupled
19	TD-	Inverted Transmit Data in	AC-coupled
20	V _{ee} T	Module Transmitter Ground	

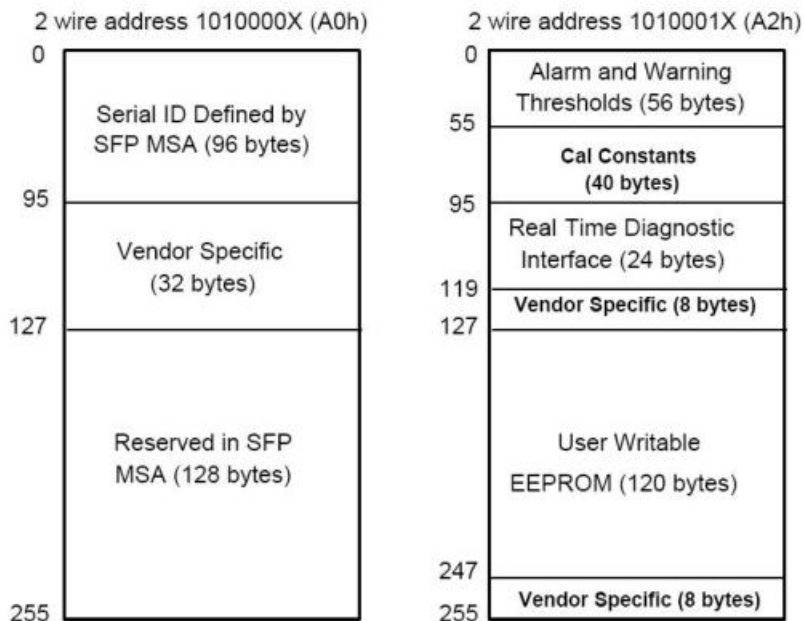
Pin Out Drawing



Typical Interface Circuit



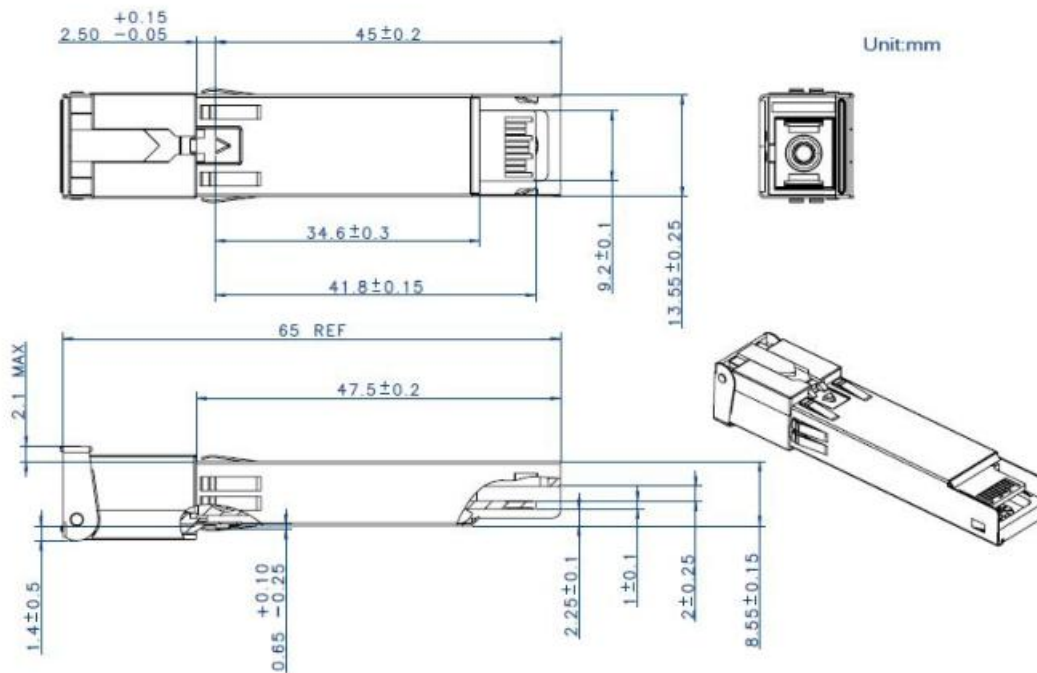
EEPROM Information



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 3.6 V	±3%	Internal	1LSB = 0.1mV
Bias Current	0 to 131mA	±10%	Internal	1LSB = 4uA
TX Power	4 to 9dBm	±2dB	Internal	1LSB = 0.2uW
RX Power Monitor	-29 to -8dBm	±3dB	Internal	1LSB = 0.1uW

Package Outline



Ordering Information

Part Number	XGSPON-ONU-C
Application	XGSPON ONU, 0°C~+70°C
Wavelength (nm)	1270T/1577R
Data Rate (Gb/s)	9.95T/9.95R
ODN Class	N1/N2
Package	SFP+
Connector	SC