

XGSPON-ONU-C

XGSPON ONU SFP+ N1/N2 Transceiver



Product Features

- ❖ Single fiber bi-directional data links asymmetric TX 9.953Gbps/RX9.953Gbps application
- ❖ 0 to 70°C operating case temperature
- ❖ 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

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 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Absolute Maximum Rating

Parameter	Symbol	Min.	Max	Unit	Notes
Storage Ambient Temperature	TSTG	-40	85	°C	
Operating Case Temperature	Tc	0	70	°C	
Operating Humidity	OH	5	95	%	
VCC3 Power Supply Voltage	VCC3	0	3.6	V	

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	Tc	0		70	°C	
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Power Supply Current	ICC			450	Gbps	
Nominal upstream line rate			9.953		Gbps	
Nominal downstream line rate			9.953		Gbps	

Transmitter Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Average Launch Optical Power	POUT	+4		+9	dBm	Launched into SMF
Extinction Ratio	ER	6			dB	PRBS231-1 @9.953Gbps
Centre Wavelength	λ	1260	1270	1280	nm	
Spectral Width (-20dB)	$\Delta\lambda$	--	-	1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Burst on time	T-on			30	ns	
Burst on time	T-off			30	ns	
Tx-SD Assert	SD-on			200	ns	
Tx-SD De-Assert	SD-off			200	ns	
Transmitter and dispersion penalty	TDP			1	dB	
Transmitter tolerance to reflected optical power		-15			dB	
Eye Diagram	Compliant With ITU-T G.987.2, margin>5%					Transmit on 20km SMF

Transmitter Electrical Characteristics

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

XGSPON Receiver Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
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Operating Center Wavelength		λC	1575	1577	1580	nm	
Receiver Sensitivity		SEN			-28.5	dBm	Measured with PRBS $2^{31}-1$ test pattern @9.953Gbit/s, BER $\leq 1 \times 10^{-3}$
Receiver Overload			-8			dBm	Measured with PRBS $2^{31}-1$ test pattern @9.953Gbit/s, BER $\leq 1 \times 10^{-3}$
Receiver Reflectance					-20	dB	
Optical Return Loss Tolerance					-15	dB	
LOS Assert		LOSA	-39			dBm	
LOS De-Assert		LOSD			-29	dBm	
LOS Hysteresis			1		5	dB	
Data Output Swing Differential		V_{OUT}	300	-	850	mV	
SD	High		2.4	-	V_{CC}	V	
	Low		0	-	0.4	V	

Pin Description

PIN	Name	Description	Notes
1	VeeT	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 VeeT or VeeR in the module
7	TX_SD	Tx Transmitter State Indication	TX_Indication Assert When Transmitter ON
8	Rx_SD	Receiver Signal Indication	High: signal detected; Low: loss of signal
9	P_DOWN	Power save mode	Low: normal; High: power save mode
10	VeeR	Module Receiver Ground	

11	VeeR	Module Receiver Ground	
12	RD-	Inverted Received Data Out	AC-coupled
13	RD+	Non-inverted Received Data Out	AC-coupled
14	VeeR	Module Receiver Ground	
15	VCCR	Module Receiver 3.3 V Supply	
16	VCCT	Module Transmitter 3.3 V Supply	
17	VeeT	Module Transmitter Ground	
18	TD+	Non-Inverted Transmit Data in	AC-coupled
19	TD-	Inverted Transmit Data in	AC-coupled
20	VeeT	Module Transmitter Ground	

Pin Out Drawing

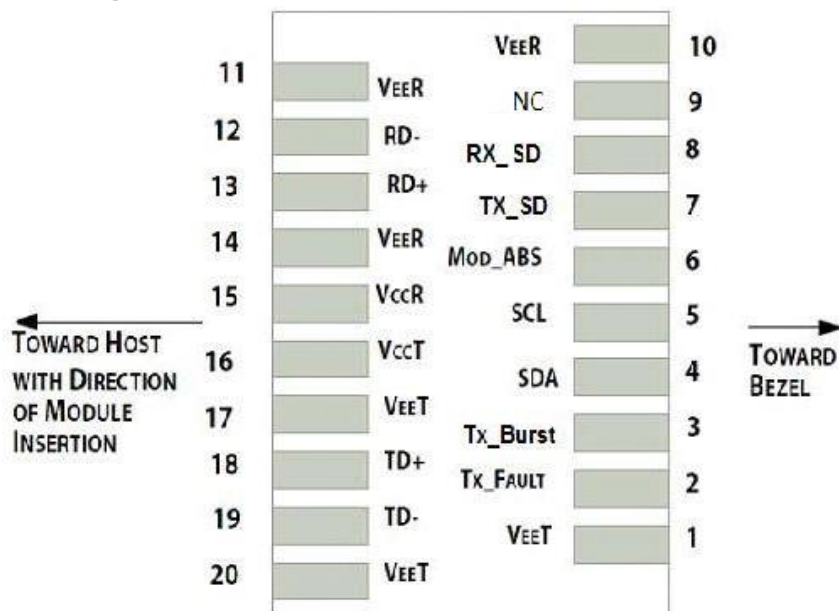


Figure 1 Pin out Drawing

Typical Interface Circuit

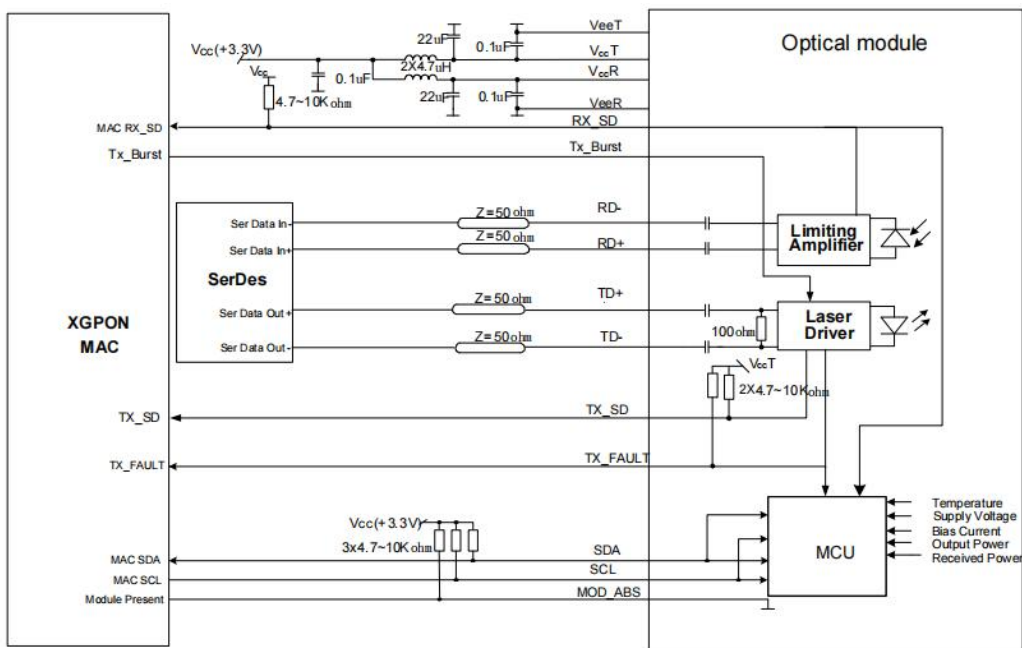


Figure 2 Typical Interface Circuit

Package Outline

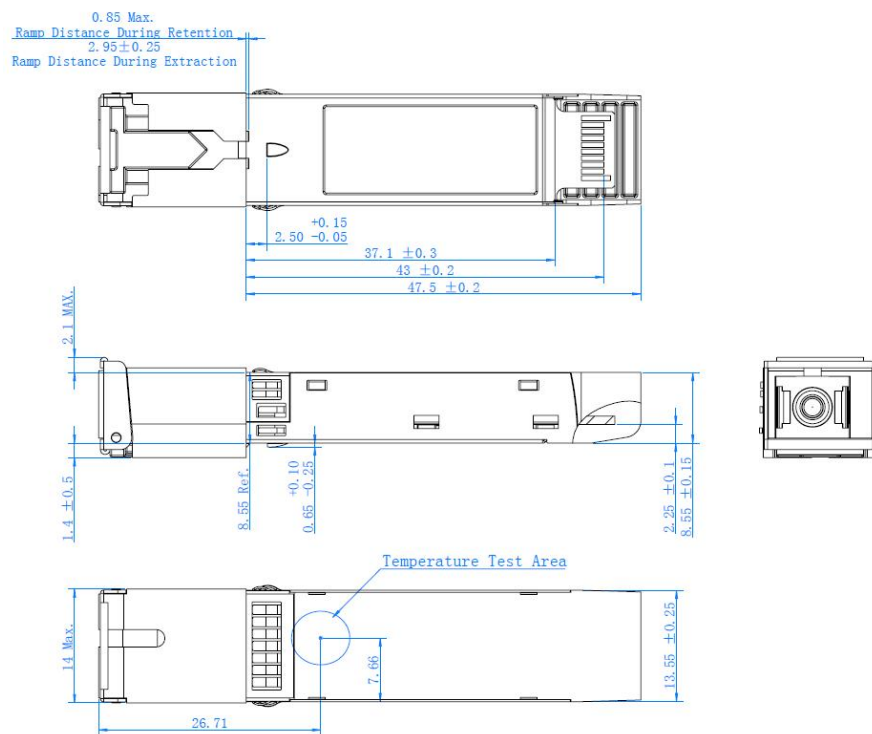


Figure 3 Package Outline

EEPROM Block Diagram

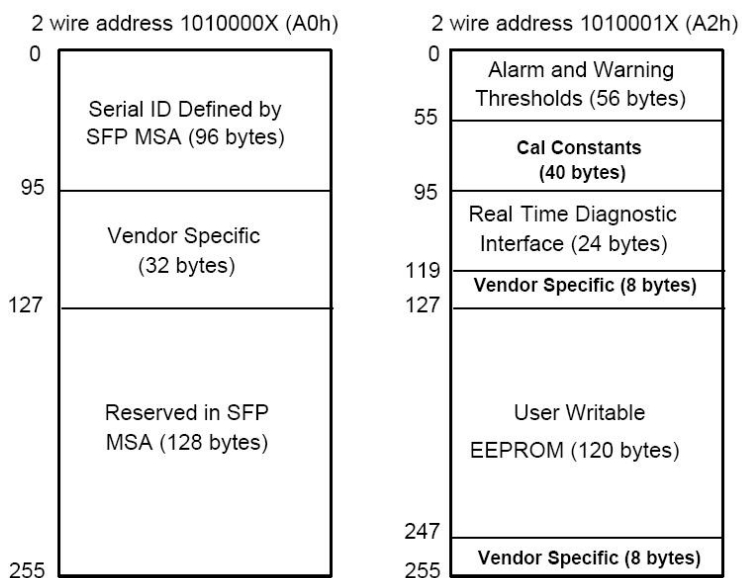


Figure 4 EEPROM Memory Map Specific Data Field Descriptions

Digital Diagnostic Monitoring Interface

Parameter	Range	Accuracy	Calibration	NOTES
Temperature	0 to 70°C	±3°C	Internal	LSB: 1/256°C
Voltage	3 to 3.6V	±3%	Internal	LSB: 0.1mV
Bias Current	0 to 131mA	±10%	Internal	LSB: 4uA
TX Power	2 to 11dBm	±2dB	Internal	LSB: 0.2uW
RX Power	-30 to -7dBm	±2dB	Internal	LSB: 0.1uW

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