

GX-U1221-20D

10G Asymmetrical GPON ONU Transceiver

PRODUCT FEATURES

- 1270nm DFB Burst mode transmitter, APD Continuous Mode Receiver
- Compliant with ITU-G.987.2
- SFP+ MSA SFF-8431 compliant
- Digital diagnostic SFF-8472 compliant
- SFP+ package with SC receptacle
- Single + 3.3V Power Supply
- ROHS-6/6 compliant
- Laser Class 1 Product which comply with the Requirements of IEC 60825-1 and IEC 60825-2



APPLICATIONS

- XGPON ONU
- Burst Mode application
- FTTX WDM Broadband Access

PRODUCT DESCRIPTION

HC's 10G GPON ONU transceiver GX-U1221-20D is designed for Gigabit Ethernet Passive Optical Network transmission. The module is contained in a SFP+ package with SC/UPC receptacle connector. It consists 1270nm DFB laser, APD+TIA, Preamplifier and WDM filter in a high-integrated optical sub-assembly, and it receives up to 9.953Gbps of continuous mode data at 1577nm, and transmits 2.488Gbps of burst mode data at 1270 nm .

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	VCC	-0.3		3.7	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		5			dBm	

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0		70	°C	Without air flow
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			450	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate	DR		2488		Mbps	
Coupled fiber	Single mode fiber					9/125um

III. Specification of Transmitter

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Launched Power	PO	2		7	dBm	
Extinction Ratio	ER	8.2			dB	
Center Wavelength	λ_C	1260		1280	nm	DFB Laser
Side mode suppression ratio	SMSR	30			dB	
Spectrum Bandwidth(-20dB)	σ			1	nm	
Optical Rise/Fall Time	tr/tf			140	ps	Note (1)
Transmitter OFF Output Power	POff			-45	dBm	
Total Jitter				0.2	UI	
Output Eye Mask	Compliant with ITU G.987.2					

Note (1). These are unfiltered 20-80% values, Measure at 2⁷-1 NRZ PRBS pattern (2.488Gbps)

IV. Specification of Receiver

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λ_{IN}	1575		1580	nm	APD
Receiver Sensitivity	Psen1			-28	dBm	Note (1)
	Psen2			-24	dBm	
Input Saturation Power (Overload)	P _{SAT}	-8			dBm	
Los Of Signal Assert	PA			-29	dBm	
Los Of Signal De-assert	PD	-40			dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	
Tolerance to reflected optical power				12	dB	

Note (1): Measured with Light source ER=8.2dB; BER =<10⁻³ @PRBS=2²³-1 NRZ

Measured with Light source ER=8.2dB; BER =<10⁻¹⁰ @PRBS=2²³-1 NRZ

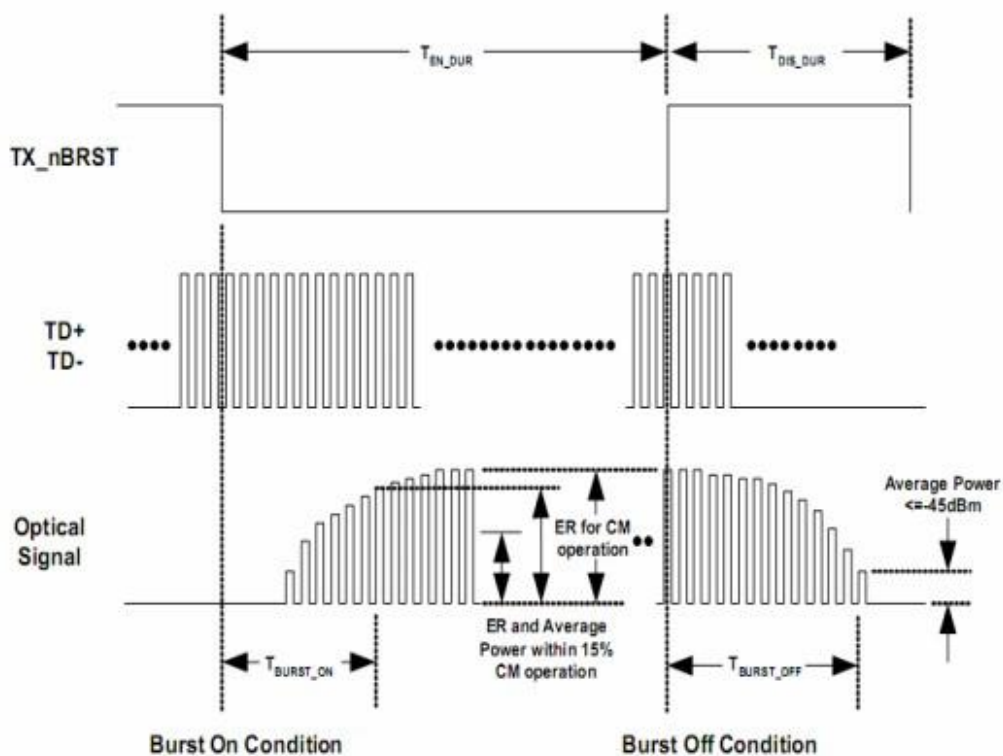
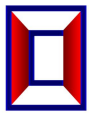
Note (2): When SD de-asserted, the data output is Low-level (fixed)

V. Electrical Interface Characteristics

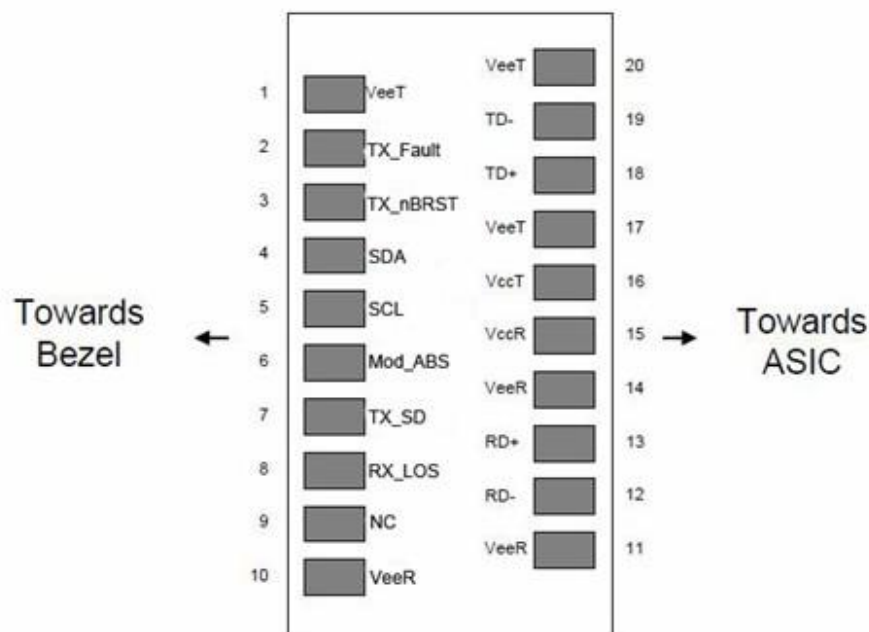
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Differential line input Impedance	RIN	90	100	110	Ohm	
Differential Data Input Swing	VDT	200		1600	mVp-p	Note (1)
BiasCNT(n) Input Voltage- High	VBCH	2		Vcc+0.3	V	LVTTL
BiasCNT(n) Input Voltage- Low	VBCL	0		0.8	V	
Receiver						
Differential Data Output Swing	VDR	500		1000	mVp-p	Note (1)
Signal Detect Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
Signal Detect Output Voltage-Low	VLOSL	0		0.8	V	

VI. Transmitter Burst Mode Timing Characteristics (BEN=low level)

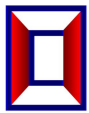
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Burst Turn On Time	T _{BURST_ON}			12	ns	
Burst Turn Off Time	T _{BURST_off}			12	ns	



VII. Pin Description

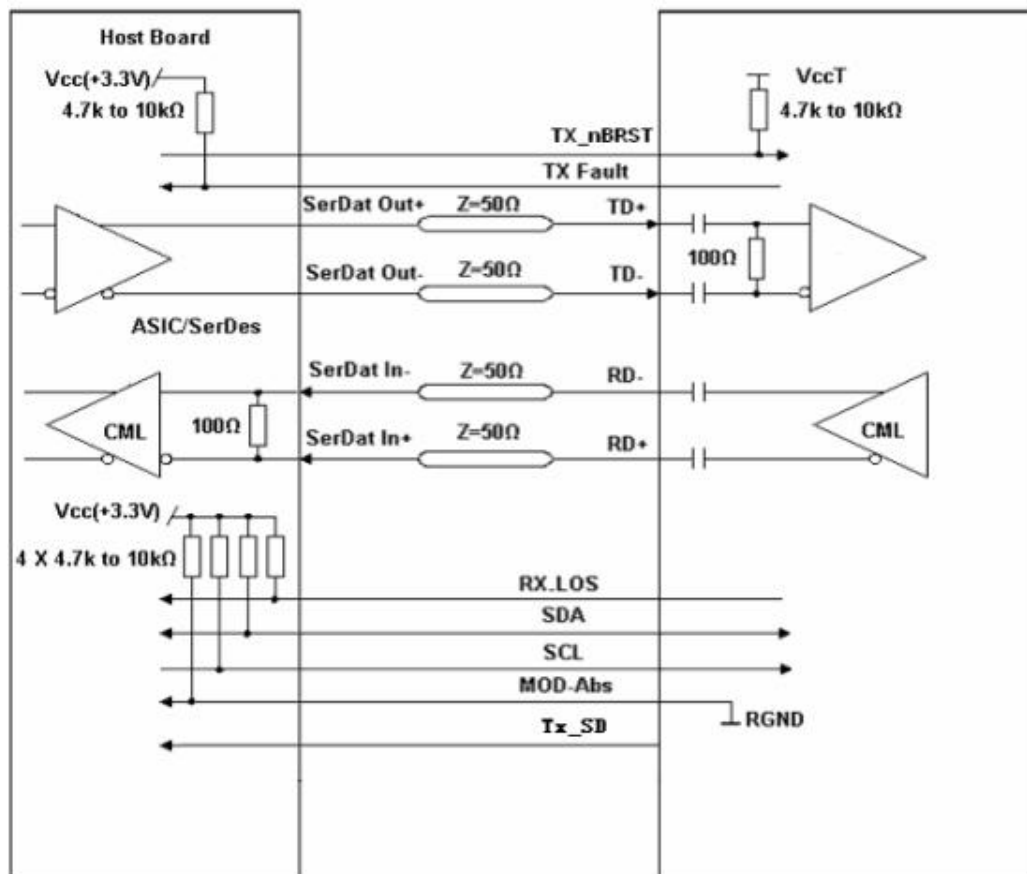


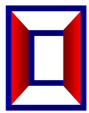
Pin	Symbol	Name/Description	Ref.
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault.	
3	TX_nBRST	Transmitter Burst Control	



4	SDA	2 wire Serial Interface Data Line(MOD_DEF2)	2
5	SCL	2 wire Serial Interface Clock(MOD_DEF1)	
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in the module(MOD_DEF0)	
7	TX_SD	TX signal Detect	3
8	RX_LOS	Loss of Signal indication.	4
9	NC	Not Connected	
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground	1

VIII. Recommended Interface Circuit





IX. Outline Dimensions

Parameter	Unit	Description	Note
Mechanical Dimensions	mm	68.8 x 13.4 x 8.5	
Connector Type	-	SC/UPC connector	IEC-61754-4

