

## XGSPON & GPON COMBO ONU SC/APC pigtail BOSA

P/N: WB3-Q32A-4X4-L43

### Description

10G DFB 1270T/1.25G DFB 1310T/10G 1577R APD-TIA/2.5G 1490R APD-TIA COMBO PON ONU COMBO BOSA WB3-Q32A-4X4-L43 (LC/APC) is designed for high speed, high performance optical communication applications as well as 10G- XGS PON and 2.5G PON applications.

### Features

- ◆ 1310nm 1.25G Transmitter with DFB laser diode
- ◆ 1270nm 10G Transmitter with DFB laser diode
- ◆ 1490nm 2.5G Receiver with APD TIA
- ◆ 1577nm 10G Receiver with APD TIA
- ◆ High output power
- ◆ RoHS Compliant Products Available
- ◆ Support LC/APC Pigtail L: 435+/-10mm

### Application

- ◆ The BOSA is used for Combo PON ONU (GPON+XGS PON ONU)

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### Product Specifications

#### Absolute Maximum Ratings

##### 1 · Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Tstg	-40	85	°C
Operating Case Temperature	Top	-40	85	°C
APD Damage Power	---	---	-3	dBm
Hand Lead Soldering (Temperature)/(Time)	---	---	260/10	°C/Sec

##### 2 · Transmitter Optical And Electrical Characteristics

(Unless specified else, the specifications below are defined at Tc=25±3°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
10G Transmitter						
Transmitter Signal Rate	---	---	9.95G	---	Gbps	---
Threshold Current	Ith	---	6	15	mA	25°C
		---	---	30	mA	85°C
LD Forward Voltage	Vf	---	---	1.8	V	CW, Iop=Ith+20mA
Center wavelength	λc	1260	1270	1280	nm	Iop=Ith+20mA
Side Mode Suppression Ratio	SMSR	30	---	---	dB	Iop=Ith+20mA
Output Power	P0	2.5	---	6.3	mW	25°C, Iop=Ith+20mA
Slope Efficiency	SE	0.125	---	0.315	mW/mA	25°C, Iop=Ith+20mA
Monitor Current	Imon	100	---	1000	uA	Iop=Ith+20mA
Monitor Dark Current	Id	---	---	100	nA	Vr=1V
Tracking Error	TE	-1.5	---	1.5	dB	CW, Tc= -40°C ~ +85C
1.25G Transmitter						
Center Wavelength	λ	1300	1310	1320	nm	Iop=Ith+20mA
Transmitter Bit Rate	---	---	1.244	---	Gbps	
Threshold Current	Ith	---	11	15	mA	25°C
		---	---	45	mA	85°C

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Output Power	P <sub>o</sub>	1.4		3.5	mW	I <sub>op</sub> =I <sub>th</sub> +20mA , 25°C
Slope efficiency	SE	0.07		0.175	mW/mA	CW, I <sub>op</sub> =I <sub>th</sub> +20mA, 25°C
Side Mode Suppression	SMSR	30	---	---	dB	I <sub>op</sub> =I <sub>th</sub> +20mA
Spectral Width((-20dB)	Δλ	---	0.2	1.0	nm	I <sub>op</sub> =I <sub>th</sub> +20mA
Monitor Current (PD)	I <sub>m</sub>	100	---	1000	uA	CW, I <sub>f</sub> =I <sub>th</sub> +20mA
LD Forward Voltage	V <sub>f</sub>	---	---	1.8	V	CW, I <sub>f</sub> =I <sub>th</sub> +20mA
Monitor Dark Current	I <sub>d</sub>	---	---	100	nA	V <sub>r</sub> =1V
Tracking Error	TE	-1.5	---	1.5	dB	CW, T <sub>c</sub> = -40°C ~ +85°C

### 3 · Receiver Optical and Electrical Characteristics

(Unless specified else , the specifications below are defined at T<sub>c</sub>=25±3°C )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
10G Receiver						
Operating Wavelength	λ	1575	1577	1580	nm	
Rx Rate	---	---	9.95	---	Gbps	
Sensitivity	Sen	---	---	-30	dBm	9.95G, PRBS2 <sup>31</sup> -1, BER≤10-3, ER=6dB, V <sub>op</sub> =V <sub>br</sub> -2.5V , BOL
Saturation Power	PSA	-7	---	---	dBm	
Break Down Voltage	V <sub>br</sub>	25	---	42	V	I <sub>d</sub> =10uA With V <sub>cc</sub> on
TIA Supply Voltage	V <sub>cc</sub>	3.0	3.3	3.6	V	
Supply Current	I <sub>cc</sub>	18	27	42	mA	
Dark Current	I <sub>d</sub>	---	---	100	nA	V <sub>op</sub> =V <sub>br</sub> -2.5, T <sub>c</sub> =25°C
Temperature Dependency of V <sub>br</sub>	TDV		0.03		V/°C	I <sub>d</sub> =10uA, T <sub>op</sub> = -40°C ~ +85°C
2.5G Receiver						
Operating Wavelength	λ	1480	1490	1500	nm	
Rx Rate	---	---	2.488	---	Gbps	
Sensitivity (BOL)	Sen	---	---	-30.5	dBm	2.488Gb/s, λ=1490nm ER=8dB, BER=10 <sup>-10</sup> PRBS2 <sup>23</sup> -1, V <sub>r</sub> =V <sub>br</sub> -3 , 25°C

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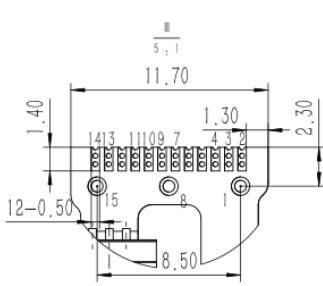
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Sensitivity (EOL)	Sen	---	---	-29.5	dBm	2.488Gb/s, $\lambda=1490\text{nm}$ ER=8dB, BER= $10^{-10}$ PRBS <sup>23</sup> -1 VR=Vbr-3, -40-85°C
Saturation Power	PSA	-7	---	---	dBm	2.488Gb/s, $\lambda=1490\text{nm}$ ER=8dB, BER= $10^{-10}$ PRBS <sup>23</sup> -1, VR=Vbr-3
Break Down Voltage	Vbr	36	---	51	V	Id=10 $\mu$ A
TIA Supply Voltage	Vcc	3.0	3.3	3.6	V	---
Supply Current	Icc	18	24	30	mA	---
Dark Current	Id	---	---	100	nA	Vop=Vbr-3, TC=25°C
Temperature Dependency of Vbr	TDV		0.07		V/°C	Id=10 $\mu$ A, Top = -40°C ~ +85°C
Optical Isolation From External Source (Rx 1490)	ISO1	25	---	---	dB	External light source. $\lambda=1441\sim 1450\text{nm}$ , 1530~1539nm
	ISO2	35	---	---	dB	External light source. $\lambda=1260\sim 1360\text{nm}$ · 1540~1625nm
Optical Isolation From External Source (Rx 1577)	ISO3	30	---	---	dB	External light source. $\lambda=1260\sim 1560\text{nm}$
	ISO4	30	---	---	dB	External light source. $\lambda=1600\sim 1675\text{nm}$
Optical Crosstalk	CT	---	---	-45	dB	1310 internal crosstalk
		---	---	-45	dB	1270 internal crosstalk
Rx Optical Return loss	ORL	---	---	-10	dB	$\lambda=1310\&1270\text{nm}$
		---	---	-15	dB	$\lambda=1490\&1577\text{nm}$

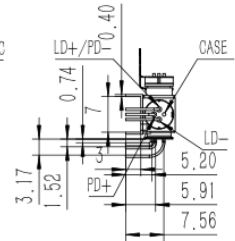
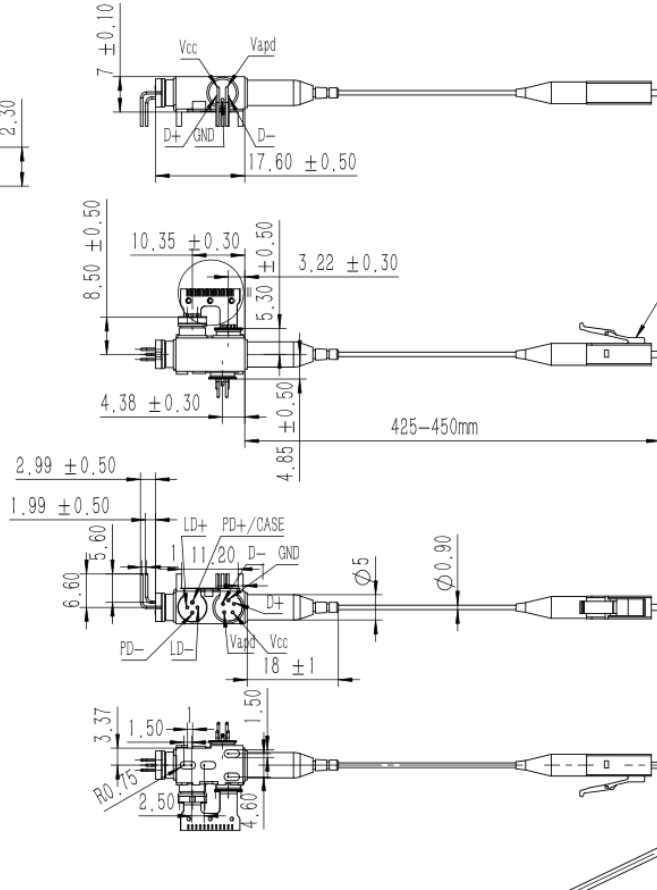
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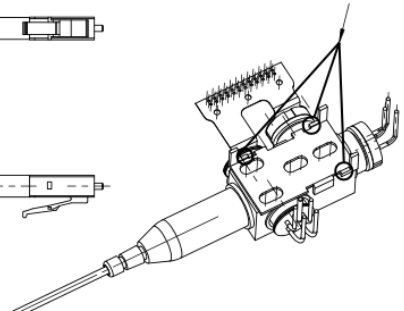
## 4 Outline Dimensions and Pin Assignment



10G Tx&Rx Pinout	
1	GND
2	Vcc
3	GND
4	D+
5	D-
6	GND
7	Vapd
8	GND
9	MPD-
10	GND
11	LD-
12	LD+
13	GND
14	GND
15	GND



Use Bracket legs to control height



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## 5. Recommend PCB Layout

