WAVESPLITTER™ TECHNOLOGIES, INC.

Data Sheet

10Gbps 1270nm DFB / 1577nm APD Receptacle ONU BOSA

P/N: WB3-P251-XS0

Description

Wavesplitter BOSA WB3-P251-XS0 is designed for high speed, high performance optical communication applications as well as 10G- XGS PON ONU and 5G networking applications.

Features

- Uncooled DFB laser with superior high temperature performance
- High sensitivity APDTIA package with immunity to WiFi interference
- Receptacle type BOSA with a high coupling efficiency TO56 for high optical output power
- RoHS complaint
- SC/APC Receptacle type

APPLICATIONS

- XGS-PON Symmetric SFP+ Transceiver, ONU
- Upstream Tx by 9.95Gbps 1270nm DFB TO56
- Downstream Rx by 9.95Gbps 1577nm 5- pin APDTIA TO46 integrated WDM filter
- Compliant with ITU-T G9807.1 standard

Product Specifications

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Min.	Max.	Unit
Operating Temperature of Laser (BOSA body temperature)	TC	---	-40	+85	°C
Storage Temperature	TStorage	---	-40	+85	°C
Solder Reflow Temperature	STEM	10sec Max.	---	260	°C
Laser Reverse Voltage	Vr	---	---	2	V
Forward Current Transient (LD)	If	---	---	100	mA
Operating Bias Current	Iop	---	---	65	mA
MPD Forward Current	Ipd	---	---	2	mA
MPD Reverse Voltage	VRM	---	---	20	V
APD Reverse Voltage	Vbr	---	---	Vbr	mA
APD Reverse Current	IRA	---	---	2	mA
TIA Supply Voltage	Volt.		-0.4	4	V
ESD Capability	Volt.	HBM	300	---	V

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Electrical and Optical Characteristics

Transmitter Optical And Electrical Characteristics (T=25°C, unless note)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Wavelength	λ	TC = -40°C ~ +85C	1260	1270	1280	nm
Threshold Current	I_{th}	CW, T_C = 25°C CW, T_C = 85°C	--- ---	5.5 15	12 20	mA
Forward Voltage	V_f	CW, T_c= 25°C Iop=Ith+20mA	-	-	1.8	V
Series Resistance	R_s	CW, I_{op}= Ith+20mA, T_C = -40°C ~ +85C	---	8	12	Ohm
Output Optical Power	Pf	CW, I_{op}=Ith+20mA, T_C = 25°C CW, I_{op}=Ith+20mA, T_C = 85°C	4.0 1.0	--- ---	9.0 ---	dBm
Slope Efficiency	SE	CW, I_{op}= Ith+20mA, T_C = 25°C CW, I_{op}= Ith+20mA, T_C = -40~85°C	0.125 0.063	---	0.4 ---	W/A
Side Mode Suppression Ratio	SMSR	CW, I_{op}= Ith+20mA, T_C = -40°C ~ +85C	30	---	---	dB
Spectrum Linewidth (-20dB)	$\Delta\lambda_{\_FWHM}$	CW, I_{op}= Ith+20mA, T_C = -40°C ~ +85C	---	---	1.0	nm
Rise Time	Tr	20~80%, I_{op}= Ith+20mA	---	50	---	ps
Fall Time	Tf	20~80%, I_{op}= Ith+20mA	---	50	---	ps
PD Monitor Current	I_m	CW, I_{op}= Ith+20mA	50	---	1200	uA
PD Dark Current	I_d	V_r= 5V	---	---	100	nA
PD Capacitance	C_{pd}	V_r= 5V @1MHz	---	6	30	pF
Tracking Error	TE	CW, T_C = -40°C ~ +85C	-1.5	---	+1.5	dB

Receiver Optical And Electrical Characteristics (T_c=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating Wavelength	λ	---	1575	1577	1580	nm
Supply Voltage	V_{CC}	No loads	3.0	3.3	3.6	V
TIA Supply Current	I_{CC}	No loads	22	27	42	mA
Reverse Breakdown Voltage	Vbr	Id=10uA, Ta = 25°C	26	---	40	V
APD Dark Current	Id	Vr=Vbr-2.5V, Ta = 25°C	---	---	150	nA
APD Responsivity	R_e	Vr=Vbr-2.5V,λ:1550nm,φe=1μw	---	8	---	A/W
Temperature Dependency of Vbr	TDV	Id=10uA, T_{op} = -40°C ~ +85°C	---	0.03	---	V/°C
Maximum incident optical power	Pmax	0≤Vr≤Vbr-2.5V, λ=1550nm	---	---	-3.0	dBm
Sensitivity	Sen	CW, λ=1577nm, 9.95Gbps, RL=50Ω, V_{op}=V_{br}-2.5; PRBS=2_{31}-1, ER=8.2dB, BER≤10^{-3} T_{op} = 25°C	---	---	-30	dBm
		CW, λ=1577nm, 9.95Gbps, RL=50Ω, V_{op}=V_{br}-2.5; PRBS=2_{31}-1, ER=8.2dB, BER≤10^{-3} T_{op} = -40°C ~ +85°C	---	---	-29.5	dBm

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Overload Power	Pol	CW, λ=1577nm, 9.95Gbps, RL=50Ω, $V_{op}=V_{br}-3$; PRBS=$2_{31}-1$, ER=8.2dB, BER≤10^{-3}	-8	---	---	dBm
Isolation	ISO	λ=1260nm~1560nm	30	---	---	dB
Isolation	ISO	λ=1600nm~1675nm	30	---	---	dB
Optical Crosstalk	OC	1270/1577nm	---	---	-45	dB
Optical Return Loss	ORL	λ=1577nm	20	---	---	dB
Output Impedance	Ohm	Single end	40	50	60	Ω

Key Components

Parts	Vendor	Part Number
1270nm DFB Laser	WST	WT3-P27B-1P7 (for -5~85C) WT3-P27B-4P7 (for -40~85C)
InGaAs Avalanche Photodiode	WST	W43-AT01-402
Transimpedance Amplifier	Semtech	GN7069-E3

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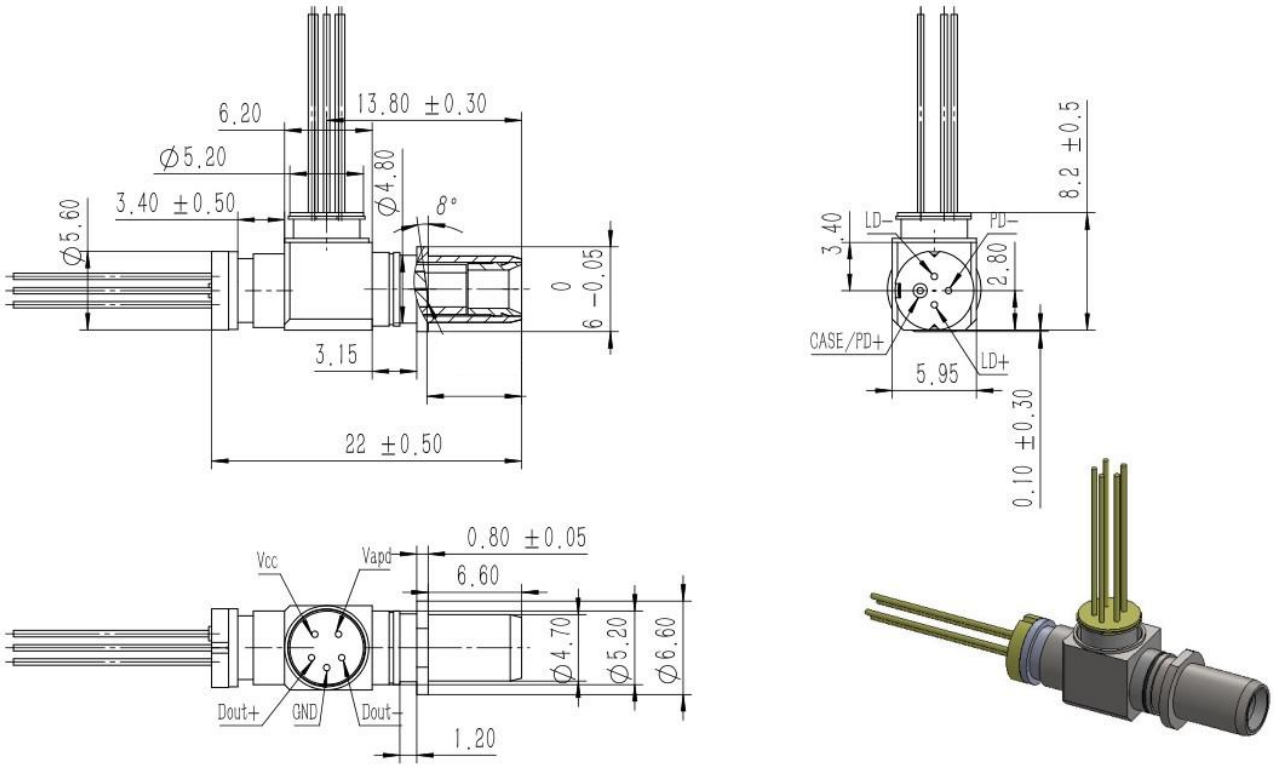
Outline Dimensions And Pin Assignment

Unit:mm



Order Information

NO	Part number	Description	Note
1	WB3-P251-1S0	10G XGS PON Receptacle BOSA, SC/APC, Tc -5~85C	
2	WB3-P251-4S0	10G XGS PON Receptacle BOSA, SC/APC, Tc -40~85C	

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