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Description

This XGPON BOSA is a high performance optical sub-assembly in single fiber by using 1270nm transmitter and 1577nm receiver.

The transmitter section uses a multiple quantum well 1270nm DFB laser supporting burst-mode operation. The receiver section uses a TO-can built in a long wavelength APD chip and a 10Gbps trans-impedance amplifier. High optical isolation and reflection free is achieved by using CWDM filter and optical isolator.

Applications

- 10G XGPON asymmetric SFP+ transceiver, ONU
- 10 Gigabit Ethernet Access Networks

10G XGPON ONU BOSA BA-43 series T2.5G/R10G

Features

- Single fiber receptacle type bi-directional transmission design for 10G XGPON ONU
- Asymmetric 9.953Gbps Tx burst mode and 2.488Gbps Rx CW data rate
- Laser welded transmitter and epoxy cured receiver package
- Integrated micro-optics CWDM filters for dual wavelength Tx/Rx operation at 1270/1577nm
- 1270nm InGaAsP/InP MQW DFB laser with high bandwidth InGaAs MPD
- 1577nm digital APD-TIA continuous mode receiver
- Flex PCB standard ping-out
- Optical reflection free with built-in 1270nm free space isolator
- High optical isolation from external 1490nm source, and low optical cross-talk from internal 1270nm source
- 0°C to +70°C commercial temperature with excellent temperature dependent power tracking error

Standard

- ITU-T 987.2 10G XGPON communication protocol
- Compliant with Telcordia GR-468 reliability test criterion
- Compliant with Telcordia GR-326 connector qualification standard
- Compliant with RoHS6 standard

1. Absolute Maximum Ratings

Item	Unit	Min	Max	Note
Forward Current for LD	mA	–	120	
Reverse Voltage for LD	V	–	2	
Forward Current for MPD	mA	–	2	
Reverse Voltage for MPD	V	–	20	
APD Reverse Voltage	V	–	Vbr	
TIA Supply Voltage	V	-0.4	4	
Operating Temp	°C	-40	85	
Storage Temperature	°C	-40	85	
Storage Relative Humidity	%	–	85	
Soldering Temperature	°C	–	260	(*1)
ESD threshold	V	500		

(*1): For soldering by iron and 10 seconds on leads

2. Transmitter Electro-Optical Characteristics (T_c=25°C, CW)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Transmitter Bit Rate		-40~85°C	–	2.488	–	Gbps
Threshold Current	I _{th}	25°C	–	8	15	mA
	I _{th}	-40~85°C	–	–	50	mA
Optical Output Power (*2)	P _f	25°C, I _f =I _{th} +20mA	2.5	–	–	mW
	P _f	85°C, I _f =I _{th} +20mA	1.5	–	–	mW
Slope Efficiency	SE	25°C, I _f =I _{th} +20mA	0.125	–	–	mW
		85°C, I _f =I _{th} +20mA	0.075	–	–	mW
Forward Voltage	V _f	I _f =I _{th} +20mA	–	1.1	1.8	V
Central Wavelength	λ _c	I _f =I _{th} +20mA, 25°C	1260	1270	1280	nm
Side Mode Suppression Ratio	SMSR	I _f =I _{th} +20mA, -40~85°C	30	–	–	dB
Monitor Current	I _m	I _f =I _{th} +20mA	100	–	1200	μA
Tracking Error (*3)	TE	T _c =-40~85°C	-1.5	–	1.5	dB

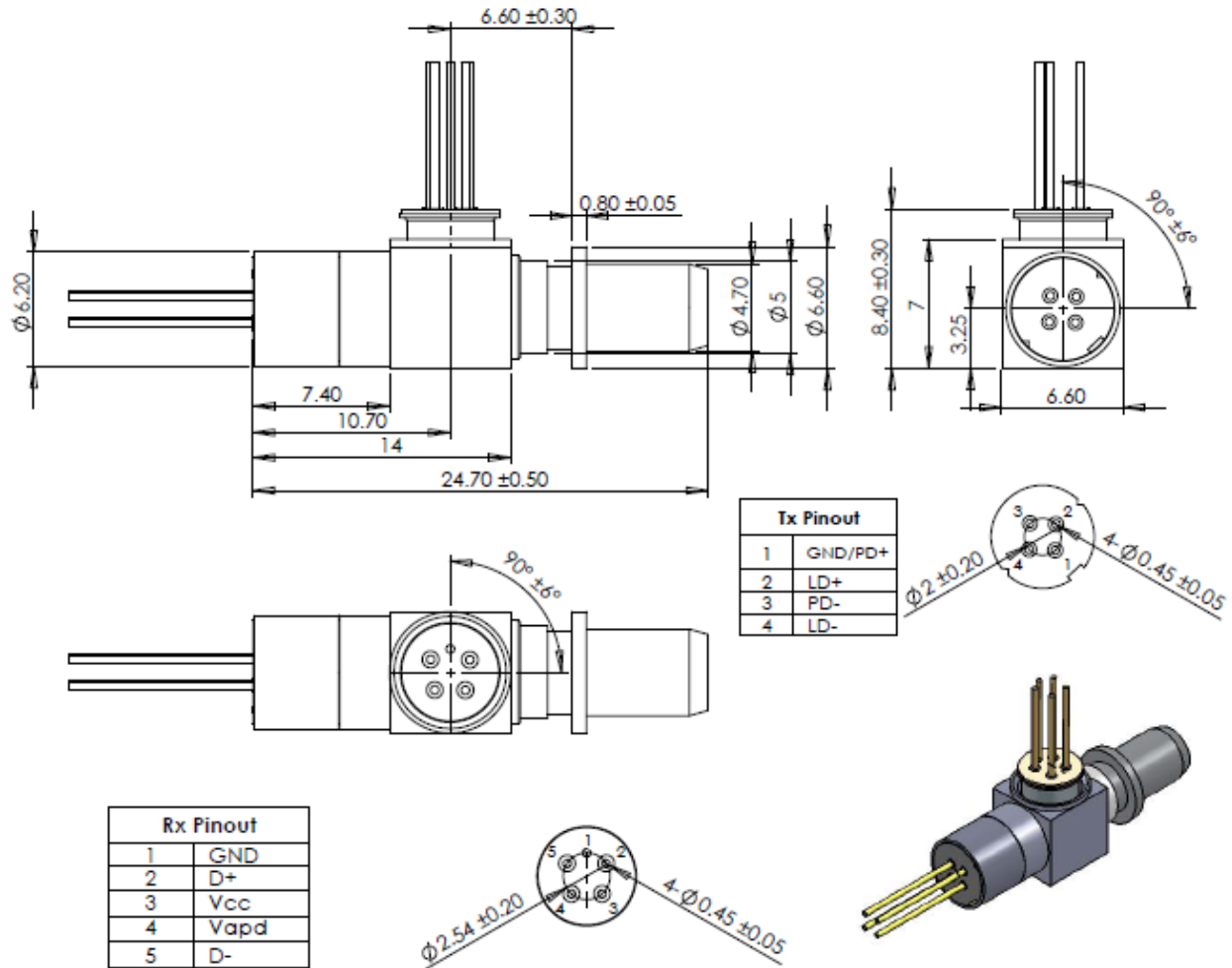
(*2): Launched into 9/125μm SMF, measured with a master plug and an extra receptacle

(*3): $\Delta P_f = 10 \times \log(P_f(T_c)/P_f(25^\circ\text{C}))$, I_m hold(@P_f=2.5mW, 25°C)

3. Receiver Electro-Optical Characteristics (TC=25°C, Vcc=3.3V)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	No loads	3.0	3.3	3.6	V
Supply Current	Icc	No loads	–	–	50	mA
Operating Wavelength	λ		1575	1577	1580	nm
Sensitivity	Sen	9.953Gbps, NRZ, PRBS23, ER=8.2dB, BER=10E-3	–	–	-29.5	dBm
Overload	OL		-7.0	–	–	dBm
Breakdown Voltage	Vbr	Id=10 μ A	22	–	45	V
Optical Return Loss	RL	λ =1270nm	10	–	–	dB
		λ =1577nm	20	–	–	dB
Optical Crosstalk	X-talk		–	-45	-40	dB
Optical Isolation from External Source	ISO	λ =1260~1560nm	35	–	–	dB
		λ =1600~1675nm	35	–	–	dB

4. Dimension Outline



5. Other Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Fiber Mode Field Diameter		8	9	10	μm	
Pull Force on LD Assembly		30	--	--	Kgw	
Pull Force on APD Assembly		15	--	--	Kgw	
Shear Strength on XY Welding		30	--	--	Kgw	
Connector Repeatability (*4)		-1.0	--	+1.0	dB	

(*4): Same plug orientation, same patchcord, 5 times, Launched into 9/125 μm SMF, measured with a master plug and an extra receptacle