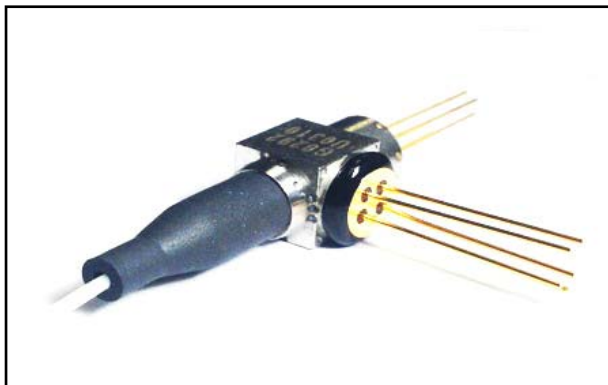




Description

This BOSA is a high performance optical sub-assembly in single fiber by using 1310nm transmitter and 1490nm receiver.

The transmitter section uses a multiple quantum well 1310nm DFB laser supporting burst-mode operation. The receiver section uses a TO-can built in a long wavelength PIN diode and a 2.5Gbps Super transimpedance amplifier.

Applications

- GPON BOB ONU optical modem, class B+
- GPON ONU transceiver
- FTTH Bi-directional play

GPON ONU STIA BOSA BA-33 series T1.25G/R2.5G

Features

- Single fiber pigtail type bi-directional transmission design for digital communication
- Asymmetric 2.5Gbps downstream and 1.25Gbps upstream data link transmission
- Laser welded transmitter and epoxy cured receiver package
- Integrated micro-optics WDM filters for dual wavelength Tx/Rx operation at 1310/1490nm
- 1310nm InGaAsP/InP MQW DFB laser diode transmission with high bandwidth InGaAs monitor photodiode
- 1490nm digital PIN photodiode with integrated 2.5Gbps, 3.3V continuous mode Super transimpedance-amplifier
- High optical isolation from external source and low optical cross-talk from internal source
- -5°C to +75°C commercial temperature and -40°C to +85°C industrial operating temperature available with excellent temperature dependent power tracking error

Standard

- Compliant with ITU-T G984.5 telecommunication 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	–	15	
Optical Power for Rx	dBm	5	–	
APD Forward Current	mA	–	2	
APD Reverse Current	mA	–	3	
APD Reverse Voltage	V		V _{br}	
TIA Supply Voltage	V	-0.4	4	
Operating Temp	°C	-5	75	
Storage Temperature	°C	-40	85	
Storage Relative Humidity	%	–	85	
Solder Reflow Temperature	°C	–	260	(*1)

(*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
Threshold Current	I _{th}	T _c =25°C	–	10	15	mA
		T _c =-5~75°C	1	–	50	mA
Optical Output Power (*2)	P _f	I _f =I _{th} +20mA, T _c =25°C	1.6	–	3.5	mW
		I _f =I _{th} +20mA, T _c =-5~ 75°C	1.0	–	–	mW
Slope Efficiency	η	I _f =I _{th} +20mA, T _c =25°C	0.08	–	0.175	mW/mA
		I _f =I _{th} +20mA, T _c =-5~ 75°C	0.05	–	–	mW/mA
Forward Current	I _f	P _f =2.5mW, T _c =-5~75°C	–	–	70	mA
Forward Voltage	V _f	I _f =I _{th} +20mA	–	1.1	1.5	V
Rise/Fall Time	τ _r /τ _f	20%~80%	–	0.1	0.2	ns
Central Wavelength	λ _c	I _f =I _{th} +20mA, T _c =25°C	1300	1310	1320	nm
		I _f =I _{th} +20mA, T _c =-5~75°C	1290	–	1330	nm

Spectrum Width (RMS)	$\Delta\lambda$	$I_f=I_{th}+20mA, T_c=-5\sim 75^{\circ}C$	–	0.32	1.0	nm
Side Mode Suppression Ratio	SMSR	$I_f=I_{th}+20mA, T_c=-5\sim 75^{\circ}C$	30	–	–	dB
Monitor Current	I_m	$I_f=I_{th}+20mA, T_c=-5\sim 75^{\circ}C$	100	–	1000	μA
Monitor Dark Current	I_d	$V_{rp}=5V$	–	–	100	nA
Monitor Capacitance	C	$V_{rp}=5V, f=1MHz$	4	–	15	pF
Tracking Error (*3)	TE	$T_c=-5\sim 75^{\circ}C$	-1.5	–	1.5	dB

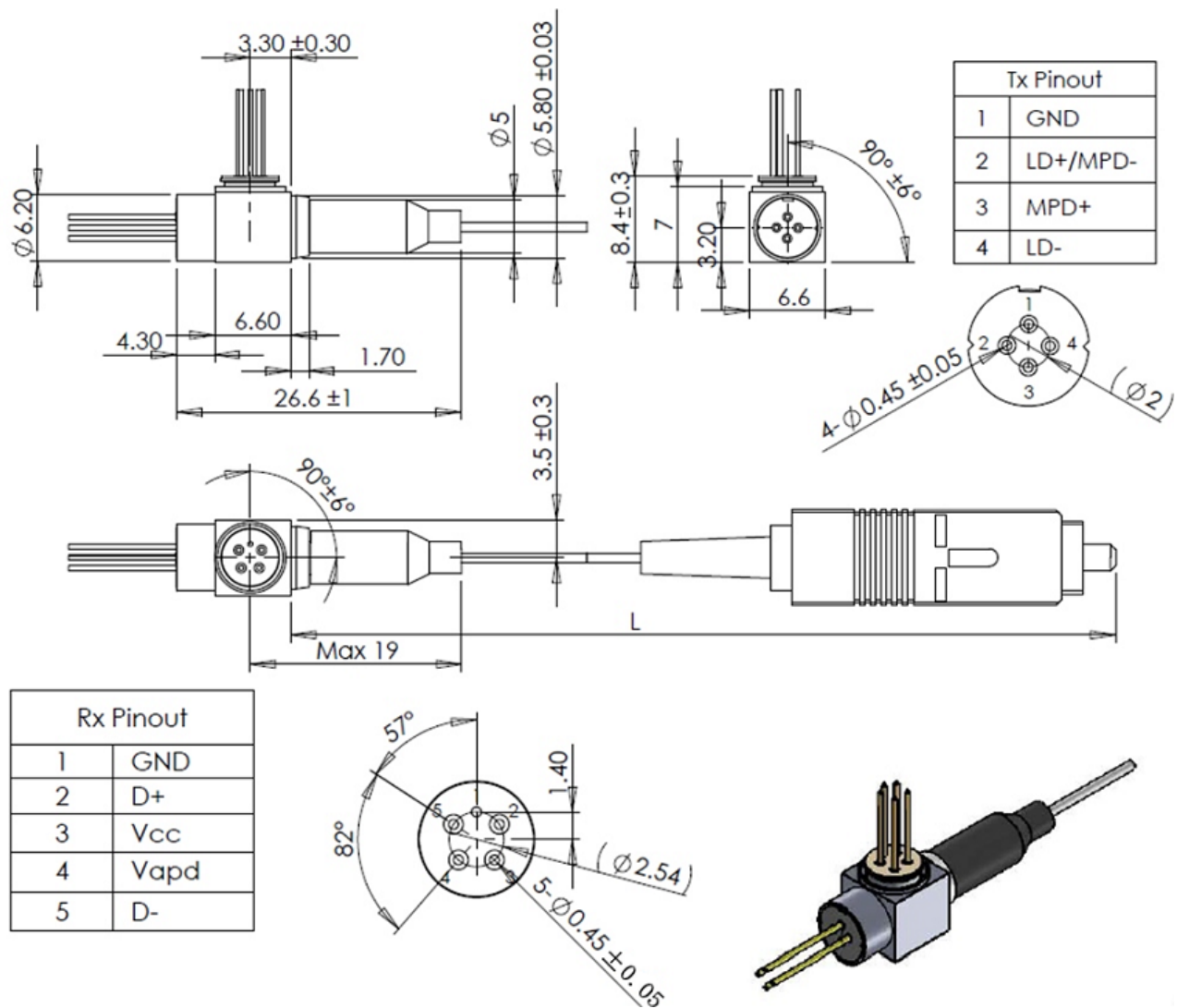
(*2): Launched into 9/125 μm SMF

(*3): $\Delta Pf = 10 \times \log (Pf (T_c) / Pf (25^{\circ}C))$, I_m hold(@ $P_f=2mW, 25^{\circ}C$)

3. Receiver Electro-Optical Characteristics ($T_c=25^{\circ}C, V_{cc}=3.3V$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V_{cc}		3.0	3.3	3.6	V
Supply Current	I_{cc}	No loads	–	20	24	mA
Operating Wavelength	λ	$T_c=-5\sim 75^{\circ}C$	1480	–	1500	nm
Sensitivity	Sen	2.5Gbps, PRBS23, ER=10dB,	–	–	-29.5	dBm
Overload	OL	BER=10E-10, RL=50 Ω , NRZ	-7.0	–	–	dBm
Output Impedance	R_{out}	Single end	40	–	60	Ω
Differential Output Voltage	V_{pp}	100 Ω differential load, 2.5Gbps	–	–	1000	mV
Dark Current	I_d	$V_{cc}=3.3V$, no input	–	–	150	nA
Optical Return Loss	ORL1310	1310nm	–	–	-15	dB
	ORL1490	1490nm	–	–	-20	dB
Optical Crosstalk	X-talk	1310nm/1490nm	–	–	-47	dB
Optical Isolation from External Source	ISO1	$\lambda=1441\sim 1450nm$	25	–	–	dB
		$\lambda=1530\sim 1539nm$				
	ISO2	$\lambda=1260\sim 1440nm$	35	–	–	dB
		$\lambda=1540\sim 1625nm$				

4. Dimension Outline



5. Other Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Mode Field Diameter		8	9	10	μm	
Gladding Diameter		123	125	127	μm	
Fiber Macro bend Loss				0.05	dB	Radius 16mm
Optical Connector Insertion Loss		–	–	0.4	dB	SC/UPC connector
Fiber Bending Radius		25	–	–	mm	
Fiber Diameter		0.8	0.9	1.0	mm	
Fiber Length		210	–	250	mm	L
Fiber Operation Temperature		75	–	–	°C	
Pull Force on LD Assembly		30	–	–	Kgw	
Pull Force on APD Assembly		15	–	–	Kgw	
Shear Strength on XY Welding		30	–	–	Kgw	
Tension Force on Fiber Pigtail		10	–	–	N	

(*4): Connector fiber end face accord with IPC-8497-1