

OF3638R-C3**Preliminary****2.5Gbps APD-TIA receiver optical sub-assembly(ROSA) with isolated snout****1. DESCRIPTION**

The OF3638R-C3 is a receiver optical sub-assembly(ROSA) for 2.5Gbps transmission. It uses an InGaAs avalanche photodiode with a low noise preamplifier in a hermetically sealed coaxial package. It incorporates a receptacle having a single-mode fiber-stub, a split sleeve for the optical connector with $\phi 1.25$ mm ferrule. The signal GND and the receptacle part are electrically isolated in this ROSA.

2. FEATURES

Data rate up to 2.5Gbps

Differential output

Wide dynamic range

High sensitivity : -35dBm typ. at $R_{ext}=10dB^*$

5-leads coaxial TO-46 package with LC receptacle

Isolated snout : Signal GND and receptacle part are electrically isolated

**3. APPLICATION**

SONET OC-48/SDH STM-16

Long-haul transmission systems up to 2.5Gbps

4. OPTICAL AND ELECTRICAL CHARACTERISTICS

(Wavelength=1550nm, $T_c = 25^\circ C$, $V_{CC}=3.3V$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Wavelength	λ	--	1250	--	1620	nm	
APD Breakdown Voltage	VBR	ID=10 μ A	25 $^\circ$ C	--	37	43	V
			-40 $^\circ$ C to 85 $^\circ$ C	--	37	50	
Temp. Coefficient of VBR**	γ	--	0.03	0.07	0.13	V/ $^\circ$ C	
APD Responsivity	RAPD	$\lambda=1.55\mu m, M=1$	0.80	0.90	--	A/W	
		$\lambda=1.31\mu m, M=1$	0.75	0.85	--		
		$\lambda=1.62\mu m, M=1$	--	0.70	--		
Responsivity	R	RL=100 Ω , M=10, Pin=-30dBm, Differential	15	24	36	kV/W	
Bandwidth	BW	f-3dB, RL=50 Ω , M=10	1700	2000	--	MHz	
Low frequency cutoff	fc_low	RL=50 Ω	--	3	--	kHz	
Sensitivity	Prmin	2.488Gbps, NRZ, BER=10 $^{-10}$, PRBS2 $^{23}-1$, M=Mopt.	25 $^\circ$ C Rext*=10dB	--	-35	-33.0	dBm
			-40 $^\circ$ C to 85 $^\circ$ C Rext*=10dB	--	-34	-32.0	
Overload	Prmax	2.488Gbps,NRZ,BER=10 $^{-10}$, PRBS2 $^{23}-1$,M=Mopt.	-7	-3	--	dBm	
Supply Current	I _{CC}	Pin = 0mW	--	44	60	mA	
Recommended TIA Supply Voltage	V _{CC}	--	3.0	3.3	3.6	V	
Optical Return Loss	ORL	--	--	--	-27	dB	
Isolation Resistance	Ri	--	1	--	--	G Ω	

*) Extinction ratio of LD source.

***) Temperature Coefficient of Breakdown Voltage.

5. ABSOLUTE MAXIMUM RATING

(Tc = 25 °C, unless otherwise specified)

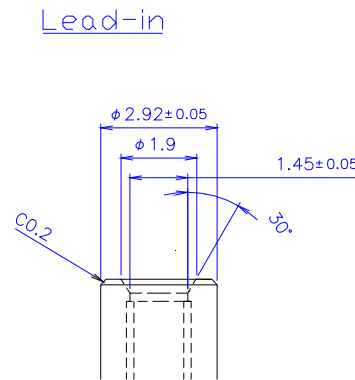
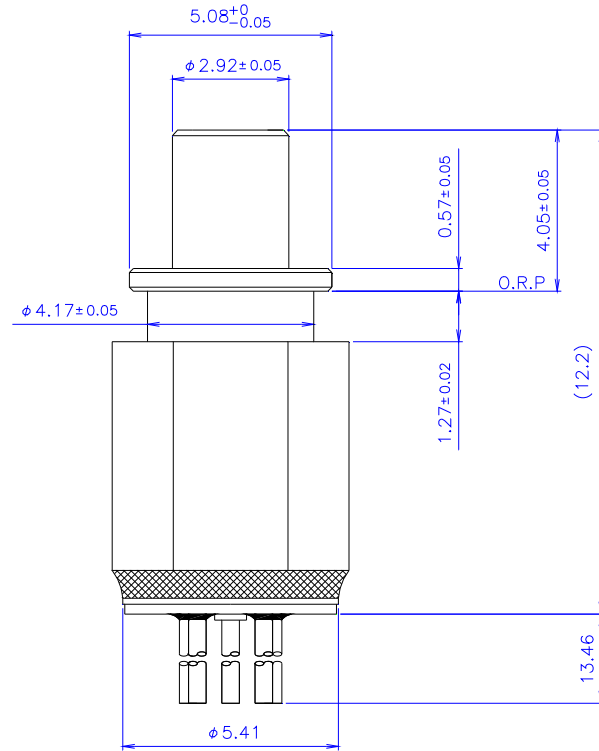
Parameter	Symbol	Rating	Unit
APD Bias Voltage	VB	0 to VBR	V
TIA Supply Voltage	Vcc	5.0	V
APD Forward Current	IF	4	mA
APD Reverse Current	IR	2(cw)	mA
Operating Temperature	Tc	-40 to +85	°C
Storage Temperature	Tstg	-40 to +85	°C

6. FIBER STUB SPECIFICATIONS

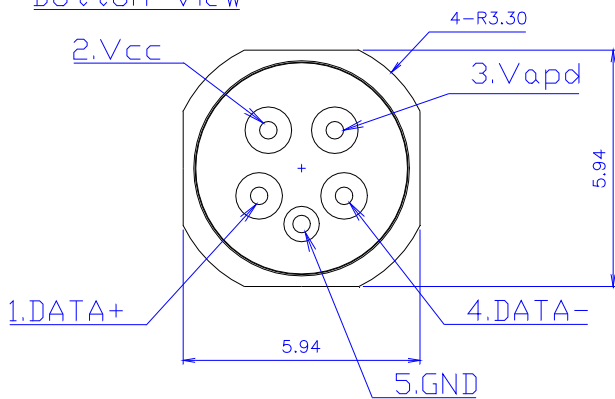
Parameter	Specifications	Unit
Type	SM	--
Mode Field Diameter	10	μm
Cladding Diameter	125	μm
Connector	LC	--

7. OUTLINE DRAWING

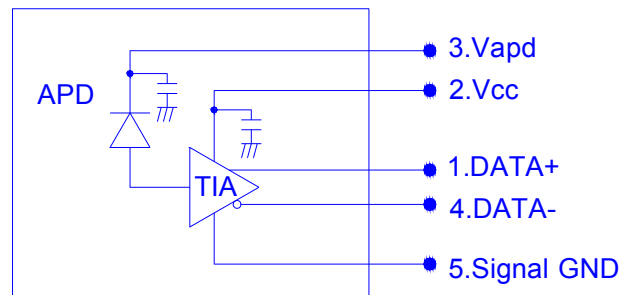
All dimensions in millimeters



Bottom View

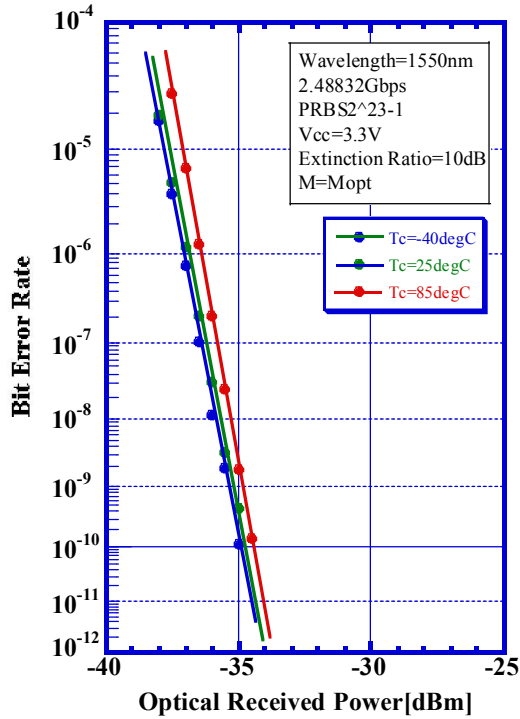


Block Diagram

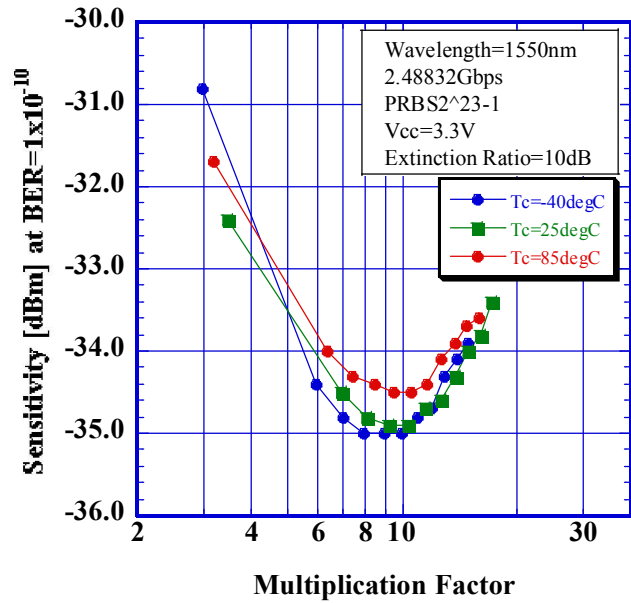


8. TYPICAL OPERATING CHARACTERISTICS

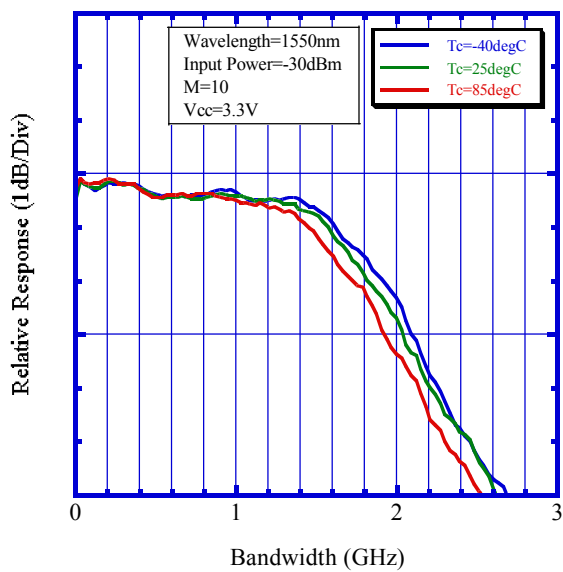
*BER Characteristics



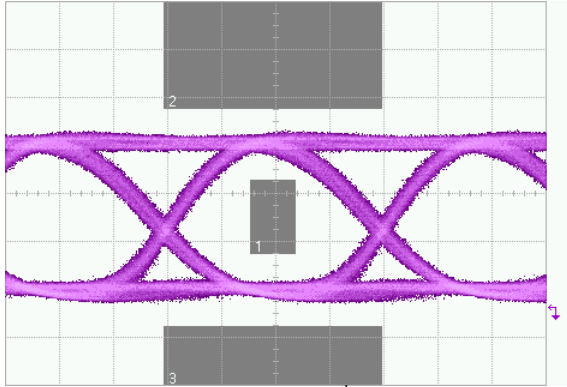
*M Vs. Sensitivity



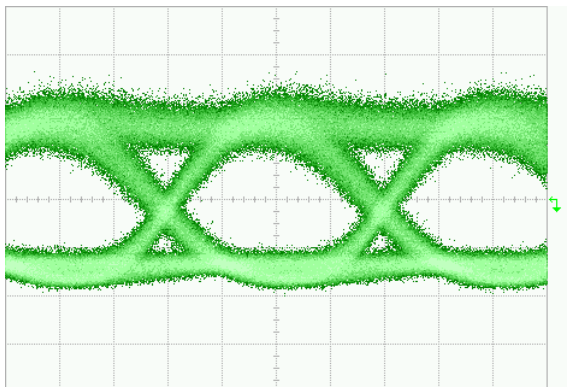
*Bandwidth



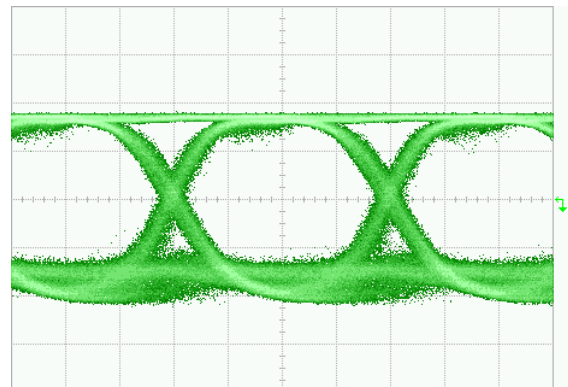
*Eye Diagram (Tc=25°C)



Input optical waveform(with 4th order Bessel filter)
2.48832Gbps, PRBS2²³-1
Extinction Ratio=10dB, Crossing Point=40%



Output waveform (Ver.:10mV/Div., Hor.:100ps/Div.)
Condition : Vcc=3.3V,M=10, Pin=-30dBm



Output waveform (Ver.:30mV/Div., Hor.:100ps/Div.)
Condition : Vcc=3.3V,M=10, Pin=-10dBm

SAFETY INFORMATION ON THIS PRODUCT



<p>Caution GaAs Product</p>	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled, ingested or swallowed. Do not destroy or burn the product. Do not crush or chemically dissolve the product. Do not put the product in the mouth. Observe related laws and company regulations when discarding this product. The product should be excluded from general industrial waste or household garbage.</p>
<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care. When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.</p>

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