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# ***InGaAs-PIN/Preamp Receiver***

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***FRM3Z621KT/LT***

## **FEATURES**

- Data rate up to 622Mb/s
- High Responsivity: 0.85A/W at 1,310nm
- High temperature operation up to 85°C

## **APPLICATIONS**

- Medium bit rate standard medium haul optical transmission system at STM-4 (OC-12)

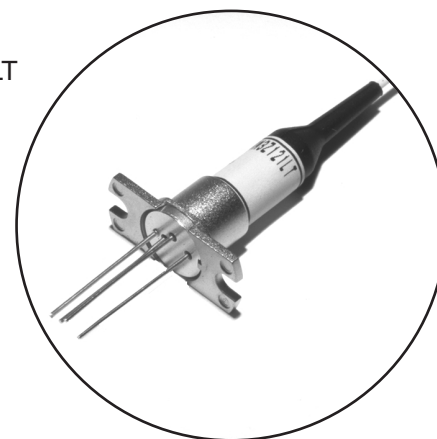
## **DESCRIPTION**

These PIN preamplifiers use an InGaAs PIN with a GaAs IC preamplifier. Package style is a hermetically sealed, epoxyless coaxial package with a multimode fiber pigtail.

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ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)

Parameter	Symbol	Ratings	Unit
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C
Operating Case Temperature	T <sub>op</sub>	-40 to +85	°C
IC Supply Voltage	V <sub>SS</sub>	-7 to +0	V
PD Supply Voltage	V <sub>r</sub>	0 to +20	V
PD Reverse Current	I <sub>r</sub>	500	μA
Maximum Input Power	P <sub>o max</sub>	0	dBm

OPTICAL & ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=-40° to +85°C, V<sub>SS</sub>=-5.2V, V<sub>r</sub>=5V level and λ=1,310/1,550nm unless otherwise specified)

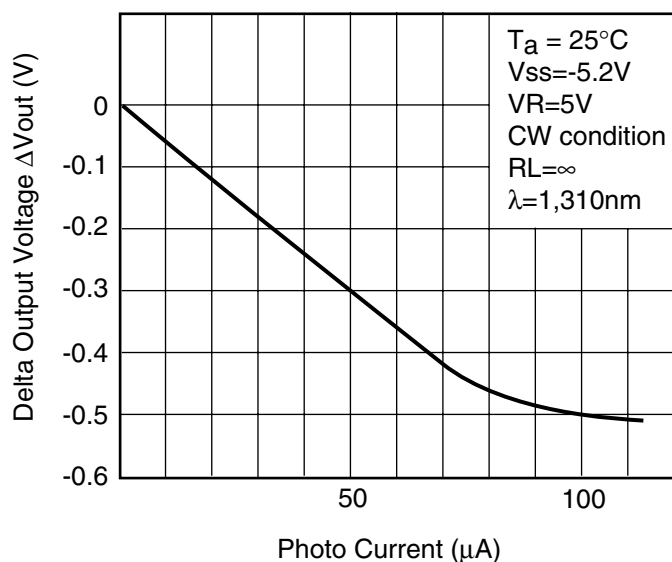
Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Responsivity	R	λ=1,310nm	0.8	0.85	-	A/W
Transimpedance	Z <sub>t</sub>	AC, RL=50Ω, Pin <-15dBm	3.0	3.5	-	KΩ
Bandwidth	BW	AC-Coupled, RL=50Ω, -3dBm from 1MHz	435	-	-	MHz
Sensitivity	P <sub>r</sub>	622Mb/s NRZ, 2 <sup>23</sup> -1 P.R.B.S., B.E.R.=10 <sup>-10</sup> T <sub>a</sub> =25°C	-	-32.5	-32	dBm
		T <sub>a</sub> =-40 to +85°C	-	-31	-30.5	dBm
Maximum Input Optical Power	P <sub>max</sub>	Note (1)	-7	-	-	dBm
Power Supply Current	I <sub>SS</sub>	-	-	-	40	mA
Recommended Supply	V <sub>SS</sub>	-	-5.46	-5.2	-4.94	V
PD Voltage	V <sub>r</sub>	-	5	-	20	V
Optical Return Loss	ORL	-	30	-	-	dB
Equivalent Input Current Density	i <sub>n</sub>	avg. within 435MHz	-	2.64	3.2	pA/√Hz

Note: (1) Maximum Input Optical Power, P<sub>max</sub> is defined as the optical power when the variation of F.W.H.M. of the output waveform is less than 10% compared with that of the low input; optical power level.

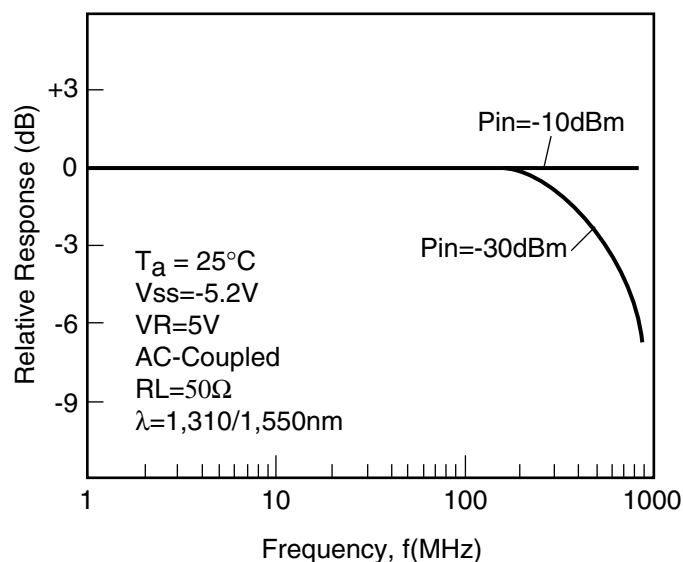
(2) No data is accompanied with each device.

(3) Optical characteristics are specified on the condition that single mode fiber is used as the optical source for testing.

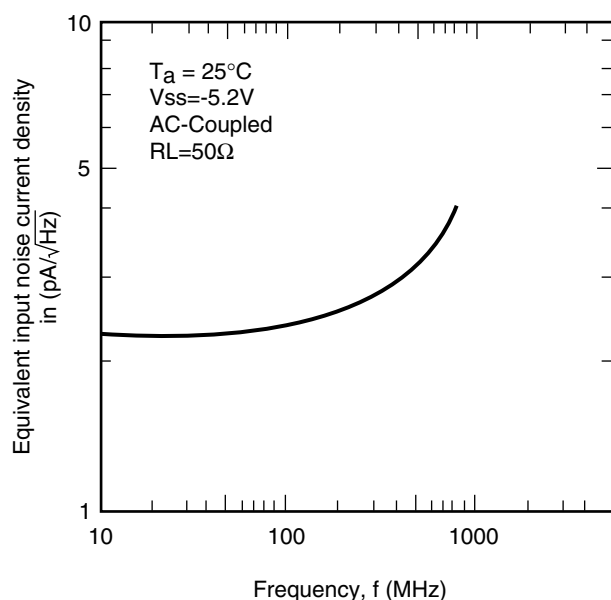
**Fig. 1 Normalized Output Voltage  
as a function of Peak Photo Current**



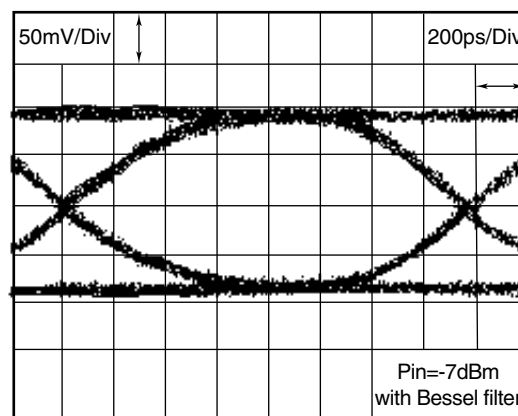
**Fig. 2 Relative Frequency Response**



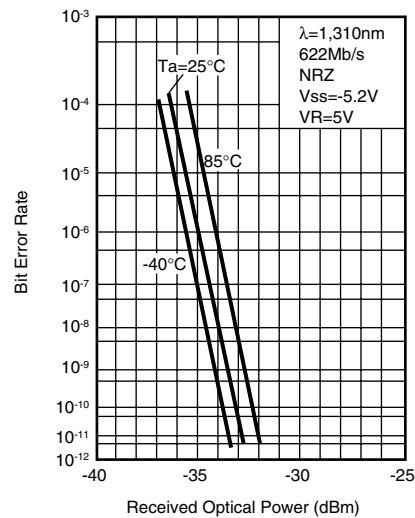
**Fig. 3 Equivalent Input Noise Current Density**



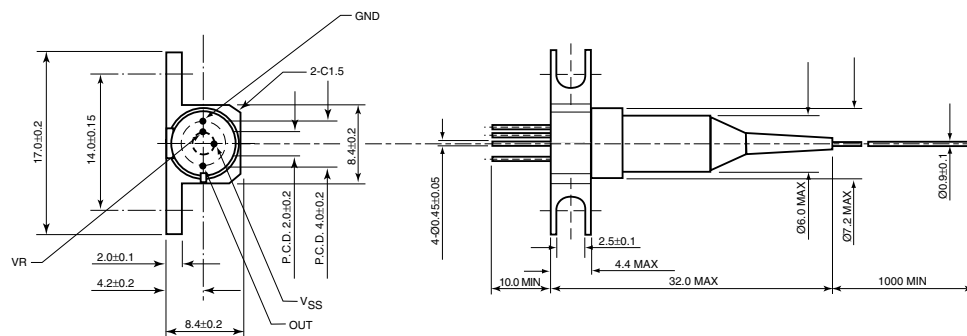
**Fig. 4 Eye diagram with a 1,310nm, 622Mbps NRZ,  
2<sup>23</sup>-1 PRBS incident signal at  $T_c = 25^\circ C$**



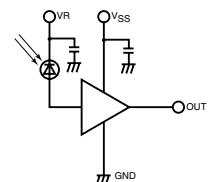
**Fig. 5 Bit Error Rate at 1,310nm and a 622Mbps NRZ  $2^{23}-1$  PRBS for various case temperature**



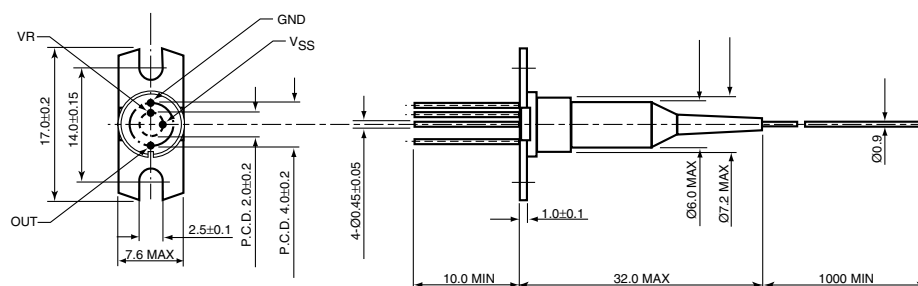
## "KT" PACKAGE



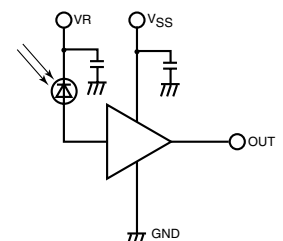
UNIT: mm



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***Receiver***

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***Eudyna***