InGaAs-PIN/Preamp_ Receiver

FRM3Z231KT/LT

FEATURES

- Data rate up to 2.5Gb/s
- -23dBm typ. sensitivity
- 30µm active area PIN chip with GaAs pre-amplifier
- Small co-axial package with multi-mode fiber

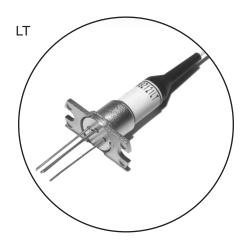
APPLICATIONS

 High bit rate short haul optical transmission systems operating at 2.5Gb/s

DESCRIPTION

These PIN preamplifiers use an InGaAs PIN chip with GaAs IC preamplifier. The KT package is designed for a horizontal PC board mount. The LT package is secured by a vertical flange. Each package is connected with multi-mode fiber by Nd: YAG welding. The detector preamplifier is DC coupled and has a low electrical output when the PIN is illuminated. These devices are in compliance with ITU-T Recommendations and meet Bellcore Requirements.







ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit	
Storage Temperature	T _{stg}	-40 to +85	°C	
Operating Temperature	T _{op}	-40 to +85	°C	
Supply Voltage	V_{SS}	-7 to 0	V	
PIN Reverse Voltage	v_{R}	0 to 20	V	
PIN Reverse Current	IR (Note 1)	2.0	mA	

OPTICAL & ELECTRICAL CHARACTERISTICS (T_a =-40° to +85°C, λ =1,310/1,550nm, V_{SS} =-5.2V, V_R =5V, unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			l lasia
			Min.	Тур.	Max.	Unit
PIN Responsivity	R15	1,550nm, M=1	0.80	0.85	-	A/W
	R13	1,310nm, M=1	0.80	0.85	-	A/W
AC Transimpedance	Z _t	$\begin{array}{c} \text{AC-coupled, f=100MHz,} \\ \text{RL=50}\Omega, \\ \text{Pin <-20dBm} \end{array}$	400	600	-	Ω
Bandwidth	BW	AC-Coupled, RL=50Ω, Pin <-27dBm, -3dBm from 1MHz	1.8	2.0	-	GHz
Equivalent Input Noise Current Density	in	AC-Coupled, RL=50Ω, Average within BW	-	6.5	8	pA/√Hz
Sensitivity	Pr	Ta=25°C, 2.488Gb/s NRZ, PRBS=2 ²³ -1, B.E.R.=10 ⁻¹⁰	-	-23	-22	dBm
		Ta=-40 to +85°C	-	-22	-21	dBm
Maximum Overload	Po	Ta=-40 to +85°C 2.488Gb/s NRZ, PRBS=2 ²³ -1, B.E.R.=10 ⁻¹⁰	0	-	-	dBm
		Ta=-40 to +85°C (Note 2)	-3	-	-	dBm
Reverse Voltage	٧R	-	5	-	20	V
Power Supply Current	I _{SS}	-	-	-	40	mA
Power Supply Voltage	V _{SS}	-	-5.46	-5.2	-4.94	V

Note: (1) CW condition

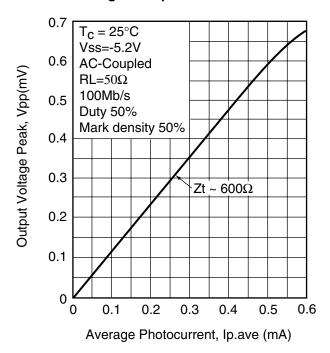
⁽⁴⁾ No data is available for either device.



⁽²⁾ Maximum Input Optical Power, Pmax 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.

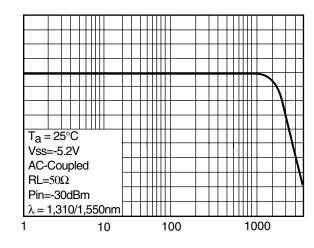
⁽³⁾ Optical characteristics are specified on the condition that single mode fiber is used as the optical source for testing.

Fig. 1 Output Characteristics



Relative Response (3dB/div)

Fig. 2 Relative Frequency Response



Frequency, f (MHz)

Fig.3 Equivalent Input Noise Current Density

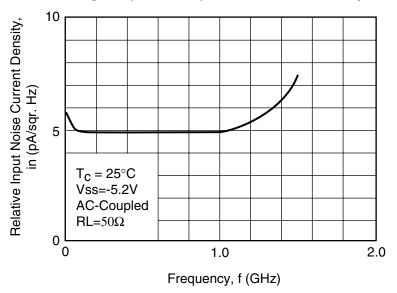
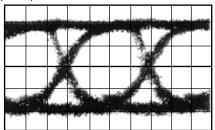
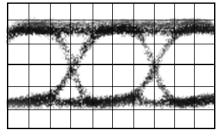


Fig.4 Eye Diagram with a 1,310nm, 2.5Gb/s NRZ, 2²³-1 PRBS incident signal

Input optical wave form with Bessel filter



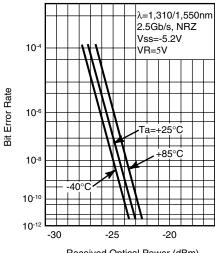
Equivalent output wave form at Pin=-22dBm, Tc=25°C, M=optimum



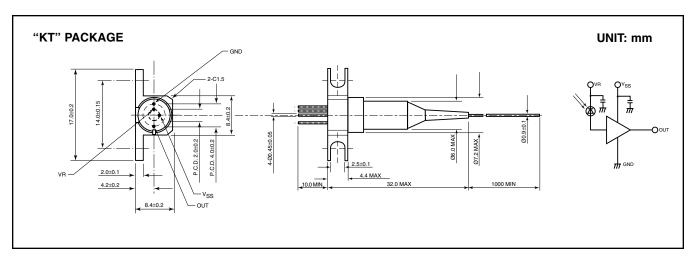
100ps/div

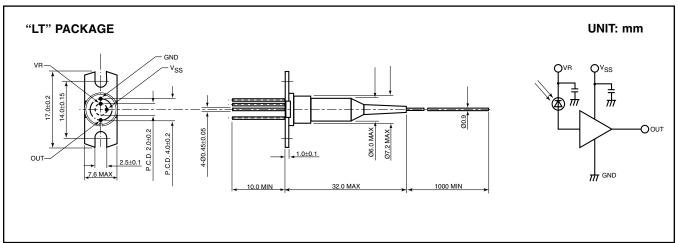


Fig.5 Bit Error Rate



Received Optical Power (dBm)







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- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

