
InGaAs-PIN/Preamp Receiver

FRM3Z121KT/LT

FEATURES

- Data rate up to 156Mb/s
- High Responsivity: 0.85A/W at 1,310nm
- High temperature operation up to 85°C

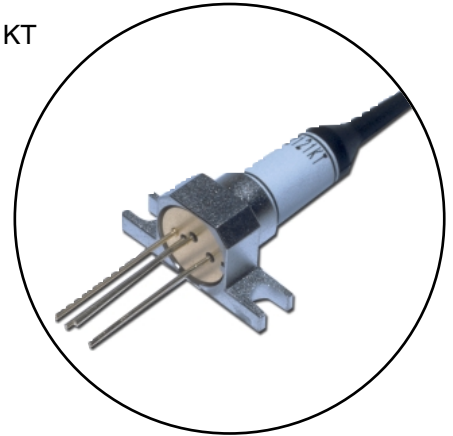
APPLICATIONS

- Medium bit rate standard medium haul optical transmission system at STM-1 (OC-3)

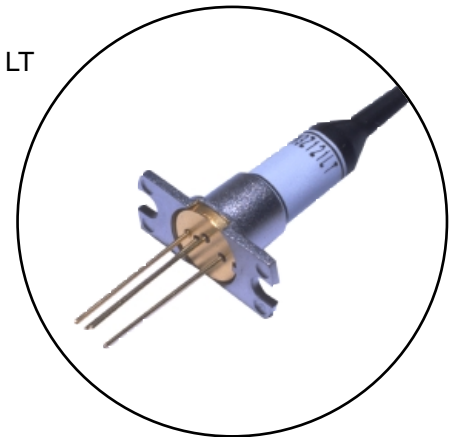
DESCRIPTION

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_a=25°C)

| Parameter | Symbol | Ratings | Unit |
|----------------------------|--------------------|------------|------|
| Storage Temperature | T _{stg} | -40 to +85 | °C |
| Operating Case Temperature | T _{op} | -40 to +85 | °C |
| IC Supply Voltage | V _{SS} | -7 to +0 | V |
| PD Supply Voltage | V _r | 0 to +20 | V |
| PD Reverse Current | I _r | 500 | μA |
| Maximum Input Power | P _{o max} | 0 | dBm |

OPTICAL & ELECTRICAL CHARACTERISTICS (T_a=-40° to +85°C, V_{SS}=-5.2V, V_r=GND 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 _t | AC, R _L =50Ω, P _{in} < -20dBm | 8.0 | 10.5 | - | KΩ |
| Bandwidth | BW | AC-Coupled, R _L =50Ω, -3dBm from 1MHz | 110 | - | - | MHz |
| Sensitivity | P _r | 156Mb/s NRZ, 2 ²³ -1 P.R.B.S., B.E.R.=10 ⁻¹⁰ T _a =25°C | - | -39 | -38 | dBm |
| | | T _a =-40 to +85°C | - | -38.5 | -37.5 | dBm |
| Maximum Input Optical Power | P _{max} | Note (1) | -7 | - | - | dBm |
| Power Supply Current | I _{SS} | - | - | - | 40 | mA |
| Recommended Supply | V _{SS} | - | -5.46 | -5.2 | -4.94 | V |
| PD Voltage | V _r | - | 0 | - | 20 | V |
| Optical Return Loss | ORL | - | 30 | - | - | dB |
| Equivalent Input Current Density | i _n | avg. within 110MHz | - | 1.12 | 1.4 | pA/√Hz |

Note: (1) Maximum Input Optical Power, P_{max} 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**

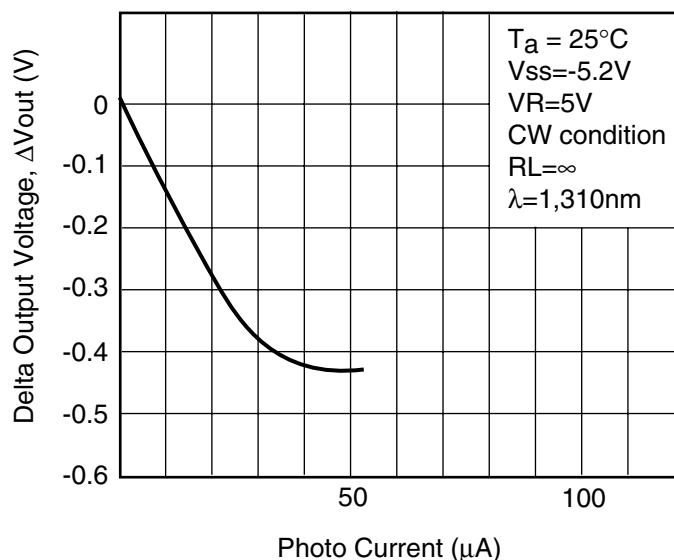


Fig. 2 Relative Frequency Response

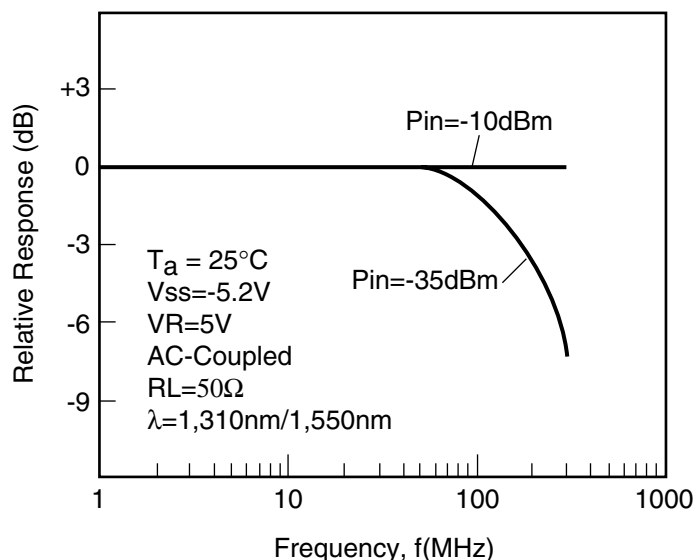
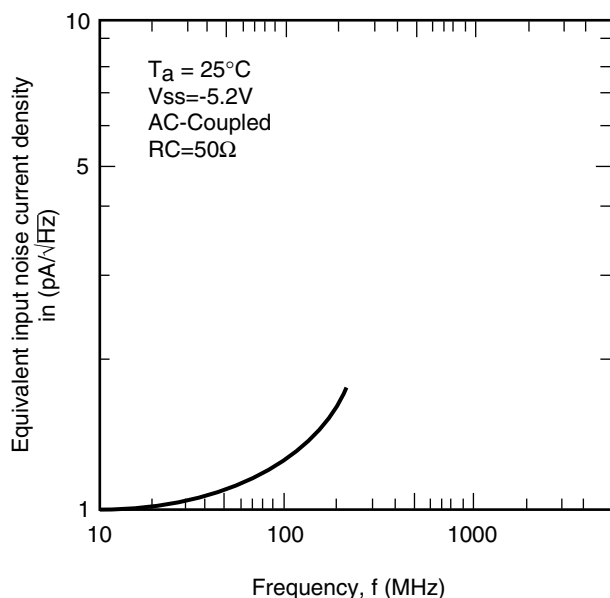


Fig. 3 Equivalent Input Noise Current Density



**Fig. 4 Eye diagram with a 1,310nm,156Mbps NRZ,
2²³-1 PRBS incident signal at $T_c = 25^\circ C$**

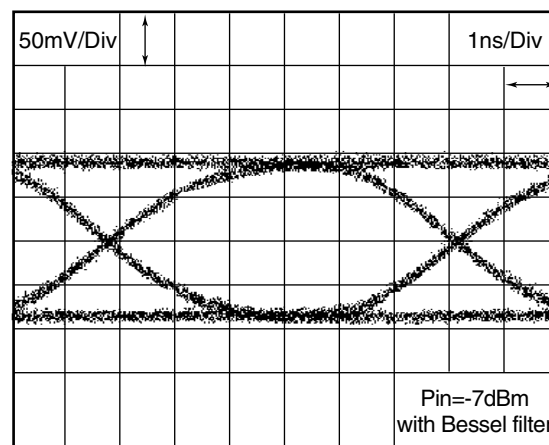
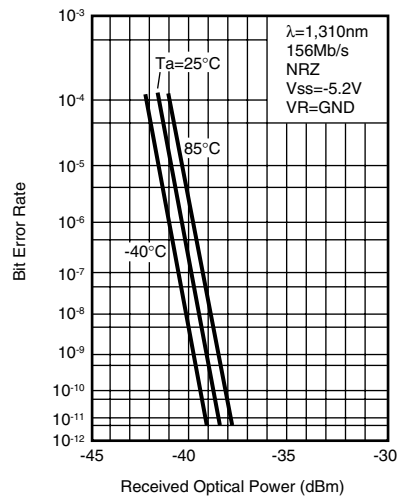
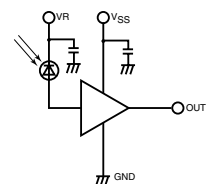
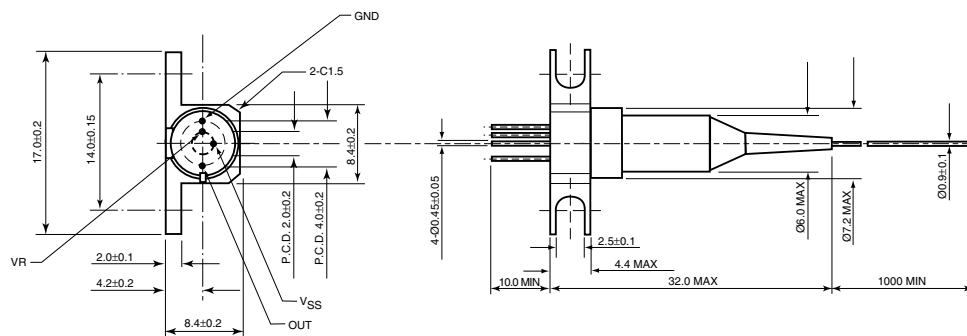


Fig. 5 Bit Error Rate at 1,310nm and a 156Mbps NRZ 2²³-1 PRBS for various case temperature



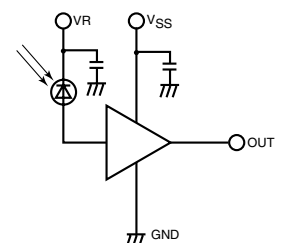
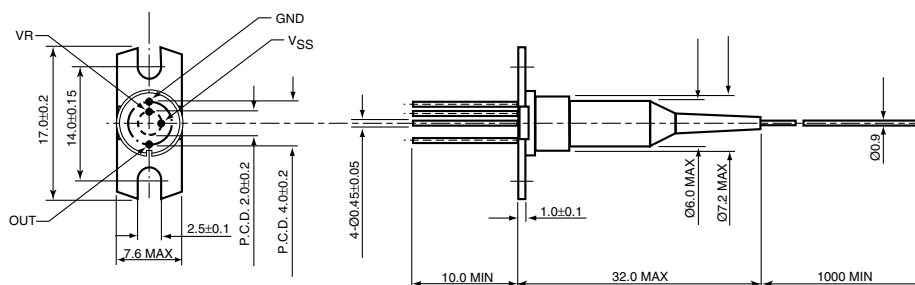
“KT” PACKAGE

UNIT: mm



“LT” PACKAGE

UNIT: mm



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Receiver

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