

InGaAs PIN photodiode with preamp G9820 series

TO-46 package, 1.3/1.55 μm , 2.5 Gbps



G9820 series is a family of high-speed receivers specifically developed for 1.3/1.55 μm band optical fiber communications. These devices incorporate a high-speed, high-sensitivity InGaAs PIN photodiode integrated with a high-speed preamp, allowing easy connection to a latter-stage circuit. Lens window types are also available for efficient and easy coupling to an optical fiber.

Features

- High-speed response
- High gain with AGC (Auto Gain Control)
- Low power supply voltage: 3.3 V
- Differential output
- Sensitivity: -25.5 to +1 dBm

Applications

- Optical fiber communications
- Fiber channel
- Gigabit Ethernet
- SDH/SONET (STM-16/OC-48)

■ Absolute maximum ratings

| Parameter | Symbol | Value | Unit |
|--------------------------|--------|------------|--------------------|
| Supply voltage | Vcc | -0.5, +5.0 | V |
| Operation temperature *1 | Topr | -40 to +85 | $^{\circ}\text{C}$ |
| Storage temperature *1 | Tstg | -40 to +85 | $^{\circ}\text{C}$ |

*1: No condensation

■ Electrical and optical characteristics

($T_a=25^{\circ}\text{C}$, $V_{cc}=3.3\text{ V}$, $V_{ee}=0\text{ V}$, $R_L=50\ \Omega$ *2, $\lambda=1.31\ \mu\text{m}$, unless otherwise noted)

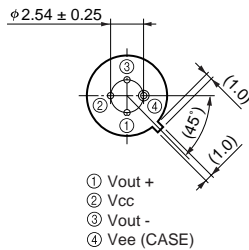
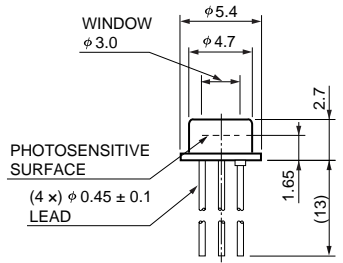
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|--------|---|------|-------|-------|----------|
| Photo sensitivity | S | Pin= -22 dBm *2, *3 | 1.0 | 1.5 | - | V/mW |
| Supply current | Icc | Dark state, $R_L=\infty$ | - | 45 | 60 | mA |
| Output bias voltage | Vo | Dark state, $R_L=\infty$ | - | 3.0 | - | V |
| Cut-off frequency | fc | Pin= -22 dBm, -3 dB *2 | 1.7 | 2.1 | - | GHz |
| Low cut-off frequency | fc-L | Pin= -22 dBm, -3 dB | - | 3.0 | - | kHz |
| Noise equivalent power | NEP | Dark state, to 1875 MHz, *2, *3 | - | 310 | 500 | nWrms |
| Minimum receivable sensitivity | Pmin | 2.5 Gbps, PRBS= $2^{23}-1$ BER= 10^{-10} Extinction ratio=10 dB | - | -25.5 | -23.5 | dBm |
| Maximum receivable sensitivity | Pmax | | +1 | - | - | |
| Output impedance | Rout | | 40 | 50 | 60 | Ω |

*2: Output: capacitive coupling

*3: Single-ended (V_{out+}) measurement

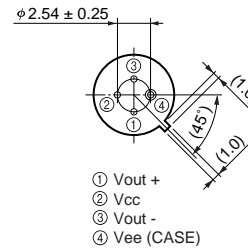
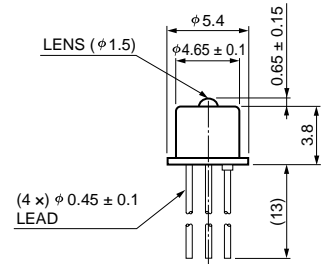
■ Dimensional outlines (unit: mm, tolerance unless otherwise noted: ± 0.2)

G9820



KGPDAA0028EA

G9820-02



KGPDAA0027EA