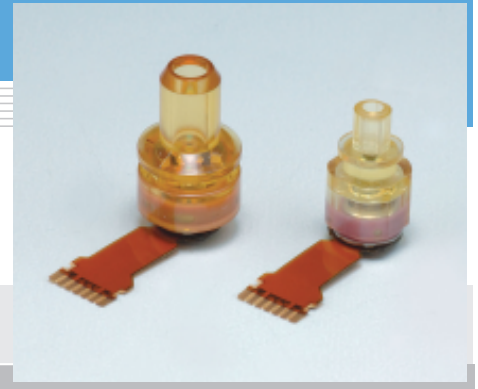


GaAs PIN photodiode with preamp G10447-51/-54

ROSA type, 850 nm, 10 Gbps



Features

- $\phi 1.25$ mm (-54)/ $\phi 2.5$ mm (-51) sleeve type ROSA (Receiver Optical Sub-Assembly)
- High-speed response: 10 Gbps
- Low power supply voltage: $V_{cc}=V_{pd}=3.3$ V
- Differential output
- Sensitivity: +2 to -13.5 dBm Typ. (Extinction ratio=3.0 dB)
- Trans-impedance: 6 k Ω Typ. (single-ended)
- Large area ($\phi 0.06$ mm) for multi-mode optical fibers

Applications

- 10 gigabit ethernet
- Optical fiber communications

■ Absolute maximum ratings (Ta=25 °C)

| Parameter | Symbol | Value | Unit |
|------------------------------|------------------|----------------------|------|
| Supply voltage | V _{cc} | -0.5 Min., +3.7 Max. | V |
| Reverse voltage (photodiode) | V _R | 7 | V |
| Operating temperature *1 | T _{opr} | -20 to +85 | °C |
| Storage temperature *1 | T _{stg} | -40 to +85 | °C |

*1: No condensation

■ Recommended operating conditions

| Parameter | Symbol | Value | Unit |
|------------------------------|-----------------|---------------------|----------|
| Case temperature *1 | T _c | -20 to 85 | °C |
| Supply voltage | V _{cc} | 3.05 to 3.53 | V |
| Reverse voltage (photodiode) | V _{pd} | 3.05 to 5.0 | V |
| Spectral response range | λ | 830 to 870 | nm |
| Load resistance *2 | R _L | 50 | Ω |
| Bit rate | - | 9 to 10.3 | Gbps |
| Bit pattern | - | NRZ, Mark ratio=1/2 | - |

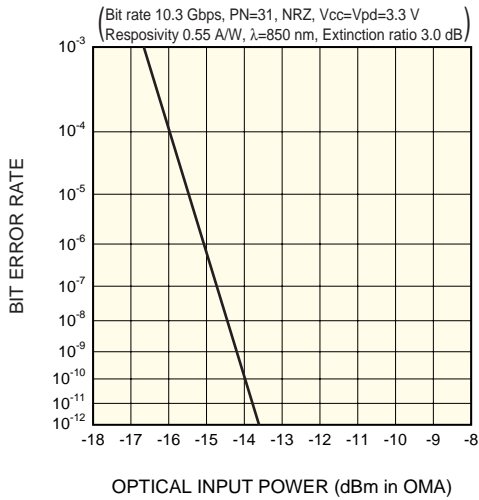
*2: Capacitive coupling

■ Electrical and optical characteristics ("■ Recommended operating conditions", unless otherwise noted)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit | |
|--|------------------------|---|-----------------------|-------|------|------------------|-----------------------|
| Responsivity | R | | 0.4 | 0.55 | - | A/W | |
| Supply current | I _{cc} | Dark state, R _L = ∞ | - | 32 | 45 | mA | |
| Cut-off frequency | f _c | -3 dB | 6.0 | 8.0 | 12.3 | GHz | |
| Low cut-off frequency | f _{c-L} | -3 dB | - | 10 | 50 | kHz | |
| Trans-impedance *3 | T _z | R _L =50 Ω , f=100 MHz | 4 | 6 | - | k Ω | |
| Stressed receivable sensitivity (OMA) | SRS | PN=31, BER=10 ⁻¹² Extinction ratio=3 dB λ =850 nm, VECP=3.5 dB | - | -12 | - | dBm | |
| Minimum receivable sensitivity (OMA) | P _{min} (OMA) | PN=31 BER=10 ⁻¹² | - | -13.5 | -12 | dBm | |
| Maximum receivable sensitivity (Average) | P _{max} | | | | | | Extinction ratio=3 dB |
| Output amplitude | V _{omax} | Differential | 300 | 450 | 650 | mV _{pp} | |
| Dark current | I _D | Dark state V _{pd} =3.3 V | T _c =25 °C | - | 0.02 | 1 | nA |
| | | | | - | - | 100 | |
| Optical return loss | ORL | | 12 | 14 | - | dB | |
| Output resistance | R _{out} | | - | 60 | - | Ω | |

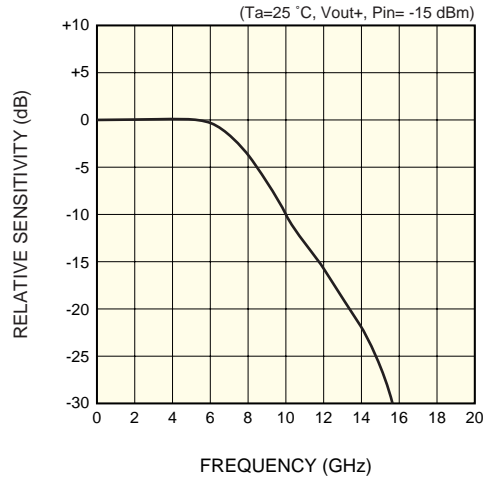
*3: Single-ended (V_{out}+) measurement

Bit error rate



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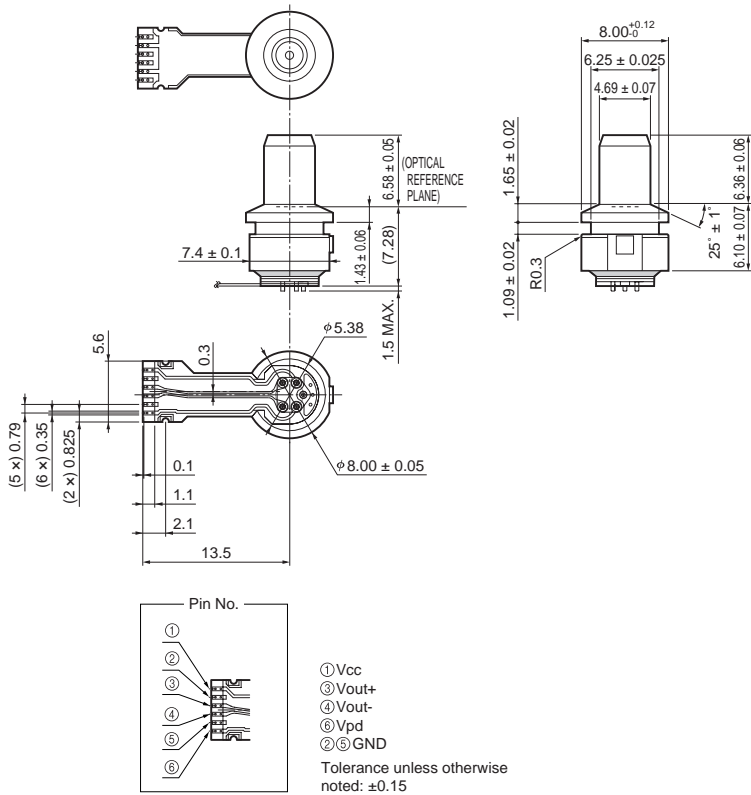
Frequency response



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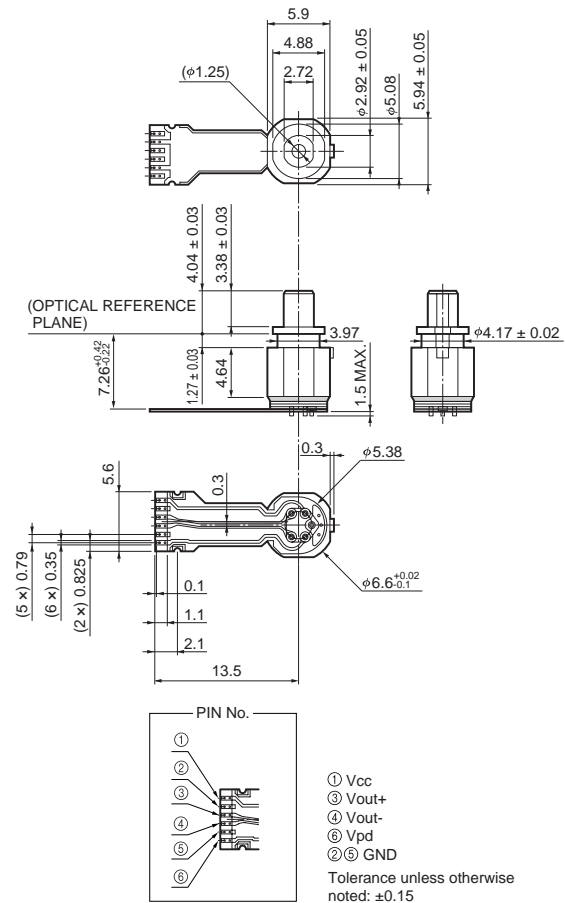
Dimensional outlines (unit: mm)

G10447-51



KGPDA0029EA

G10447-54



Note: LC connector with lead pin terminal (-14) is available.

KIRDA0192EB

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