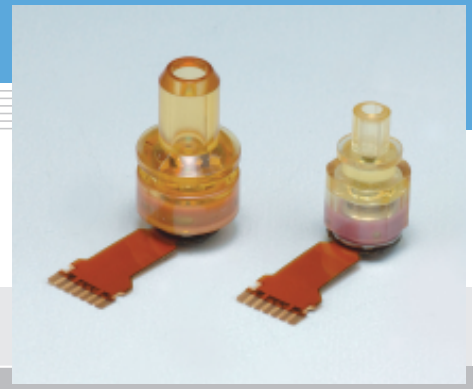




PHOTODIODE

# 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 $\Omega$  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	Vcc	-0.5 Min., +3.7 Max.	V
Reverse voltage (photodiode)	VR	7	V
Operating temperature *1	Topr	-20 to +85	°C
Storage temperature *1	Tstg	-40 to +85	°C

\*1: No condensation

**■ Recommended operating conditions**

Parameter	Symbol	Value	Unit
Case temperature *1	Tc	-20 to 85	°C
Supply voltage	Vcc	3.05 to 3.53	V
Reverse voltage (photodiode)	Vpd	3.05 to 5.0	V
Spectral response range	$\lambda$	830 to 870	nm
Load resistance *2	RL	50	$\Omega$
Bit rate	-	9 to 10.3	Gbps
Bit pattern	-	NRZ, Mark ratio=1/2	-

\*2: Capacitive coupling

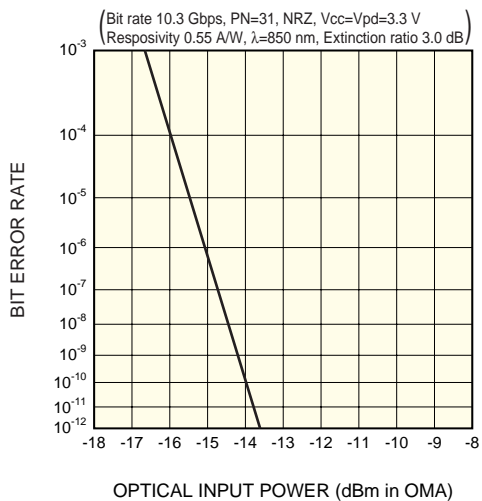
**■ Electrical and optical characteristics ("■ Recommended operating conditions", unless otherwise noted)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Responsivity	R		0.4	0.55	-	A/W	
Supply current	Icc	Dark state, RL= $\infty$	-	32	45	mA	
Cut-off frequency	fc	-3 dB	6.0	8.0	12.3	GHz	
Low cut-off frequency	fc-L	-3 dB	-	10	50	kHz	
Trans-impedance *3	Tz	RL=50 $\Omega$ , f=100 MHz	4	6	-	k $\Omega$	
Stressed receivable sensitivity (OMA)	SRS	PN=31, BER=10 <sup>-12</sup> Extinction ratio=3 dB $\lambda$ =850 nm, VECP=3.5 dB	-	-12	-	dBm	
Minimum receivable sensitivity (OMA)	Pmin (OMA)	PN=31 BER=10 <sup>-12</sup>	-	-13.5	-12	dBm	
Maximum receivable sensitivity (Average)	Pmax						Extinction ratio=3 dB
Output amplitude	Vomax	Differential	300	450	650	mVpp	
Dark current	ID	Dark state Vpd=3.3 V	Tc=25 °C	-	0.02	1	nA
				-	-	100	
Optical return loss	ORL		12	14	-	dB	
Output resistance	Rout		-	60	-	$\Omega$	

\*3: Single-ended (Vout+) measurement

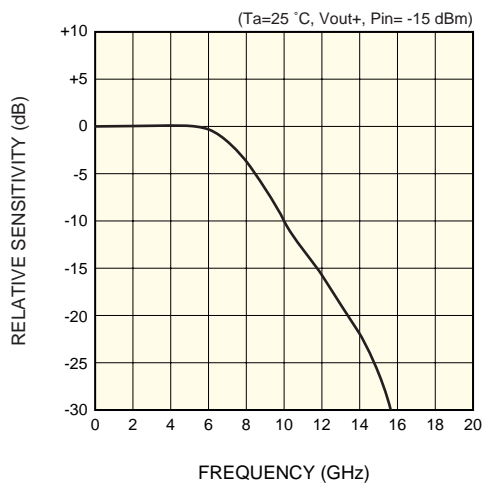
# GaAs PIN photodiode with preamp G10447-51/-54

## Bit error rate



KGPD80072EA

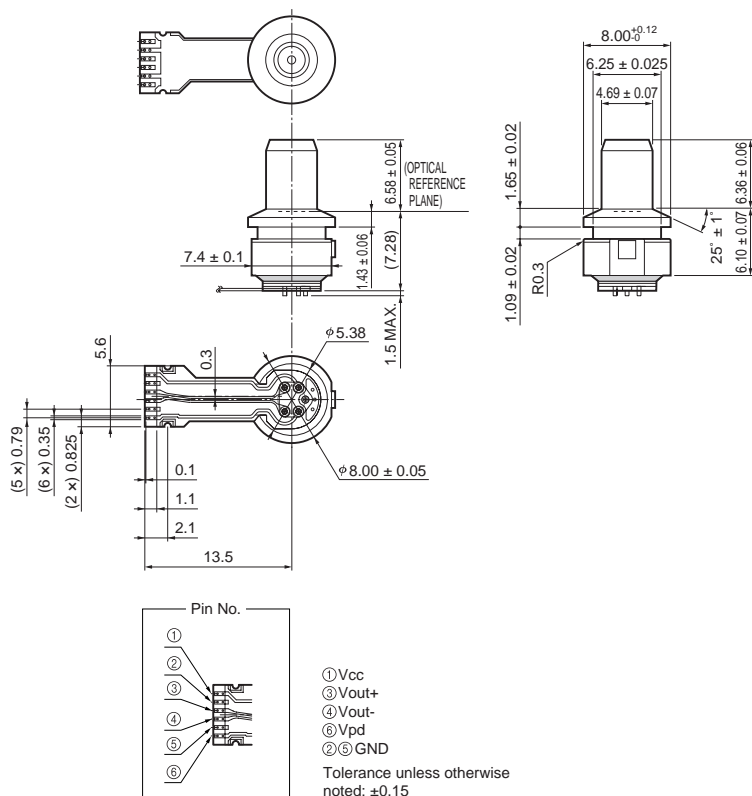
## Frequency response



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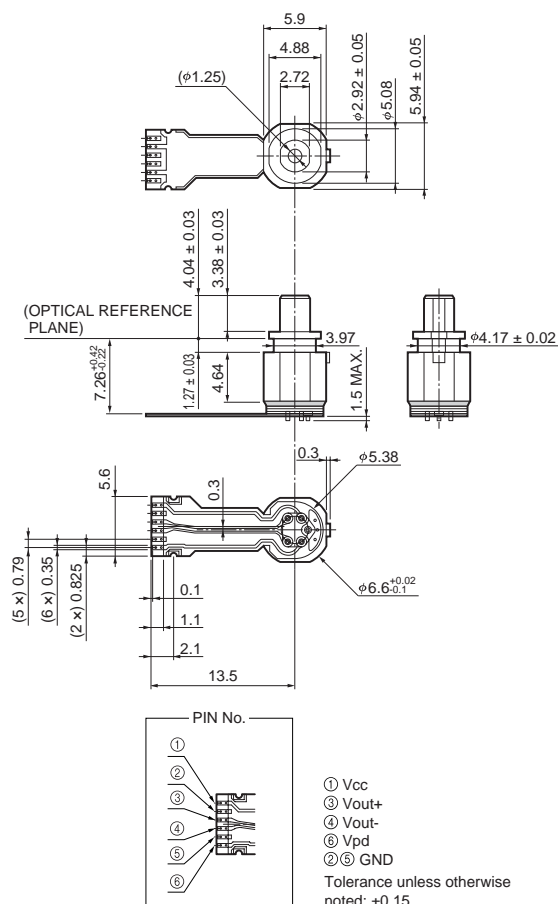
## Dimensional outlines (unit: mm)

G10447-51



KGPD80029EA

G10447-54



KIRDA0192EB

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

**HAMAMATSU**

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