

# GaAs PIN photodiode with preamp G9287-14

ROSA type, 850 nm, 10 Gbps



## Features

- $\phi$ 1.25 mm sleeve type ROSA (Receiver Optical Sub-Assembly)
- High-speed response: 10 Gbps
- Low power supply voltage: 3.3 V
- Differential output
- Sensitivity: +2 to -14 dBm Typ. (Extinction ratio=4.5 dB)
- Trans-impedance: 6 k $\Omega$  Typ. \*1

## Applications

- 10 gigabit ethernet
- Optical fiber communications

### ■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5, +4	V
Reverse voltage (photodiode)	VR	7	V
Operating temperature	Topr	-20 to +85	°C
Storage temperature	Tstg	-40 to +85	°C

### ■ Electrical and optical characteristics (Ta=25 °C, 850 nm, Vcc=3.3 $\pm$ 5 % V, Vpd=3.13 to 5.0 V, RL=50 $\Omega$ \*2, unless otherwise noted)

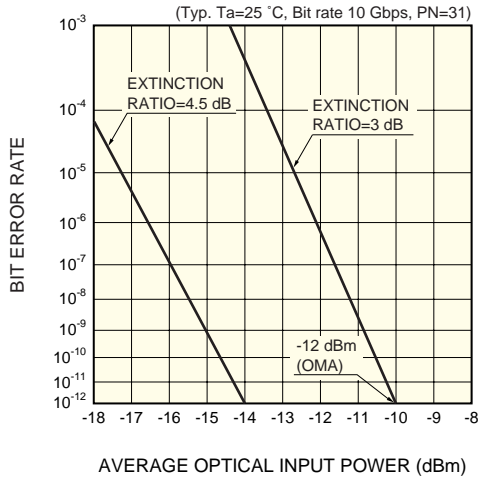
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Responsivity *3	R		0.4	0.55	-	A/W	
Supply current	Icc	Dark state, RL= $\infty$	-	30	45	mA	
Cut-off frequency	fc	-3 dB	6.5	7.0	-	GHz	
Low cut-off frequency	fc-L	-3 dB	-	20	-	kHz	
Noise equivalent power *1	NEP	Dark state, DC to 7.5 GHz	-	1.5	-	$\mu$ Wrms	
Trans-impedance *1	Tz	RL=50 $\Omega$ , f=100 MHz	4.5	6	-	k $\Omega$	
Minimum receivable sensitivity *3	Pmin	10 Gbps, NRZ, PRBS=2 <sup>31</sup> -1, BER=10 <sup>-12</sup>	Extinction ratio=4.5 dB	-	-14	-	dBm
Minimum receivable sensitivity *3 (OMA)	Pmin (OMA)		Extinction ratio=3 dB	-	-10	-	
			Extinction ratio=3 dB	-	-12	-	
Maximum receivable sensitivity	Pmax		Extinction ratio=10 dB	-	+2	-	
Output amplitude	Vomax		350	450	550	mVpp	
Dark current	ID	Dark state, RL= $\infty$	-	0.05	1	nA	
Optical return loss *3	ORL		12	14	-	dB	

\*1: Single-ended (Vout+) measurement

\*2: Capacitive coupling

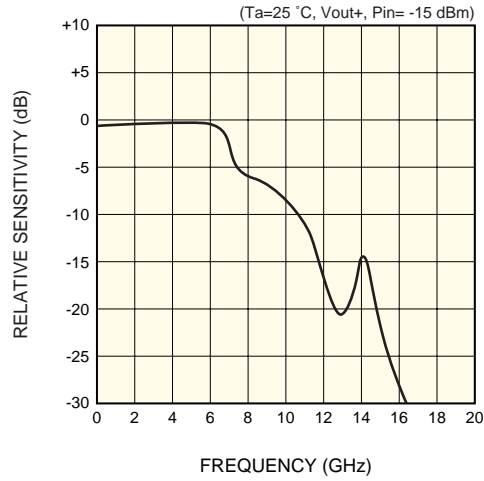
\*3: Measurement by 50/125  $\mu$ m GI MM fiber

## Bit error rate



KGPD0058EC

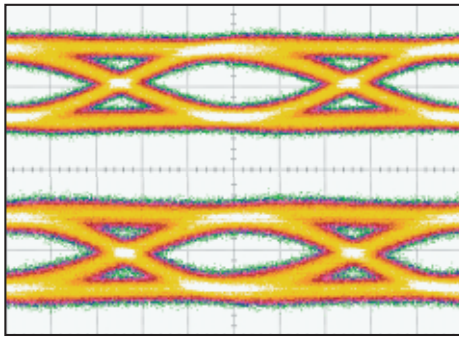
## Frequency response



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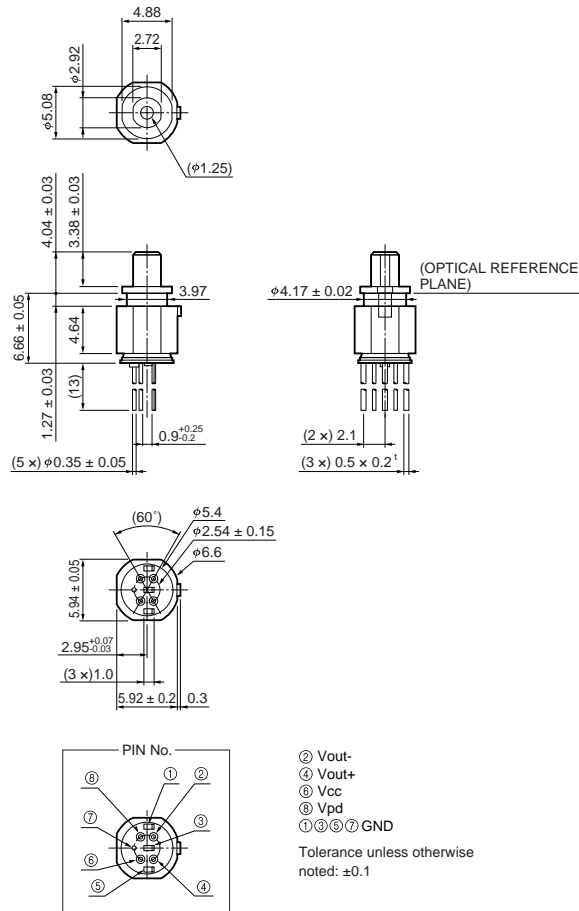
## Eye diagram

Bit rate 10 Gbps, PN=31, NRZ,  $\lambda=850\text{ nm}$ ,  
Extinction ratio 4.5 dB,  $V_{cc}=V_{pd}=3.3\text{ V}$ ,  
Responsivity=0.55 A/W



$P_{in} = -13\text{ dBm}$ , 30 mV/div., 20 ps/div.

## Dimensional outline (unit: mm)



KIRDA0176EB

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HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, <http://www.hamamatsu.com>

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658

France: Hamamatsu Photonics France S.A.R.L.: 8, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741

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