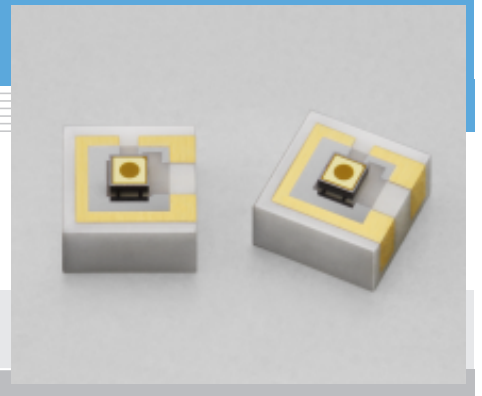


# InGaAs PIN photodiode

## G9230-01

Back-illuminated type, uses package with no wire



### Features

- Back-illuminated type
- Easy to handle since there are no wires on chip (AnSn eutectic bonding)  
Optical fibers can be brought closer to the chip
- Miniature package: 2 × 2 × 1 mm
- High sensitivity: 0.95 A/W Typ. ( $\lambda=1.55 \mu\text{m}$ )
- Precise chip position tolerance:  $\pm 0.075 \text{ mm}$

### Applications

- LD monitor
- Optical fiber communication

### ■ General / Absolute maximum ratings

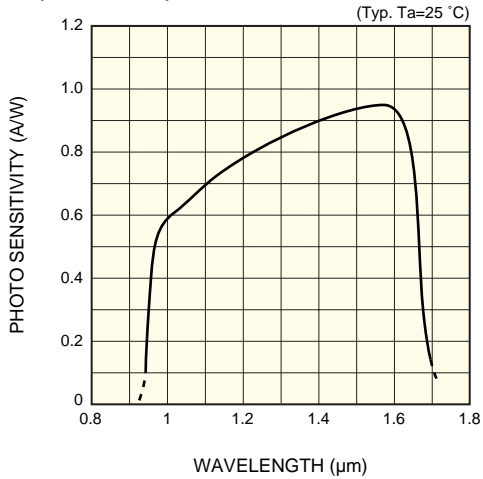
Parameter	Symbol	value	Unit
Active area	-	$\phi 0.3$	mm
Reverse voltage	$V_R$ Max.	10	V
Operating temperature *	$T_{opr.}$	-40 to +85	$^{\circ}\text{C}$
Storage temperature *	$T_{stg.}$	-40 to +85	$^{\circ}\text{C}$

\* In  $\text{N}_2$  environment or in vacuum

### ■ Electrical and optical characteristics ( $T_a=25 \text{ }^{\circ}\text{C}$ )

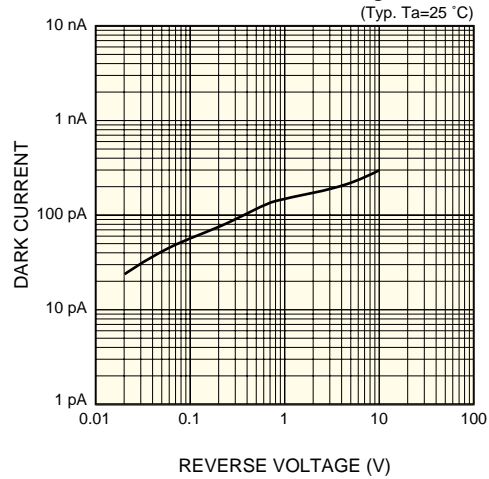
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	$\lambda$		-	0.95 to 1.7	-	$\mu\text{m}$
Photo sensitivity	S	$\lambda=1.3 \mu\text{m}$	-	0.85	-	A/W
		$\lambda=1.55 \mu\text{m}$	0.85	0.95	-	A/W
Dark current	$I_D$	$V_R=5 \text{ V}$	-	0.3	1.5	nA
Shunt resistance	Rsh	$V_R=10 \text{ mV}$	-	1000	-	$\text{M}\Omega$
Terminal capacitance	Ct	$V_R=5 \text{ V}, f=1 \text{ MHz}$	-	5	-	pF
Cut-off frequency	$f_c$	$V_R=5 \text{ V}, R_L=50 \Omega$	-	400	-	MHz
Noise equivalent power	NEP	$\lambda=\lambda_p$	-	$4 \times 10^{-15}$	-	$\text{W}/\text{Hz}^{1/2}$

## ■ Spectral response



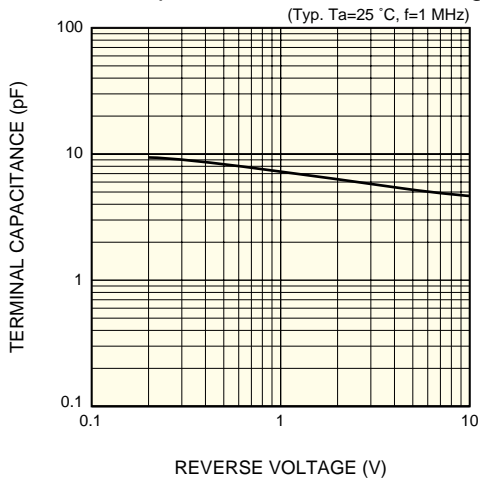
KIRDB0287EA

## ■ Dark current vs. reverse voltage



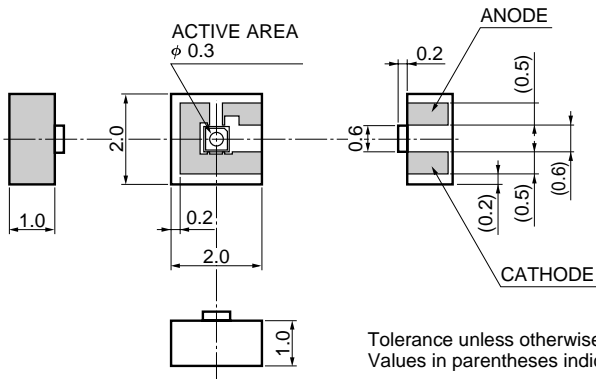
KIRDB0288EA

## ■ Terminal capacitance vs. reverse voltage



KIRDB0289EA

## ■ Dimensional outline (unit: mm)



KIRDA0168EA

# HAMAMATSU

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2004 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184, <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.: 19, Rue du Saule Trape, 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