

# InGaAs PIN photodiodes with preamp



G9821 series

## Receptacle type, 1.3/1.55 $\mu\text{m}$ , 2.5 Gbps

The G9821 series is a family of high-speed receivers specifically developed for 1.3/1.55  $\mu\text{m}$  band optical fiber communications. These devices incorporate a high-speed, high-sensitivity InGaAs PIN photodiode and a high-speed preamp integrated in a receptacle module. Packages are available with various connectors and mounting styles.

### 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	Condition	Value	Unit
Supply voltage	Vcc		-0.5, +5.0	V
Operation temperature	Topr	No dew condensation*1	-40 to +85	°C
Storage temperature	Tstg	No dew condensation*1	-40 to +85	°C

\*1: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

### Electrical and optical characteristics (Ta=25 °C, Vcc=3.3 V, Vee=0 V, RL=50 $\Omega$ \*2, $\lambda$ =1.31 $\mu\text{m}$ , unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photosensitivity	S	Pin=-22 dBm *2 *3 *4	1.0	1.5	-	V/mW
Supply current	Icc	Dark state, RL= $\infty$	-	45	60	mA
Output bias voltage	Vo	Dark state, RL= $\infty$	-	3.0	-	V
Cutoff frequency	fc	Pin=-22 dBm, -3 dB *3	1.7	2.1	-	GHz
Low cutoff frequency	fc-L	Pin=-22 dBm, -3 dB	-	3.0	-	kHz
Noise equivalent power	NEP	Dark state, to 1875 MHz *3 *4	-	310	500	nW rms
Minimum receivable sensitivity	Pmin	2.5 Gbps, PRBS=2 <sup>23</sup> -1 BER=10 <sup>-10</sup>	-	-25.5	-23.5	dBm
Maximum receivable sensitivity	Pmax	Extinction ratio=10 dB	+1	-	-	
Output impedance	Rout		40	50	60	$\Omega$
Optical return loss	ORL	1.31/1.55 $\mu\text{m}$	12	14	-	dB

\*2: Using a single mode optical fiber with a master plug

\*3: Output: capacitive coupling

\*4: Single-ended (Vout+) measurement

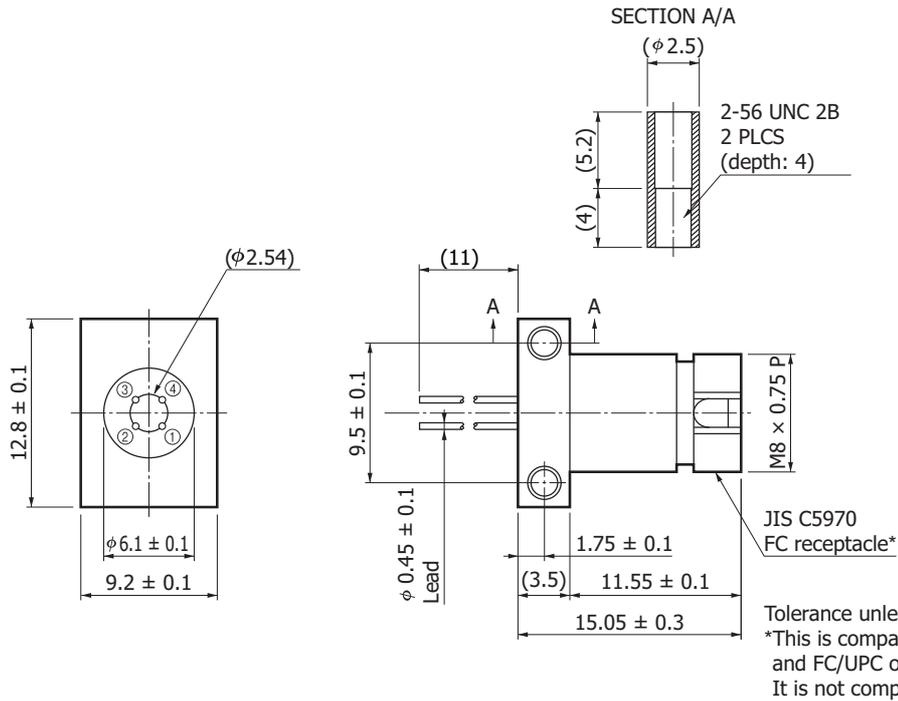
The G9821 series may be damaged by electrostatic discharge, etc. Be careful when using the G9821 series.

Package lineup

Parameter	G9821-22	G9821-32
Mounting style	Board	Panel
Connector	FC	FC
Dimensional outline	(1)	(2)

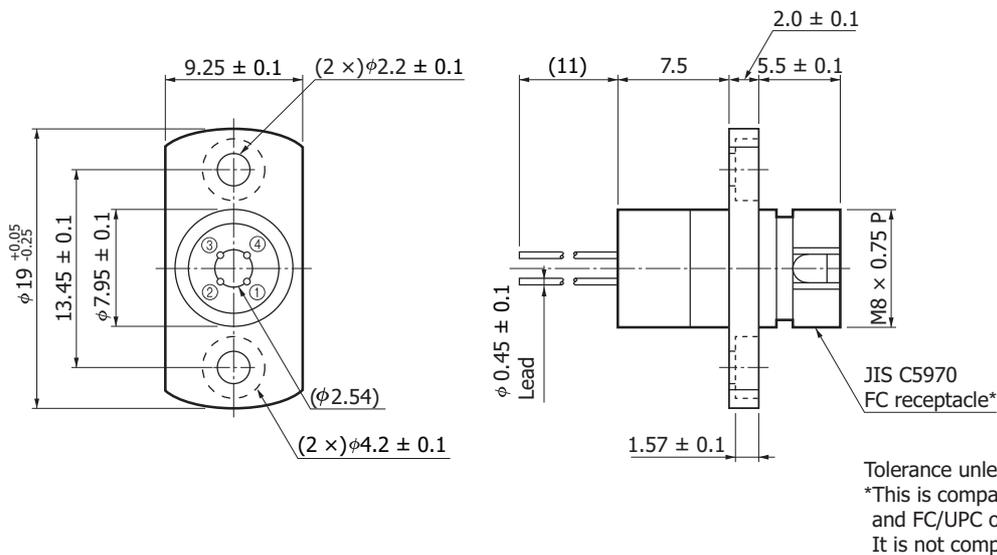
Dimensional outlines (unit: mm)

(1) G9821-22



KIRDA0082ED

(2) G9821-32



KIRDA0083ED

## Pin connections

Pin no.	G9821 series
①	Vcc
②	Vout -
③	Vee
④	Vout +

## Related information

[www.hamamatsu.com/sp/ssd/doc\\_en.html](http://www.hamamatsu.com/sp/ssd/doc_en.html)

### Precautions

- Disclaimer
- Metal, ceramic, plastic products

### Technical information

- Infrared detectors

Information described in this material is current as of August, 2015.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

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