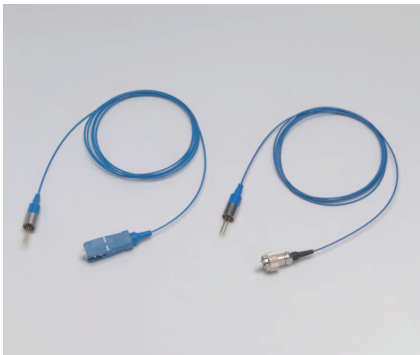
HAMAMATSU
PHOTON IS OUR BUSINESS

InGaAs PIN photodiodes with preamp



G9822 series

Pigtail type, 1.3/1.55 µm, 2.5 Gbps

The G9822 series is a family of high-speed receivers specifically developed for 1.3/1.55 µm band optical fiber communications. These devices incorporate a high-speed, high-sensitivity InGaAs PIN photodiode and a high-speed preamp integrated in a pigtail module.

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 Ω*2, λ=1.31 µm, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photosensitivity	S	Pin=-22 dBm *2 *3	1.0	1.5	-	V/mW
Supply current	Icc	Dark state, RL=∞	-	45	60	mA
Output bias voltage	Vo	Dark state, RL=∞	-	3.0	-	V
Cutoff frequency	fc	Pin=-22 dBm, -3 dB *2	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 *2 *3	-	310	500	nW rms
Minimum receivable sensitivity	Pmin	2.5 Gbps, PRBS=2^{23}-1 BER=10^{-10} Extinction ratio=10 dB	-	-25.5	-23.5	dBm
Maximum receivable sensitivity	Pmax		+1	-	-	
Output impedance	Rout		40	50	60	Ω
Optical return loss	ORL	1.31/1.55 µm	12	14	-	dB

*2: Output: capacitive coupling
*3: Single-ended (Vout+) measurement

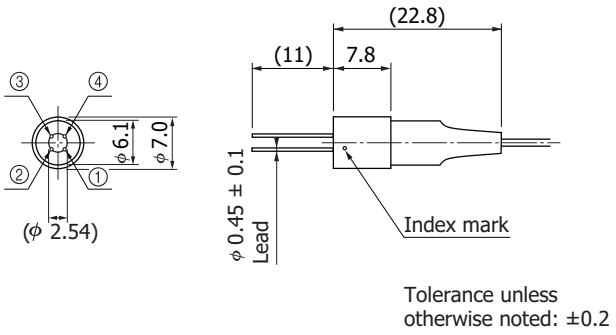
The G9822 series may be damaged by electrostatic discharge, etc. Be careful when using the G9822 series.

Package lineup

Structure	G9822-11	G9822-12
Mount type	Coaxial	
Fiber	SM (9.5/125) ϕ0.9 mm, 1 m +20 cm/-0 cm	
Connector	SC	FC

Dimensional outlines (unit: mm)

Mount type



Tolerance unless otherwise noted: ±0.2

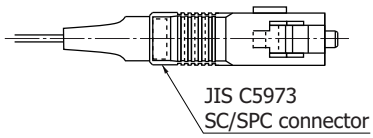
KIRDA0099EB

■ Pin connections

Pin no.	G9822 series
①	Vcc
②	Vout -
③	Vee
④	Vout +

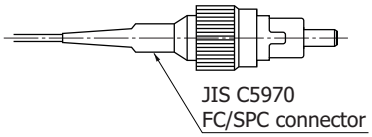
Connector

(1) SC



KIRDA0102EA

(2) FC



KIRDA0103EA

Related information

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 July, 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.

HAMAMATSU www.hamamatsu.com

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
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, 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) 8152-375-0, Fax: (49) 8152-265-8
France: Hamamatsu Photonics France S.A.R.L.: 19, 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: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39) 02-93581733, Fax: (39) 02-93581741
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866

Cat. No. KIRD1089E02 Jul. 2015 DN