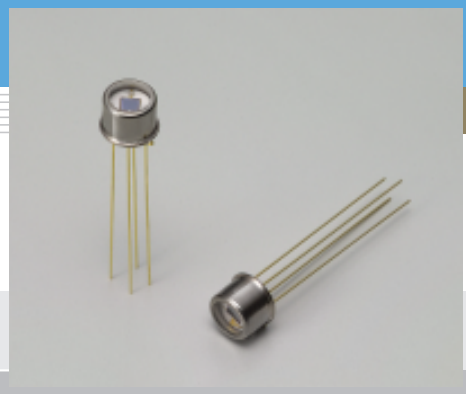


Two-color detector

K1713-05/-08/-09

Wide spectral response range from UV to IR



K1713 series incorporates an infrared-transmitting Si photodiode mounted over an InGaAs PIN photodiode, along the same optical axis.

Features

- Wide spectral response range
- Allows same optical path design
- 4-pin TO-5 package

Applications

- Spectrophotometers
- Laser monitors

General ratings / Absolute maximum ratings

Type No.	Package	Cooling	Detector element	Active area (mm)	Absolute maximum ratings		
					Reverse voltage V_R (V)	Operating temperature T_{opr} (°C)	Storage temperature T_{stg} (°C)
K1713-05	TO-5	No-cooled	Si	2.4×2.4	5	-40 to +70	-55 to +85
			InGaAs	$\phi 0.5$	20		
K1713-08			Si	2.4×2.4	5		
			InGaAs	$\phi 1$	2		
K1713-09			Si	2.4×2.4	5		
			InGaAs	$\phi 1$	10		

Electrical and optical characteristics (Typ. $T_a=25^\circ\text{C}$, unless otherwise noted)

Type No.	Detector element	Peak sensitivity wavelength λ_p (μm)	Photo sensitivity S $\lambda=\lambda_p$ (A/W)	Dark current I_D $V_R=10\text{ mV}$		Shunt Resistance R_{sh} (M Ω)	D^* $\lambda=\lambda_p$ ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)	Rise time t_r $V_R=0\text{ V}$ $R_L=1\text{ k}\Omega$ 10 to 90 % (ns)	Terminal capacitance C_t $V_R=5\text{ V}$ $f=1\text{ MHz}$ (pF)
				Typ. (nA)	Max. (nA)				
K1713-05	Si	0.94	0.45	30 (pA)	150 (pA)	300	1.4×10^{13}	200 *3	60 *5
	InGaAs	1.55	0.55	0.5 *1	2.5 *1	300	3.5×10^{12}	1.5 *4	12
K1713-08	Si	0.94	0.45	30 (pA)	150 (pA)	300	1.4×10^{13}	200 *3	60 *5
	InGaAs	2.30	0.60	15 (μA) *2	75 (μA) *2	3 (k Ω)	2.3×10^{10}	23 *4	200 *2
K1713-09	Si	0.94	0.45	30 (pA)	150 (pA)	300	1.4×10^{13}	200 *3	60 *5
	InGaAs	1.55	0.55	1 *1	5 *1	100	3.5×10^{12}	7 *4	90

*1: $V_R=5\text{ V}$

*2: $V_R=1\text{ V}$

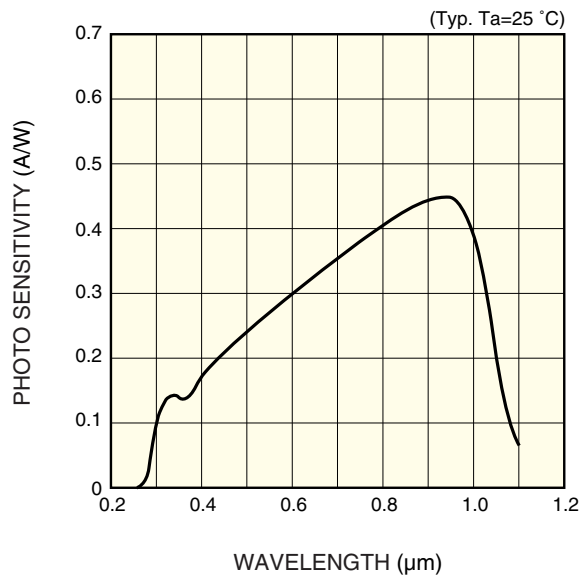
*3: $\lambda=655\text{ nm}$

*4: $V_R=5\text{ V}$, $R_L=50\text{ }\Omega$

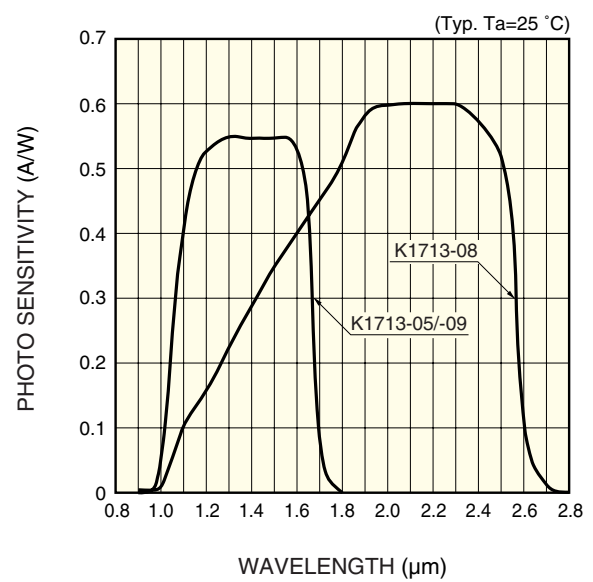
*5: $V_R=0\text{ V}$, $f=10\text{ kHz}$

■ Spectral response

Si photodiode

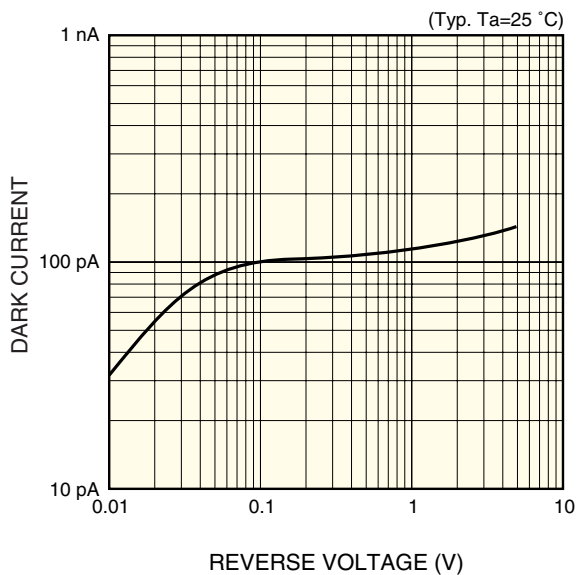


InGaAs PIN photodiode

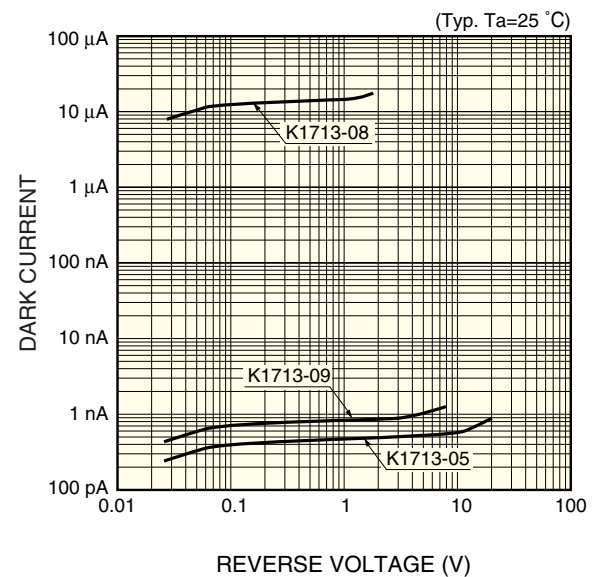


■ Dark current vs. reverse voltage

Si photodiode

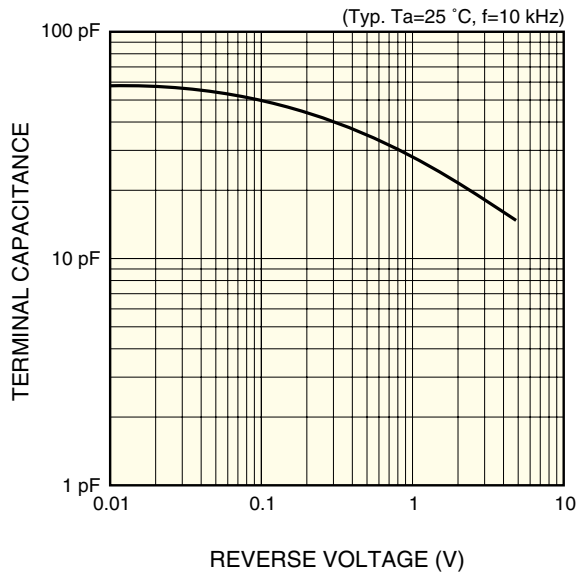


InGaAs PIN photodiode

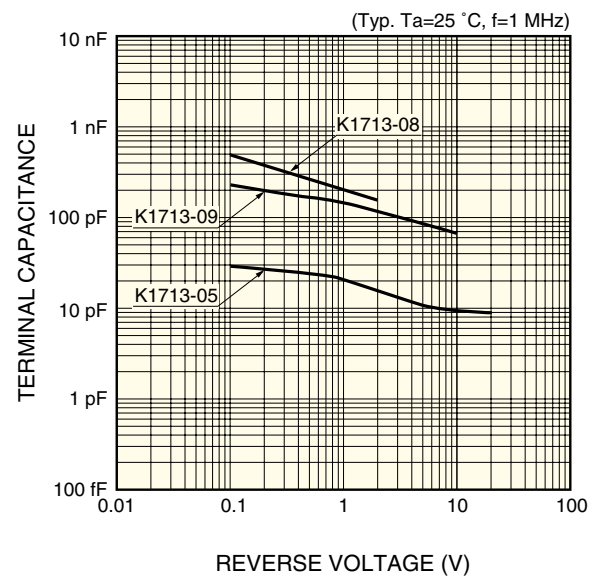


■ Terminal capacitance vs. reverse voltage

Si photodiode

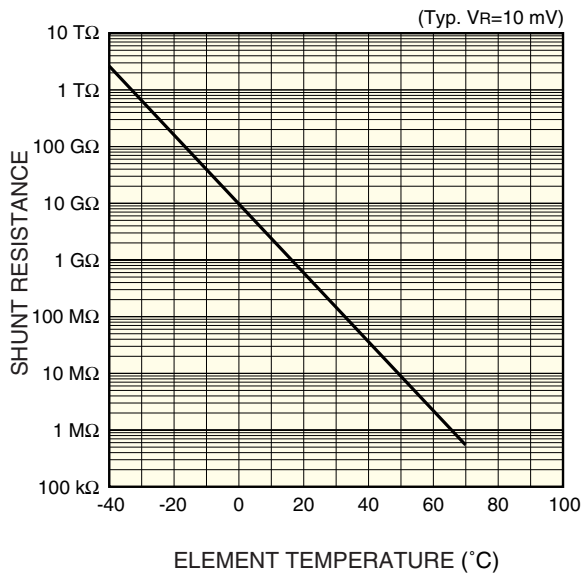


InGaAs PIN photodiode

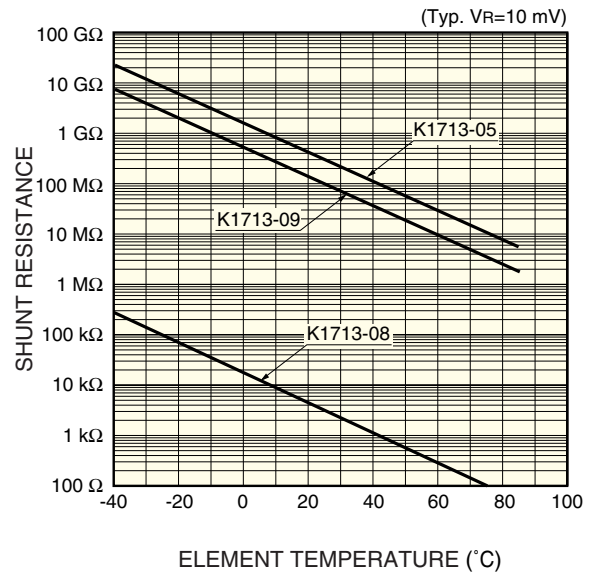


■ Shunt resistance vs. element temperature

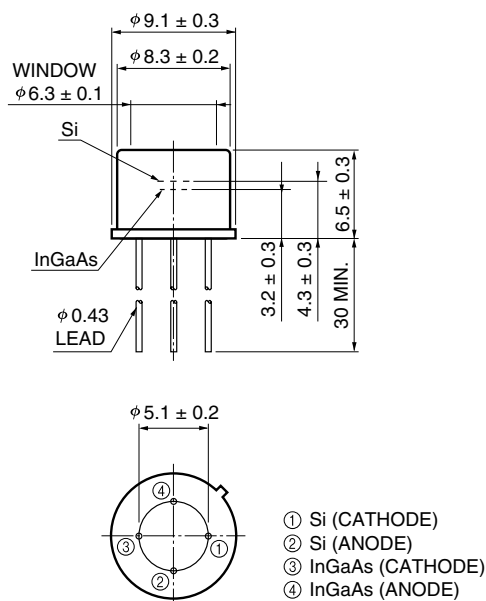
Si photodiode



InGaAs PIN photodiode



■ Dimensional outline (unit: mm)



KIRD0A0147EB

HAMAMATSU

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

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. ©2001 Hamamatsu Photonics K.K.