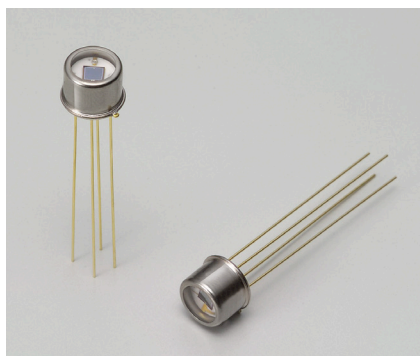


# Two-color detectors



K11908-010K, K13085-010K

**Two InGaAs PIN photodiodes with different wavelength regions have been installed above and below to provide a wide spectral response range**

The K11908-010K and K13085-010K are two-color detectors with two InGaAs PIN photodiodes with different cutoff wavelengths installed along the same optical axis. They provide a wide spectral response range, and they make optical system design easy because their photosensitive areas are along the same optical axis.

## Features

- Two InGaAs PIN photodiodes with different cutoff wavelengths are installed along the same optical axis
- Wide spectral response range: 0.9 to 2.55  $\mu\text{m}$  (K11908-010K)
- Low noise, low dark current

## Applications

- Radiation thermometers
- Spectrophotometry
- Optical measurement equipment

## Option (sold separately)

- Amplifier for infrared detector **C4159-03**  
(Two amplifiers are required.)

## Structure / Absolute maximum ratings

Type no.	Window material	Package	Cooling	Detector	Photosensitive area (mm)	Absolute maximum ratings			
						Reverse voltage $V_R$ max (V)	Operating temperature $T_{opr}$ ( $^{\circ}\text{C}$ )	Storage temperature $T_{stg}$ ( $^{\circ}\text{C}$ )	
K11908-010K	Borosilicate glass	4-pin TO-5	Non-cooled	InGaAs ( $\lambda_c=1.7 \mu\text{m}$ )	$2.4 \times 2.4$	2	-40 to +70*1	-55 to +85*1	
				InGaAs ( $\lambda_c=2.55 \mu\text{m}$ )	$\phi 1.0$	1			
K13085-010K					InGaAs ( $\lambda_c=1.7 \mu\text{m}$ )	$2.4 \times 2.4$			2
					InGaAs ( $\lambda_c=1.85 \mu\text{m}$ )	$\phi 1.0$			1

\*1: No dew condensation

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.

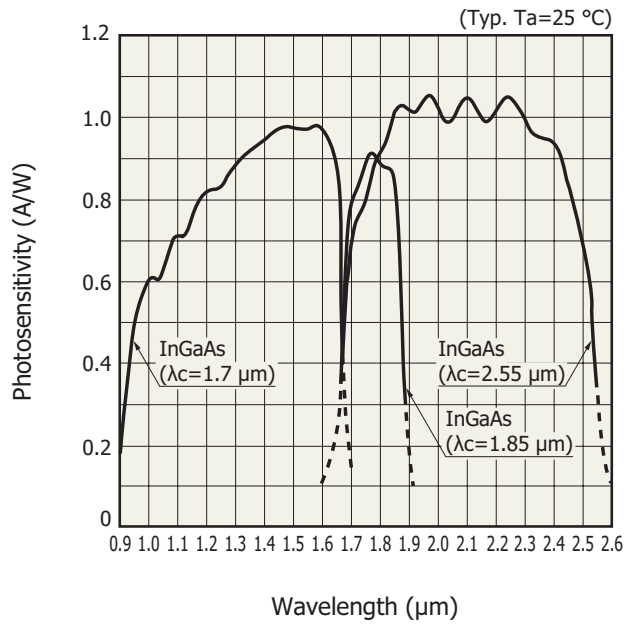
## Electrical and optical characteristics (Typ. $T_a=25 \text{ }^{\circ}\text{C}$ , unless otherwise noted)

Type no.	Detector	Spectral response range ( $\mu\text{m}$ )	Peak sensitivity wavelength $\lambda_p$ ( $\mu\text{m}$ )	Photosensitivity $S_{\lambda=\lambda_p}$ (A/W)	Dark current $I_D$ ( $V_R=10 \text{ mV}$ )		Shunt resistance $R_{sh}$ ( $V_R=10 \text{ mV}$ ) (M $\Omega$ )	Detectivity $D^*$ ( $\lambda=\lambda_p$ ) (cm $\cdot$ Hz $^{1/2}$ /W)	Cutoff frequency*2 (MHz)	Terminal capacitance*3 (nF)
					Typ. (nA)	Max. (nA)				
K11908-010K	InGaAs ( $\lambda_c=1.7 \mu\text{m}$ )	0.9 to 1.7	1.55	0.95	1	10	10	$5.0 \times 10^{12}$	2	1.5
	InGaAs ( $\lambda_c=2.55 \mu\text{m}$ )	1.7 to 2.55	2.1	1	700	3500	14 (k $\Omega$ )	$7.0 \times 10^{10}$	6	0.5
K13085-010K	InGaAs ( $\lambda_c=1.7 \mu\text{m}$ )	0.9 to 1.7	1.55	0.95	1	10	10	$5.0 \times 10^{12}$	2	1.5
	InGaAs ( $\lambda_c=1.85 \mu\text{m}$ )	1.7 to 1.85	1.75	0.8	2	10	5	$1.0 \times 10^{12}$	10	0.23

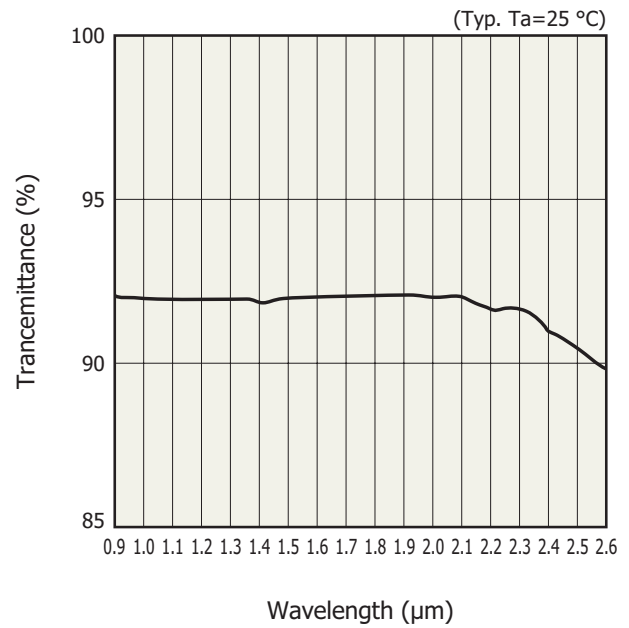
\*2:  $V_R=0 \text{ V}$ ,  $R_L=50 \Omega$

\*3:  $V_R=0 \text{ V}$ ,  $f=1 \text{ MHz}$

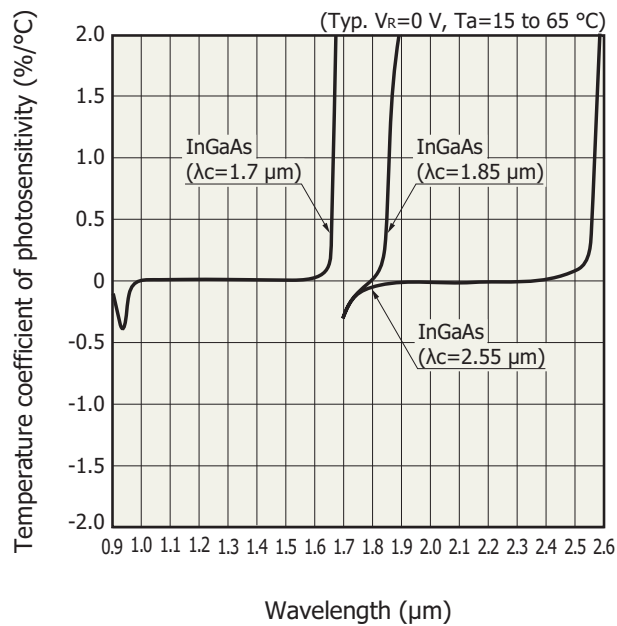
**Spectral response**



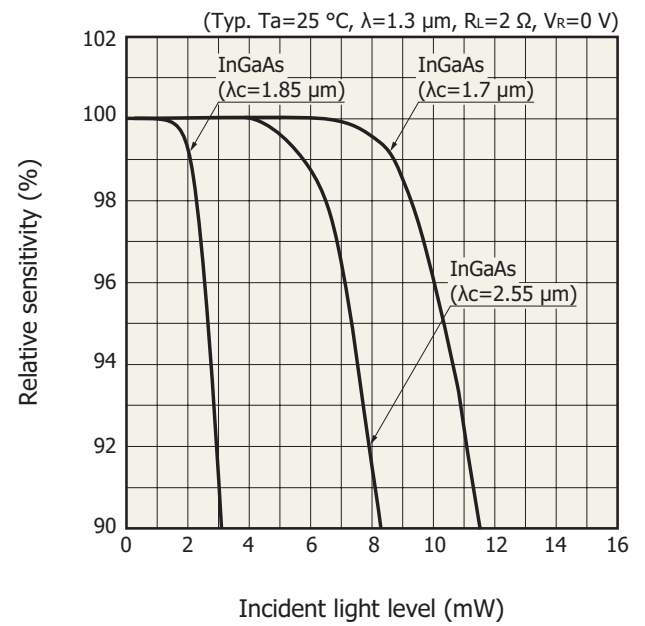
**Spectral transmittance of window material**



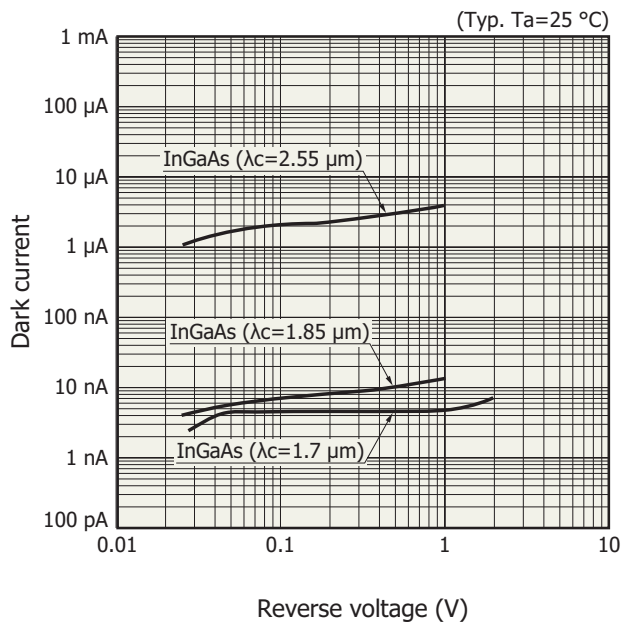
**Photosensitivity temperature characteristics**



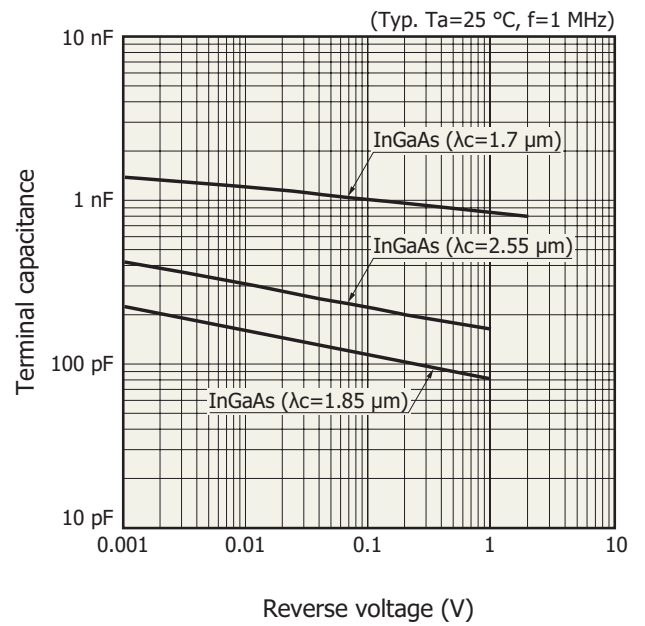
**Linearity**



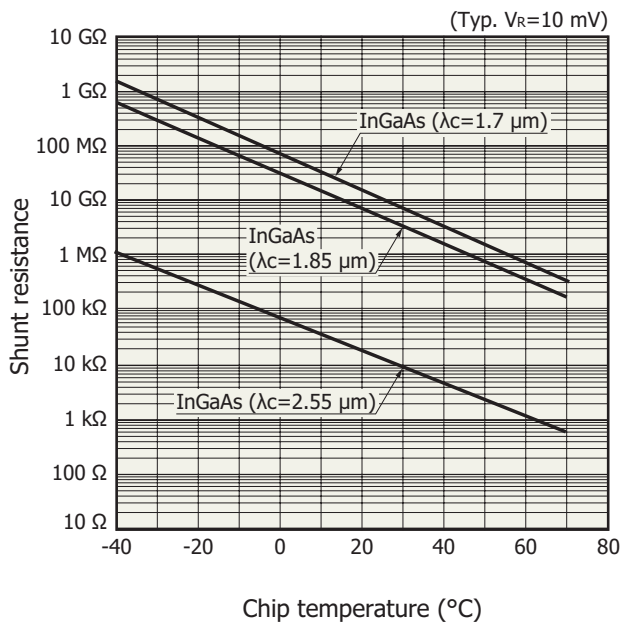
**Dark current vs. reverse voltage**



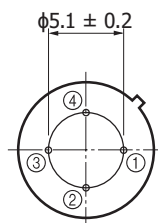
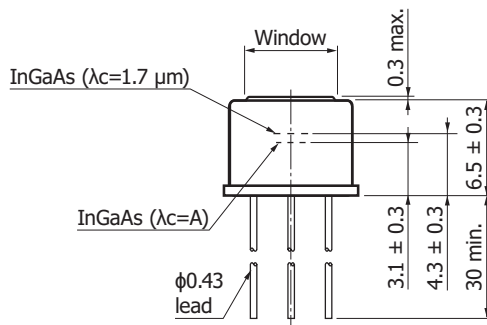
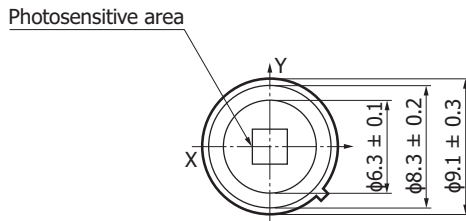
**Terminal capacitance vs. reverse voltage**



**Shunt resistance vs. chip temperature**



### Dimensional outline (unit: mm)



Chip position accuracy:  
with respect to package center  
 $-0.3 \leq X \leq +0.3$   
 $-0.3 \leq Y \leq +0.3$

- ① InGaAs ( $\lambda c=1.7 \mu\text{m}$ ) cathode
- ② InGaAs ( $\lambda c=1.7 \mu\text{m}$ ) anode
- ③ InGaAs ( $\lambda c=A$ ) cathode
- ④ InGaAs ( $\lambda c=A$ ) anode

	K11908-010K	K13085-010K
A	2.55 $\mu\text{m}$	1.85 $\mu\text{m}$

KIRDA0218EB

### Related information

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

#### Precautions

- Disclaimer
- Safety consideration
- Metal, ceramic, plastic package products

Information described in this material is current as of September 2018.

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