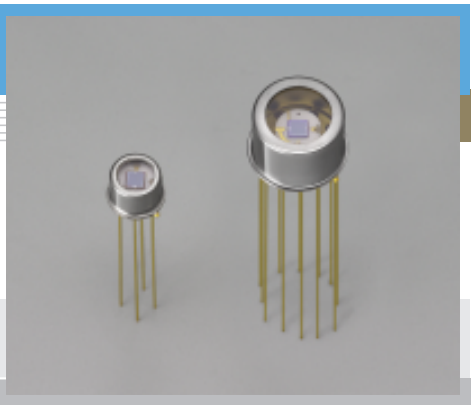


Two-color detector
K1713/K3413-01, -02

Broad spectral response range from UV through IR

K1713/K3413-01, -02 detectors have a sandwich structure in which an infrared transmitting silicon photodiode is mounted over an infrared detector element. This structure allows you to design instruments using the same optical path from UV through IR.

Features

- Broad spectral response
  Suitable for spectrophotometers, flame monitors, etc.
- Noncooled type:
  Room temperature operation for easy handling
  One-stage thermoelectrically cooled type:
  Keeps the detector temperature at a constant level to make high-precision measurements.

Applications

- Spectrophotometers
- Laser monitors
- Flame monitors
- Radiation thermometers

Accessories (Optional)

- Heatsink for thermoelectrically cooled type A3179-03
- Temperature controller for thermoelectrically cooled type C1103-04
- Photosensor amplifier C2719
- Amplifier for PbS and PbSe detectors C3757-02

■ General ratings / Absolute maximum ratings

Type No.	Dimensional outline/ Window material *1	Package	Cooling	Detector	Active area size (mm)	Absolute maximum ratings: Thermistor allowable dissipation (mW)	TE-cooler allowable current (A)	Reverse voltage VR (V)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
K1713-01	①/S	TO-5	Non-cooled	Si	2.4 × 2.4	-	-	5	-30 to +50	-55 to +50
				PbS	1.8 × 1.8			100 *2		
K1713-02				Si	2.4 × 2.4			5		
				PbSe	1.8 × 1.8			100 *2		
K3413-01	②/S	TO-8	One-stage TE-cooled	Si	2.4 × 2.4	0.2	1.5	5		
				PbS	1.8 × 1.8			100 *2		
K3413-02				Si	2.4 × 2.4			5		
				PbSe	1.8 × 1.8			100 *2		

■ Electrical and optical characteristics (Typ., unless otherwise noted)

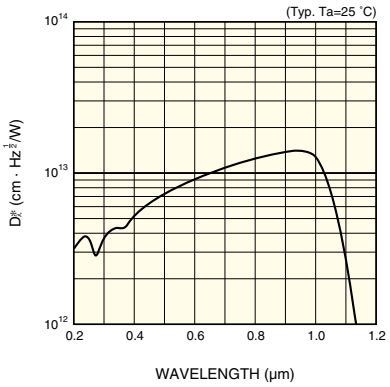
Type No.	Detector	Measurement condition: Element temperature T (°C)	Peak sensitivity wavelength λp (μm)	Photo sensitivity S λ=λp (A/W)	Shunt resistance or dark resistance (MΩ)	D* λ=λp (cm · Hz$^{1/2}$/W)	Rise time tr VR=0 V RL=1 kΩ 10 to 90 % (μs)
K1713-01	Si	25	0.94	0.45	300	1.4 × 10^{13}	0.2 *4
	PbS		2.2	6 × 10^{4} (V/W)	0.2 to 2	5 × 10^{10} *3	200 Max. *5
K1713-02	Si	25	0.94	0.45	300	1.4 × 10^{13}	0.2 *4
	PbSe		4.0	5 × 10^{2} (V/W)	0.5 to 1.8	5 × 10^{8} *3	3 Max. *5
K3413-01	Si	25	0.94	0.45	300	1.4 × 10^{13}	0.2 *4
	PbS	-10	2.4	3 × 10^{5} (V/W)	0.5 to 10	1 × 10^{11} *3	600 Max. *5
K3413-02	Si	25	0.94	0.45	300	1.4 × 10^{13}	0.2 *4
	PbSe	-10	4.1	1.5 × 10^{3} (V/W)	1.5 to 5	1 × 10^{9} *3	5 Max. *5

*1: Window material S: sapphire glass
*2: Maximum supply voltage
*3: Light source 500 K black body
Chopping frequency: 600 Hz,
Noise bandwidth: 60 Hz
Supply voltage: 15 V
Load resistance: nearly equal to element dark resistance
Input energy: 4.8 μW/cm^2 (PbSe: 16.7 μW/cm^2)
*4: λ=655 nm
*5: 0 to 63 %

SOLID STATE DIVISION

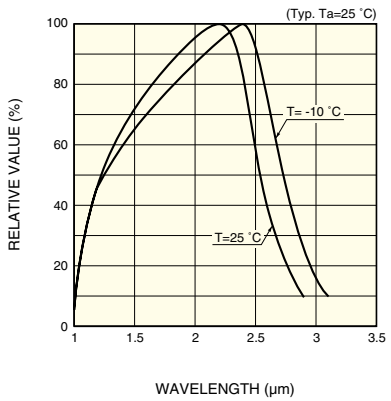
■ Spectral response

Si photodiode



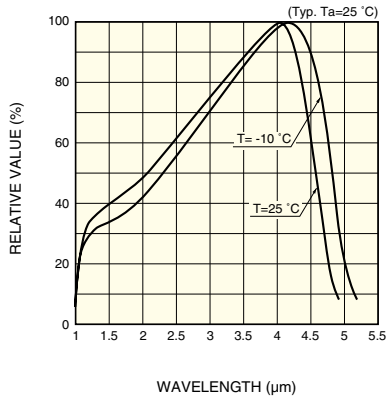
KIRDB0058EE

PbS photoconductive detector



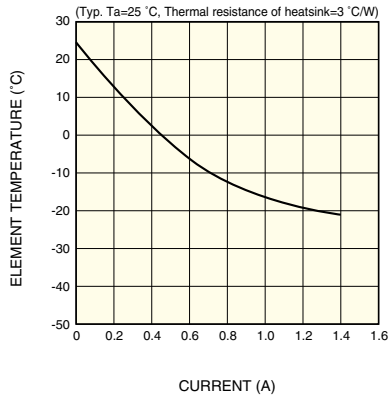
KIRDB0282EA

PbSe photoconductive detector



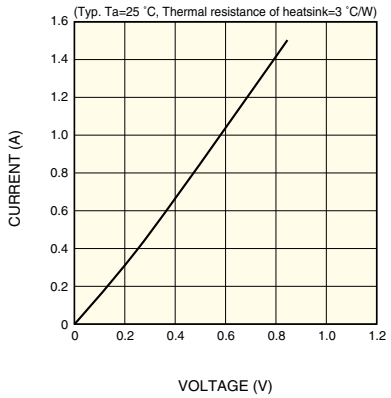
KIRDB0283EA

■ Cooling characteristics of TE-cooler



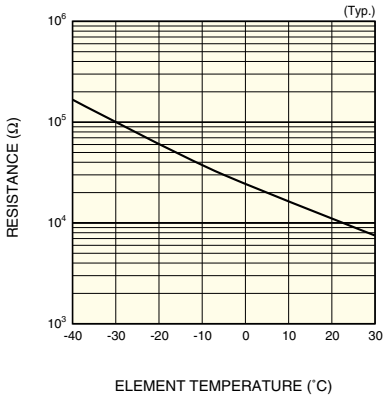
KIRDB0276EA

■ Current vs. voltage characteristics of TE-cooler



KIRDB0277EA

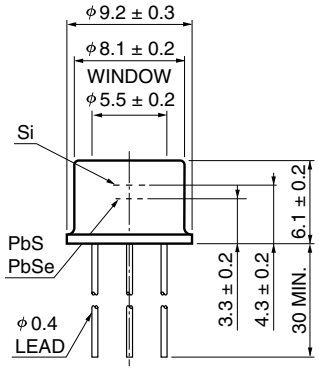
■ Thermistor temperature characteristic

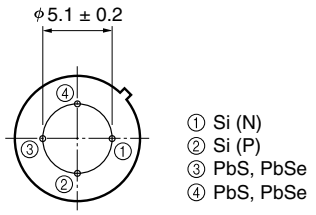


KIRDB0278EA

■ Dimensional outline (unit: mm)

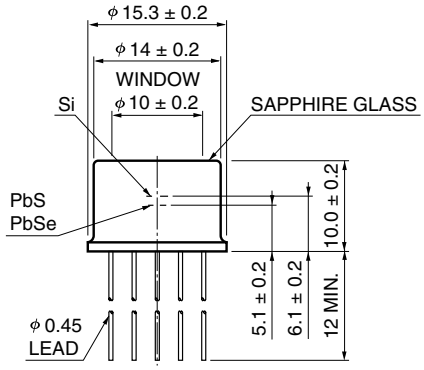
① K1713-01, -02

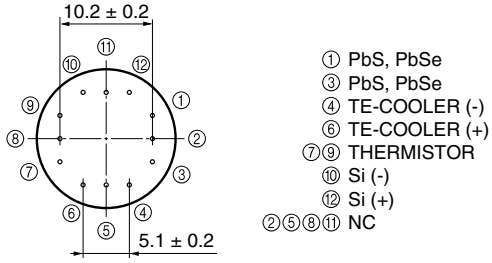




KIRDA0041EE

② K3413-01, -02





KIRDA0043ED

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. ©2002 Hamamatsu Photonics K.K.

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

Cat. No. KIRD1029E04
Dec. 2002 DN