

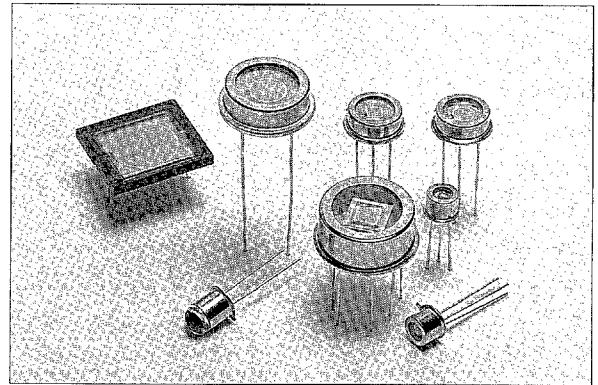
# Ge Photodiodes (Noncooled Types)

## NIR (Near Infrared) Detectors for Stable Operation at Room Temperature

### High Stability Over Extended Time Periods

Ge photodiodes are planar type photovoltaic devices that provide stable responsivity over extended time periods.

**Lower Temperature Detection Limit:** Approx. 200°C



### Standard Types

A variety of types are offered, ranging in active areas from 1 mm diameter to 10 mm diameter.

### High Shunt Resistance Types

These devices offer further reduced noise than the standard types, allowing more accurate measurement with an excellent S/N ratio.

These devices are suited for low light level detection at low frequency.

### Multielement Types

Multielement types are developed primarily for high-speed multichannel spectroscopy.

### ● SPECIFICATIONS (Common)

Peak Wavelength	1.55 $\mu$ m
Window Material	Borosilicate glass (Note)
Operating Temperature	-30 to +60°C
Storage Temperature	-55 to +80°C

(Note) Non-reflective coating on the window surface is available. Please consult our sales office.

### ● ACCESSORIES (Optional)

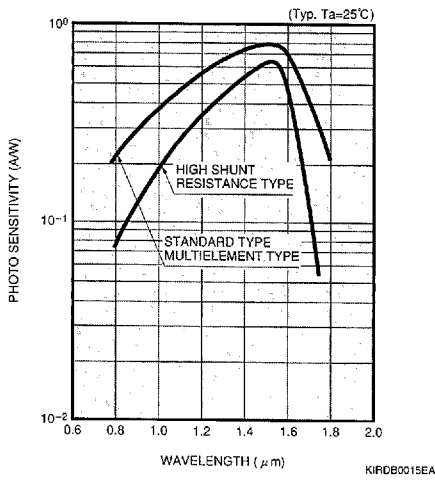
Preamplifier for Ge photodiodes: C4159

(Typical data unless otherwise specified,  $T_a=25^\circ\text{C}$ )

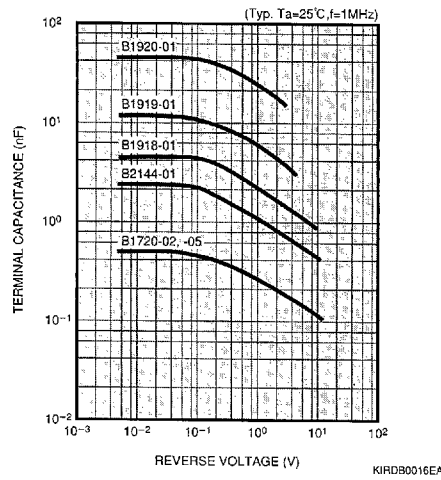
Type No.	Outline No. (P.34,35)	Package	Active Area (mm)	Photo Sensitivity S at $\lambda_p$ (A/W)	Short-Circuit Current $I_{sc}$ 100 $\mu$ , 2856K		Dark Current $I_D$ $V_R=10\text{mV}$		Shunt Resistance R <sub>sh</sub> $V_R=10\text{mV}$ (k $\Omega$ )	$D^*$ at $\lambda_p$ ( $\text{cm}^2\text{Hz}^{1/2}/\text{W}$ )	NEP at $\lambda_p$ ( $\text{W}/\text{Hz}^{1/2}$ )	Rise Time	Terminal Capacitance	Maximum Reverse Voltage
					Min. ( $\mu\text{A}$ )	Typ. ( $\mu\text{A}$ )	Typ. ( $\mu\text{A}$ )	Max. ( $\mu\text{A}$ )				$V_R=0\text{V}$ 10 to 90% $f=1\text{MHz}$ ( $\mu\text{s}$ )	$V_R=0\text{V}$ $f=1\text{MHz}$ (nF)	$V_R$ Max. (V)
<b>Standard Types</b>														
B1720-02	7	3-pin TO-18	1 dia.	0.8	1	1.4	0.3	0.6	33	$1 \times 10^{11}$	$8 \times 10^{-13}$	3	0.4	10
B1720-05	8	3-pin TO-18	1 dia. (Lens type)	0.8	9	12	0.3	0.6	33	$1 \times 10^{11}$	$8 \times 10^{-13}$	3	0.4	10
B2144-01	9	3-pin TO-5	2 dia.	0.8	4	6	1.2	2.4	8	$1 \times 10^{11}$	$1 \times 10^{-12}$	5	2	10
B1918-01		3-pin TO-5	3 dia.	0.8	10	13	2	4	5	$1 \times 10^{11}$	$2 \times 10^{-12}$	7	4.5	10
B1919-01	10	2-pin TO-8	5 dia.	0.8	24	30	4	8	2.5	$1 \times 10^{11}$	$2 \times 10^{-12}$	11	10	5
B1920-01	11	Ceramic	10 dia.	0.8	90	120	20	40	0.5	$1 \times 10^{11}$	$4 \times 10^{-12}$	35	50	3
<b>High Shunt Resistance Types</b>														
B4209	7	3-pin TO-18	1 dia.	0.65	0.8	1	0.05	0.1	180	$1 \times 10^{12}$	$8 \times 10^{-14}$	2	3	0.1
B3538-02	9	3-pin TO-5	2 dia.	0.65	2.6	3.3	0.1	0.2	80	$1 \times 10^{12}$	$1 \times 10^{-13}$	8	11	0.1
B3538-03		3-pin TO-5	3 dia.	0.65	6	7.5	0.25	0.5	40	$1 \times 10^{12}$	$2 \times 10^{-13}$	16	23	0.1
<b>Multielement Types</b>														
B3209-16	12	18-pin DIP	$0.8 \times 1.0$ (16 elements)	0.7	1.0	1.7	0.45	1.0	30	$1 \times 10^{11}$	$9 \times 10^{-13}$	1	0.2	5
B3188	15	8-pin TO-5	$1.45 \times 1.45$ (2x2 elements)	0.7	2.5	3.5	0.7	1.4	10	$1 \times 10^{11}$	$2 \times 10^{-12}$	3	0.7	5

# Spectral Response 0.8 to 1.8 $\mu\text{m}$

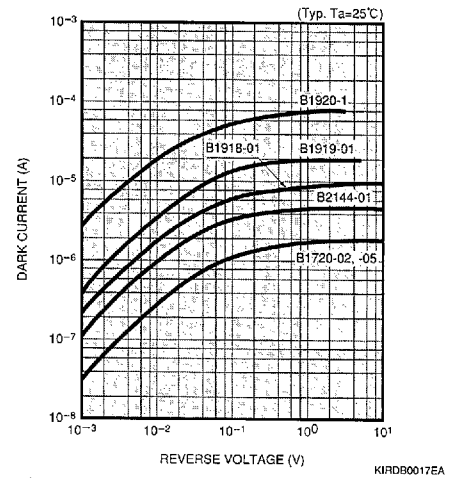
## ● Spectral Response



## ● Terminal Capacitance vs. Reverse Voltage

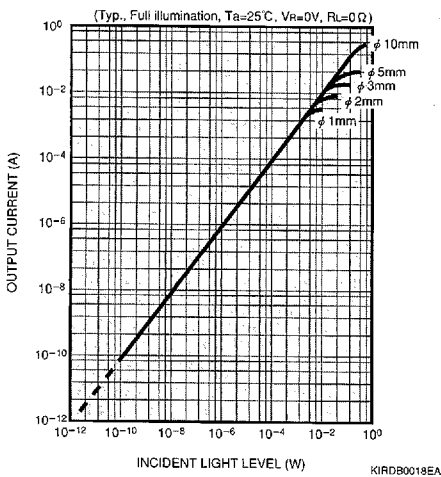


## ● Dark Current vs. Reverse Voltage (Standard Types)



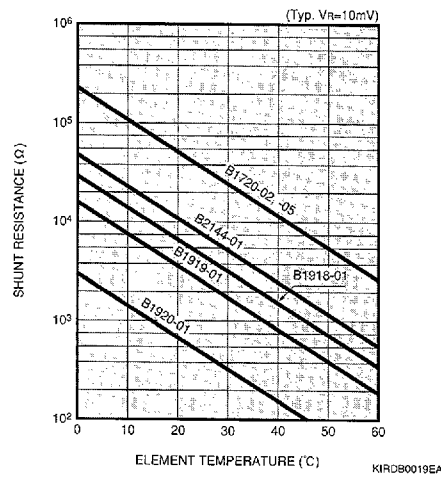
The dark current increases with the application of a reverse voltage, but the response speed and linearity are improved.

## ● Linearity

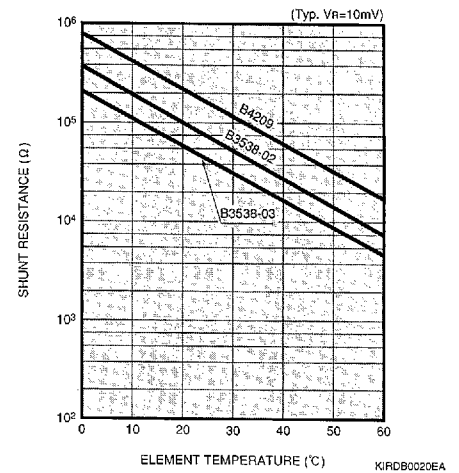


Increasing the load resistance provides a higher output voltage, but the linearity limit becomes lower.

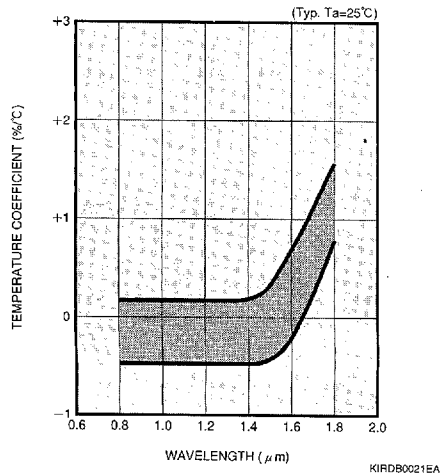
## ● Shunt Resistance vs. Temperature (Standard Types)



## ● Shunt Resistance vs. Temperature (High Shunt Resistance Types)



## ● Temperature Characteristic for Responsivity



## ● Directivity

