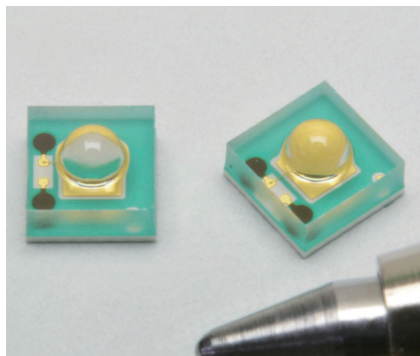


# InGaAs PIN photodiode

G14448-003L



## Surface mount type COB package with lens

The G14448-003L is a compact near-infrared detector available in a surface mount type COB package with lens. Using the lens provides narrow directivity, which allows for pinpoint analysis/measurement and other uses. The small package makes it suitable for inclusion in compact and mobile equipment.

### Features

- Low noise
- High sensitivity
- High-speed response
- Compact surface mount type package with lens (2.8 × 2.8 × 2.0t mm)
- Applicable lead-free reflow soldering

### Applications

- Light level monitor

### Structure

Parameter	Symbol	Specification	Unit
Window material	-	Silicone resin	-
Package	-	Glass epoxy	-
Photosensitive area	-	φ0.3	mm

### Absolute maximum ratings

Parameter	Symbol	Condition	Specification	Unit
Reverse voltage	V <sub>R</sub> max		10	V
Operating temperature	T <sub>opr</sub>	No dew condensation*	-25 to +105	°C
Storage temperature	T <sub>stg</sub>	No dew condensation*	-40 to +105	°C
Reflow soldering conditions	-	JEDEC Level 2	Peak temperature: 260 °C, 2 times	-

\* 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: Handle the G14448-003L with tweezers and gloves. Do not touch it with bare hands. As the resin area of the G14448-003L is soft, do not allow sharp or hard objects to come in contact with it, or apply external force to it.

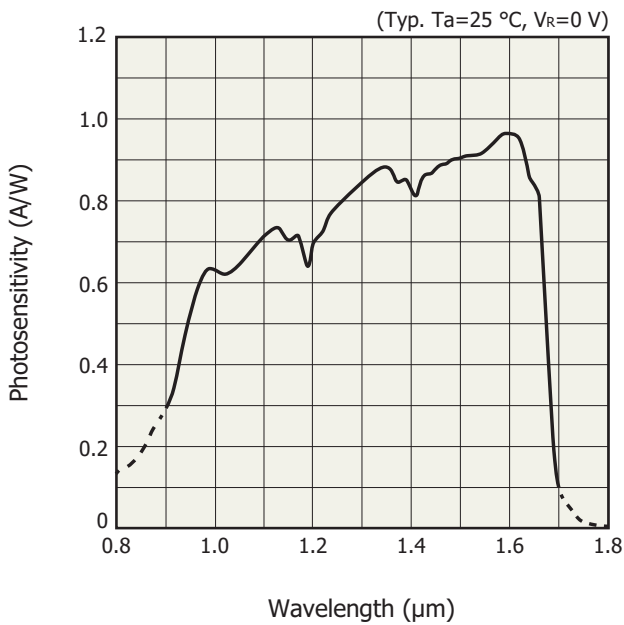
Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

The G14448-003L may be damaged or degraded by static electricity. Be careful when using the G14448-003L.

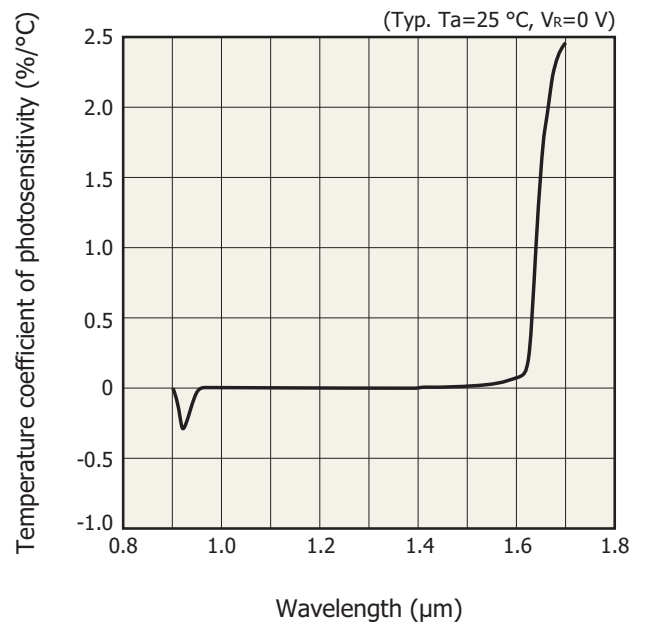
**Electrical and optical characteristics (Ta=25 °C)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	$\lambda$	10% or more of the value at peak	-	0.9 to 1.7	-	$\mu\text{m}$
Peak sensitivity wavelength	$\lambda_p$		-	1.55	-	$\mu\text{m}$
Photosensitivity	S	$\lambda=1.3 \mu\text{m}$	0.75	0.85	-	A/W
		$\lambda=\lambda_p$	0.85	0.95	-	
Dark current	$I_D$	$V_R=5 \text{ V}$	-	100	800	pA
Dark current temperature coefficient	$\Delta T_{ID}$	$V_R=1 \text{ V}$	-	1.09	-	times/ $^{\circ}\text{C}$
Cutoff frequency	$f_c$	$V_R=5 \text{ V}, R_L=50 \Omega$	300	600	-	MHz
Terminal capacitance	$C_t$	$V_R=5 \text{ V}, f=1 \text{ MHz}$	-	5	8	pF
Shunt resistance	$R_{sh}$	$V_R=10 \text{ mV}$	100	700	-	$\text{M}\Omega$
Detectivity	$D^*$	$\lambda=\lambda_p$	$1.5 \times 10^{12}$	$5 \times 10^{12}$	-	$\text{cm}^2\text{Hz}^{1/2}/\text{W}$
Noise equivalent power	NEP	$\lambda=\lambda_p$	-	$5 \times 10^{-15}$	$2 \times 10^{-14}$	$\text{W}/\text{Hz}^{1/2}$

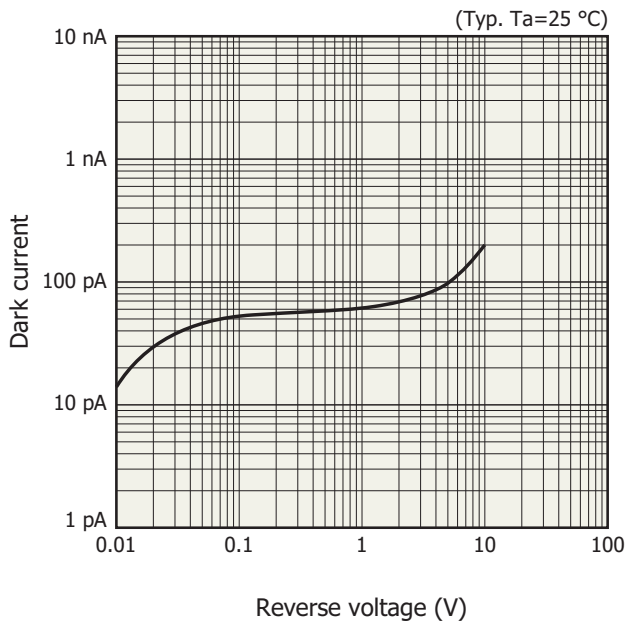
**Spectral response**



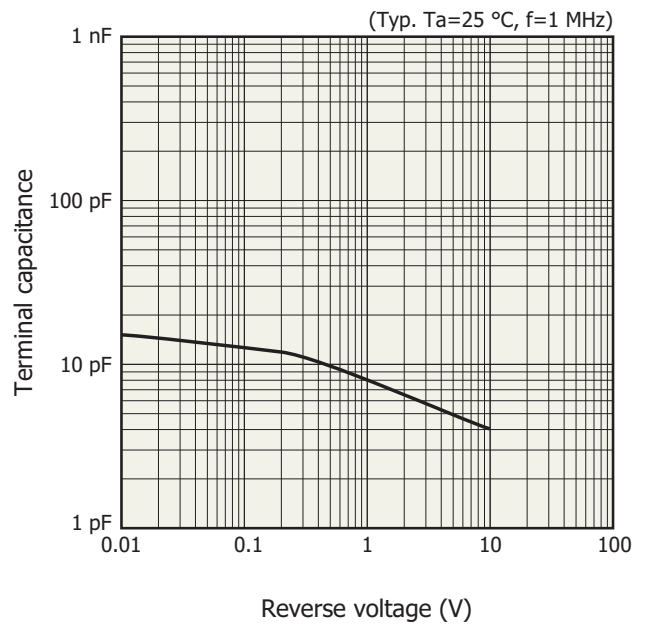
**Photosensitivity temperature characteristics**



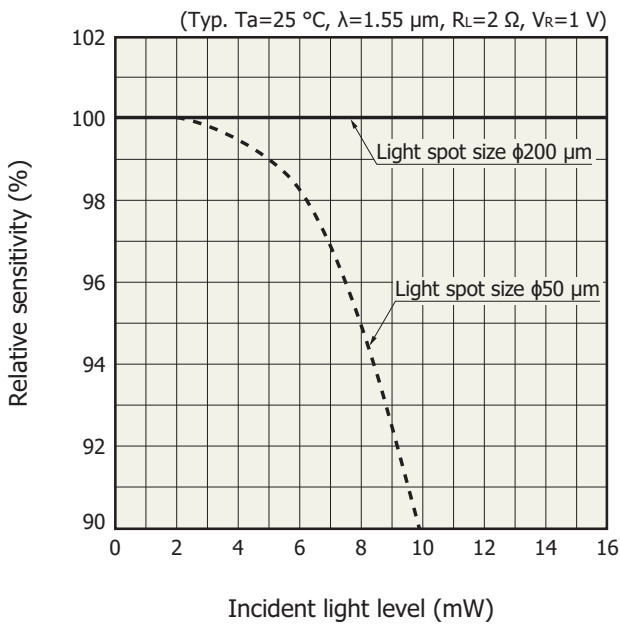
**Dark current vs. reverse voltage**



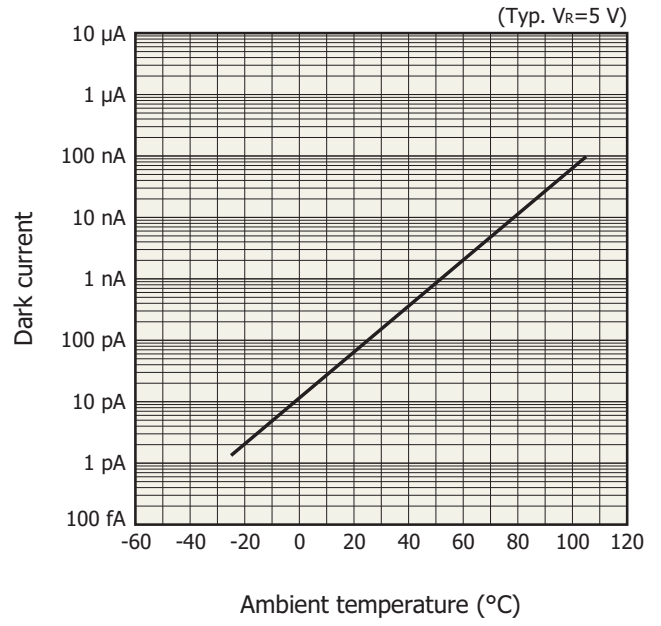
**Terminal capacitance vs. reverse voltage**



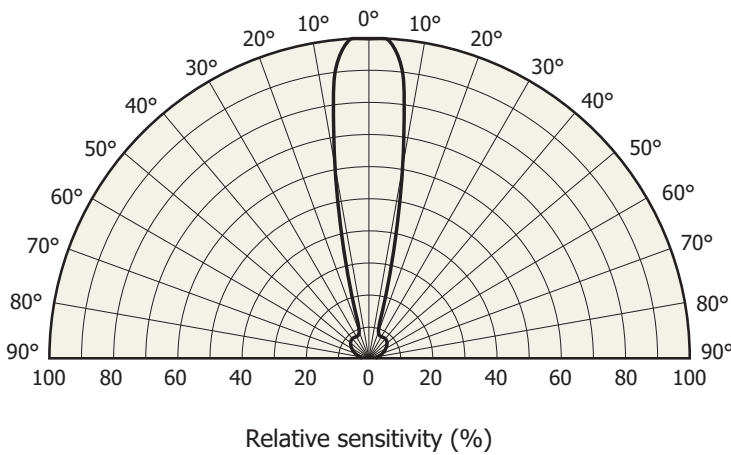
**Linearity**



**Dark Current vs. ambient temperature**

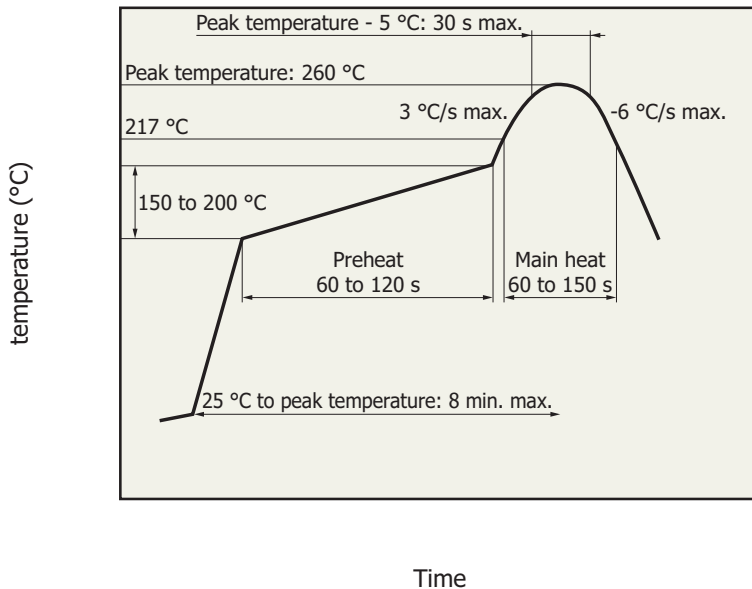


**Directivity**



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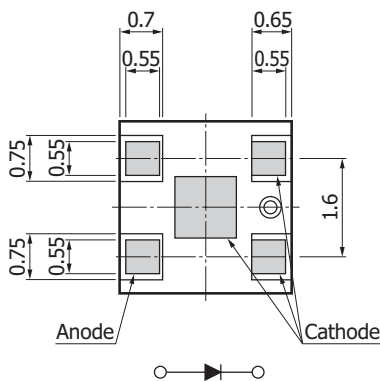
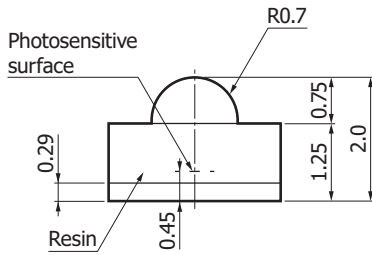
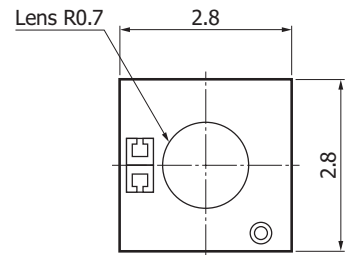
**Recommended solder reflow conditions**



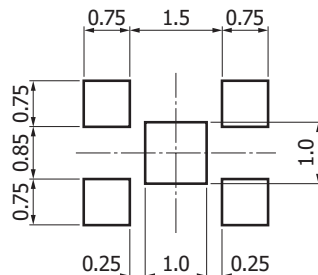
- After unpacking, store the device in an environment at a temperature range of 5 to 30 °C and a humidity of 60% or less, and perform reflow soldering within 1 year.
- The thermal stress applied to the device during reflow soldering varies depending on the circuit board and the reflow oven that are used.
- When setting the reflow conditions, verify that the reliability of the device is not compromised by the reflow soldering process.

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### Dimensional outline (unit: mm)



#### Recommended land pattern



■ Electrode

Chip position accuracy:  
with respect to package center

$-0.15 \leq X \leq +0.15$

$-0.15 \leq Y \leq +0.15$

Tolerance unless otherwise noted:  $\pm 0.1$

KIRDA0262EA

### Related information

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

#### ■ Precautions

- Disclaimer
- Safety consideration
- Surface mount type products

#### ■ Technical information

- Infrared detectors

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

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