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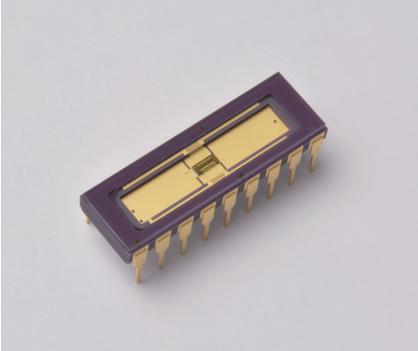
InGaAs PIN photodiode array



G7151-16

16-element InGaAs PIN photodiode array for near infrared detection

Features

- **High sensitivity**
- **Low noise**

Applications

- **Near infrared (NIR) spectrophotometers**

Structure

Parameter	Specification	Unit
Photosensitive area	0.08 × 0.2	mm
Element pitch	0.1	mm
Number of elements	16	-
Package	18-pin DIP	-
Window material	Borosilicate glass	-

Absolute maximum ratings (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Reverse voltage	V_R	5	V
Operating temperature*	Topr	-25 to +70	°C
Storage temperature*	Tstg	-25 to +70	°C

* No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

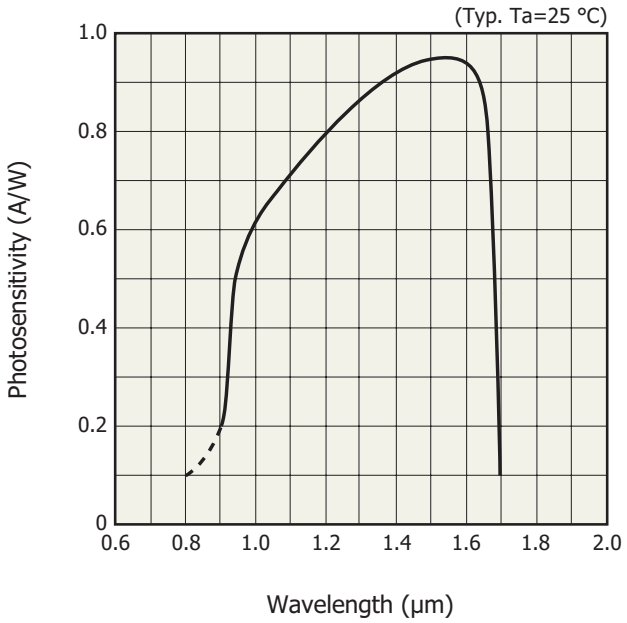
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C, per 1 element)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	0.9 to 1.7	-	μm
Peak sensitivity wavelength	λp		-	1.55	-	μm
Photosensitivity	S	λ=1.3 μm	0.8	0.9	-	A/W
		λ=λp	0.85	0.95	-	
Dark current	I_D	V_R=1 V	-	0.2	1	nA
Temperature coefficient of I_D	ΔT_{ID}	V_R=1 V	-	1.09	-	times/°C
Cutoff frequency	fc	V_R=1 V, R_L=50 Ω λ=1.3 μm, -3 dB	100	300	-	MHz
Terminal capacitance	Ct	V_R=1 V, f=1 MHz	-	10	20	pF
Shunt resistance	Rsh	V_R=10 mV	100	1000	-	MΩ
Detectivity	D*	λ=λp	1×10^{12}	5×10^{12}	-	$cm \cdot Hz^{1/2}/W$
Noise equivalent power	NEP	λ=λp	-	5×10^{-15}	2×10^{-14}	$W/Hz^{1/2}$

The G7151-16 may be damaged by electrostatic discharge, etc. Be carefull when using the G7151-16.

Spectral response



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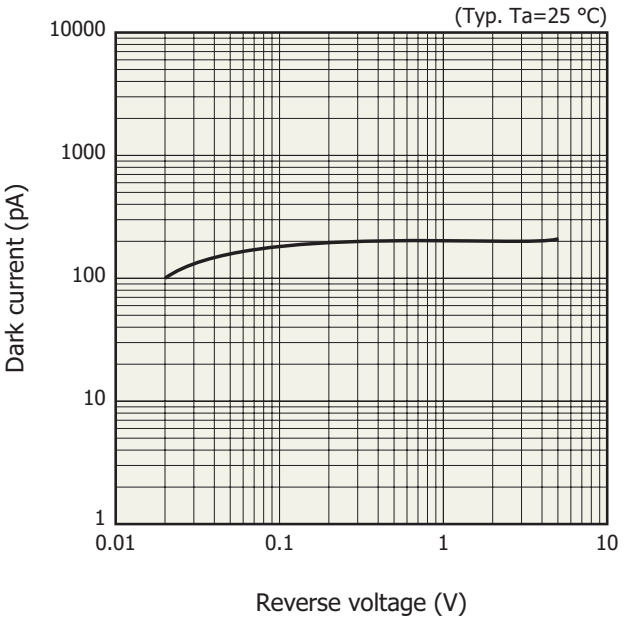
Dark current vs. reverse voltage



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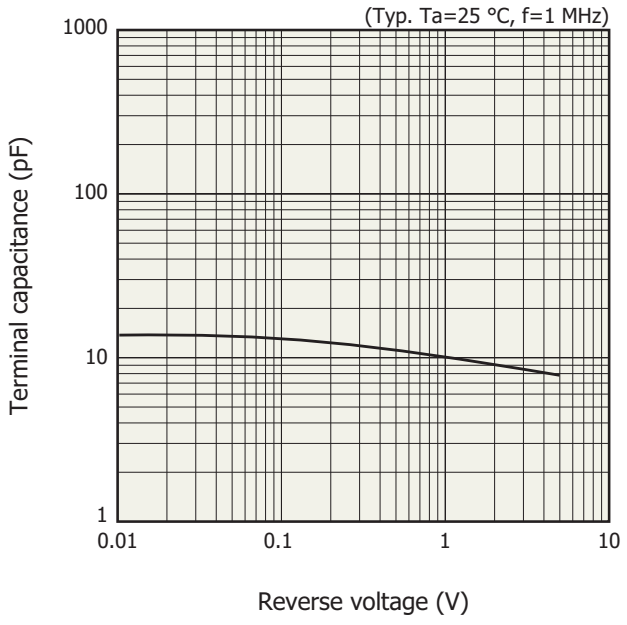
Terminal capacitance vs. reverse voltage



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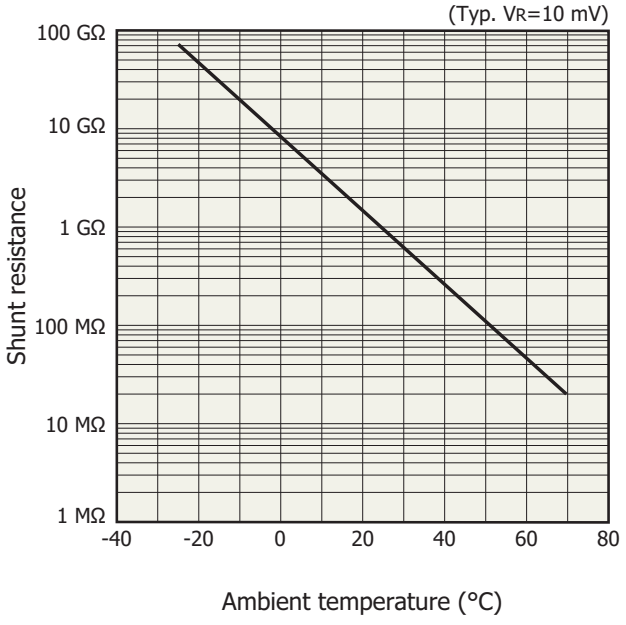
Shunt resistance vs. ambient temperature



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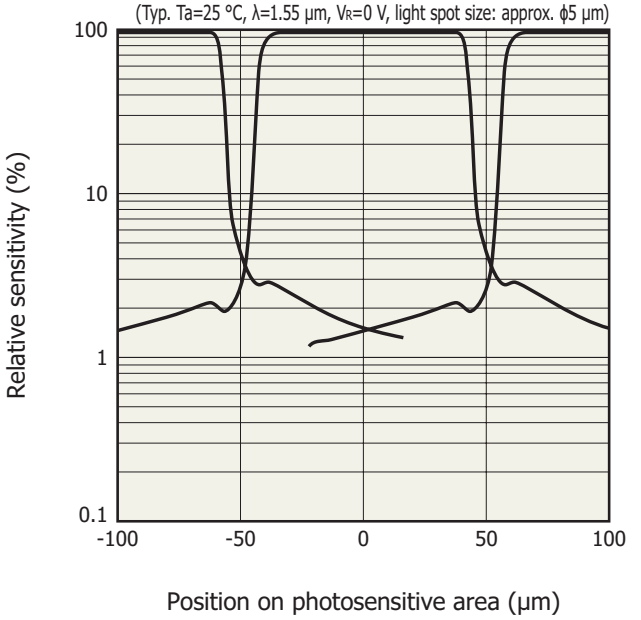
Crosstalk characteristics



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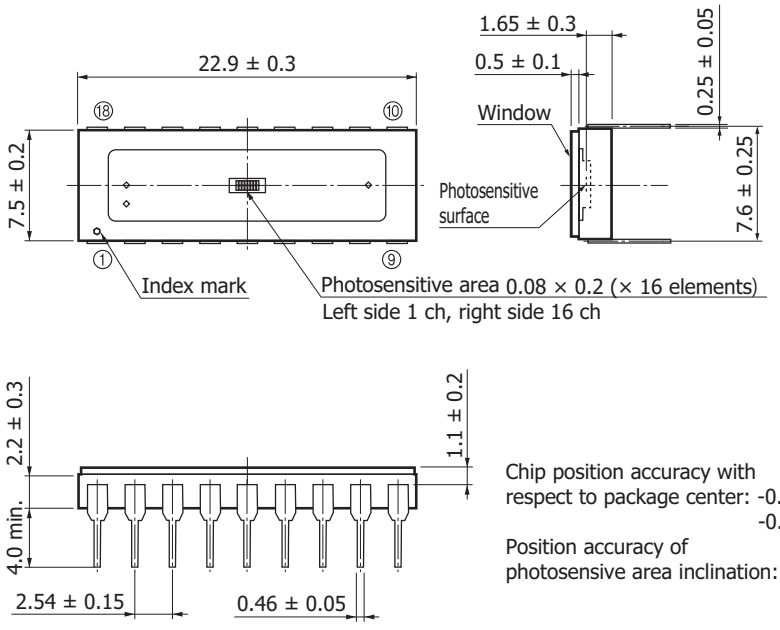
Dimensional outline (unit: mm)



Chip position accuracy with respect to package center: -0.3 ≤ X ≤ +0.3
-0.3 ≤ Y ≤ +0.3
Position accuracy of photosensive area inclination: -5° ≤ θ ≤ +5°

KIRDA0030EH

Pin connections

Pin no.	Function
1	1 ch (anode)
2	3 ch (anode)
3	5 ch (anode)
4	7 ch (anode)
5	9 ch (anode)
6	Common (cathode)
7	11 ch (anode)
8	13 ch (anode)
9	15 ch (anode)
10	16 ch (anode)
11	14 ch (anode)
12	12 ch (anode)
13	Common (cathode)
14	10 ch (anode)
15	8 ch (anode)
16	6 ch (anode)
17	4 ch (anode)
18	2 ch (anode)

Recommended soldering conditions

Solder temperature: 260 °C (5 s or less, once)
Solder the leads at a point at least 1.5 mm away from the package body.

Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Disclaimer
· Safety consideration
· Compound opto-semiconductors (photosensors, light emitters)

■ Technical note
· Compound semiconductor photosensors

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