

KP-2 Two-tone Photodiodes

KPMC29

In order to extend the wavelength range, Si photodiode which has sensitivity to short-wavelength and InGaAs photodiode which has sensitivity to long-wavelength are stacked on the same axis. Also, to make the device more compact, we store InGaAs photodiode to the recess of Si photodiode's substrate. As a result, the height of the package could be as low as possible.(US Patented : No.11,145,773)
Compared to our earlier models, the volume ratio has been reduced to 1/8.

Features

- Integrated Si and InGaAs photodiode
- Same optical axis configuration
- Wide sensitive wavelength range
- Low dark current

Characteristics

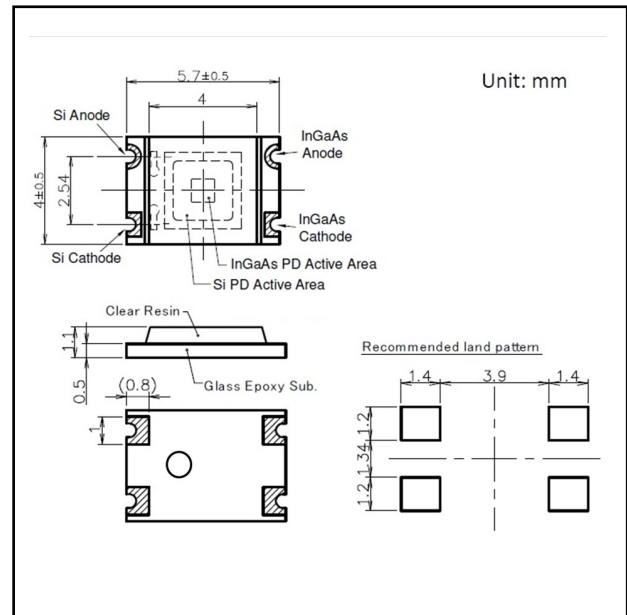
- Wide sensitive wavelength range ($\lambda = 400 \sim 1700\text{nm}$)
- Optical design possible under the same optical axis
- Small and thin transfer mold package compatible with reflow soldering

Applications

- Spectrophotometer
- Radiation thermometer
- Medical equipment
- Health care equipment
- Fiber optic testing equipment

Package

- SMD



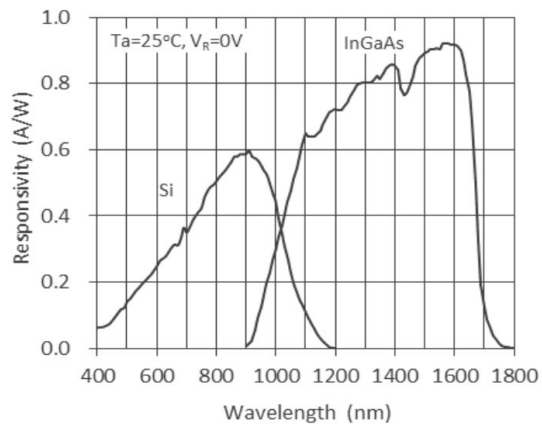
Absolute Maximum Ratings

Parameter	Symbol	Detector	Value	Unit	Conditions
Reverse voltage	V_R	Si	10	V	-
		InGaAs	10		
Reverse Current	I_R	Si	1	mA	-
		InGaAs	5		
Forward current	I_F	Si	10	mA	-
		InGaAs	10		
Operating temperature	T_{opr}	-	-20 to +80		Avoid dew condensation
Storage temperature	T_{stg}	-	-30 to +85		Avoid dew condensation

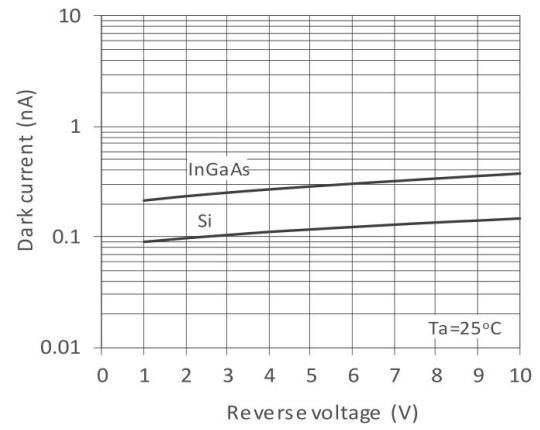
Electrical and Optical characteristics (Ta=25 unless otherwise noted)

Parameter	Symbol	Detector	Min.	Typ.	Max.	Unit	Conditions
Active area	S	Si	-	2.2 x 2.2	-	mm ²	-
		InGaAs	-	0.86 x 0.86	-		
Sensitive wavelength		Si	400	-	1000	nm	-
		InGaAs	900	-	1700		
Responsivity	R	Si	0.5	0.6	-	A/W	$V_R=0V, \lambda=850nm$
		InGaAs	0.8	0.9	-		$V_R=0V, \lambda=1550nm$
Dark current	I_D	Si	-	0.1	10	nA	$V_R=5V$
		InGaAs	-	1	10		
Terminal capacitance	C_t	Si	-	30	50	pF	$V_R=5V, f=1MHz$
		InGaAs	-	45	60		

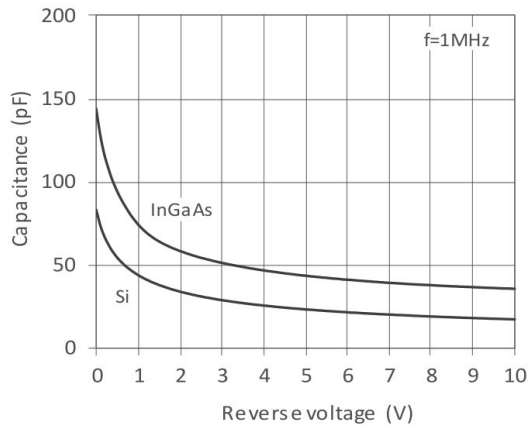
Spectral Responsivity



Dark Current - Reverse Voltage



Capacitance - Reverse Voltage



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