

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. (Patents have been filed.)

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

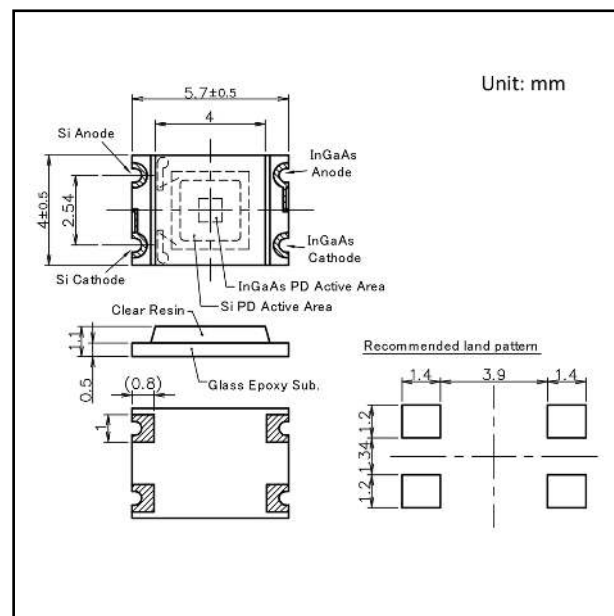
- Wide sensitive wavelength range ($\lambda = 400 \sim 1700\text{nm}$)
- Optical design possible under the same optical axis
- Small and thin transfer mold package compatible with reflow soldering

Applications

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

Package

- SMD



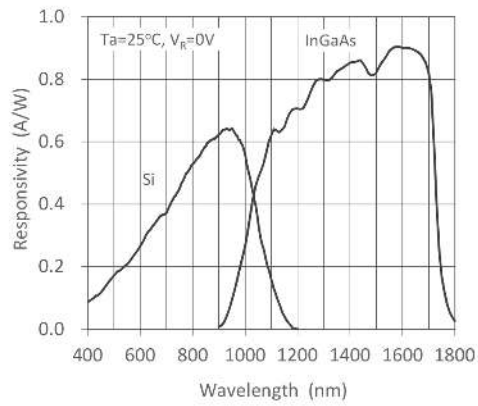
Absolute Maximum Ratings

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

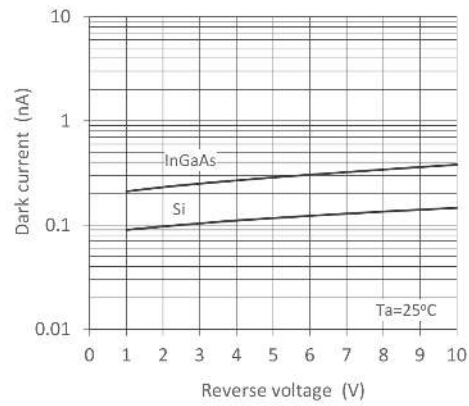
Electrical and Optical characteristics (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|----------------------|-----------|------------|-------------|------|-----------------|--|
| Active area | S | - | 2.2 x 2.2 | - | mm ² | - |
| | | - | 0.86 x 0.86 | - | | |
| Sensitive wavelength | λ | 400 | - | 1000 | nm | - |
| | | 900 | - | 1700 | | |
| Responsivity | R | 0.5 0.6 | 0.6 0.7 | - | A/W | $V_R=0V \lambda = 850nm$ $V_R=0V \lambda = 950nm$ |
| | | 0.7 0.8 | 0.8 0.9 | - | | |
| Dark current | I_D | - | 0.1 | 10 | nA | $V_R=5V$ |
| | | - | 1 | 10 | | |
| Terminal capacitance | C_t | - | 30 | 50 | pF | $V_R=5V f=1MHz$ |
| | | - | 45 | 60 | | |

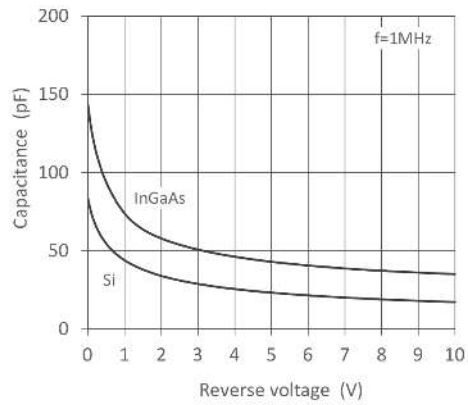
Spectral Responsivity



Dark Current - Reverse Voltage



Capacitance - Reverse Voltage



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