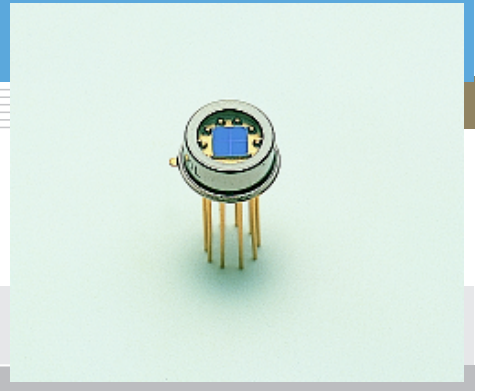


# Si PIN photodiode

## S4349

### Quadrant Si PIN photodiode



S4349 is a quadrant Si PIN photodiode having sensitivity in the UV to near IR spectral range. A quadrant element format allows position sensing such as for laser beam axis alignment.

#### Features

- Quadrant (2 × 2) element format
- Low cross-talk: 2 % Max.
- Wide spectral response range: 190 to 1000 nm
- High-speed response:  $f_c=20$  MHz
- TO-5 metal package

#### Applications

- Laser beam axis alignment
- Position sensing

#### ■ General ratings

| Parameter       | Symbol | Value          | Unit |
|-----------------|--------|----------------|------|
| Window material | -      | Quartz glass   | -    |
| Active area     | A      | □3.0/4 element | mm   |
| Element gap     | -      | 100            | μm   |

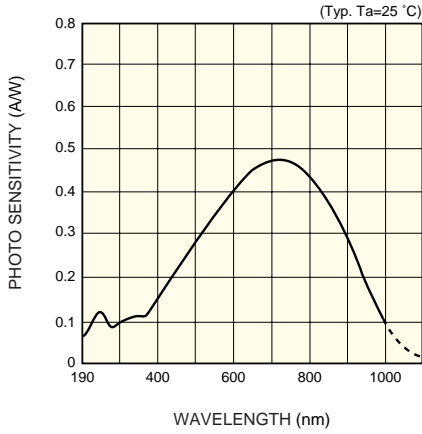
#### ■ Absolute maximum ratings

| Parameter             | Symbol     | Value      | Unit |
|-----------------------|------------|------------|------|
| Reverse voltage       | $V_R$ Max. | 20         | V    |
| Operating temperature | $T_{opr}$  | -20 to +60 | °C   |
| Storage temperature   | $T_{stg}$  | -55 to +80 | °C   |

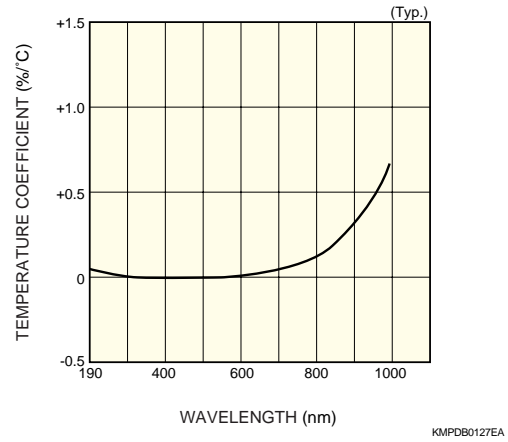
#### ■ Electrical and optical characteristics ( $T_a=25$ °C, per 1 element)

| Parameter                        | Symbol      | Condition  | Typ.                  | Max. | Unit                |
|----------------------------------|-------------|--|-----------------------|------|---------------------|
| Spectral response range          | $\lambda$   |  | 190 to 1000           | -    | nm                  |
| Peak sensitivity wavelength      | $\lambda_p$ |  | 720                   | -    | nm                  |
| Photo sensitivity                | S           | $\lambda=\lambda_p$                              | 0.45                  | -    | A/W                 |
| Dark current                     | $I_D$       | $V_R=5$ V  | 0.01                  | 0.2  | nA                  |
| Temperature coefficient of $I_D$ | $TC_{I_D}$  |  | 1.12                  | -    | times/°C            |
| Cut-off frequency                | $f_c$       | $V_R=5$ V, $R_L=50$ Ω<br>$\lambda=780$ nm, -3 dB | 20                    | -    | MHz                 |
| Terminal capacitance             | $C_t$       | $V_R=5$ V, $f=1$ MHz                             | 25                    | -    | pF                  |
| Noise equivalent power           | NEP         | $V_R=5$ V, $\lambda=\lambda_p$                   | $4.0 \times 10^{-15}$ | -    | W/Hz <sup>1/2</sup> |
| Cross-talk                       | CL          | $V_R=5$ V, $\lambda=780$ nm                      | -                     | 2    | %                   |

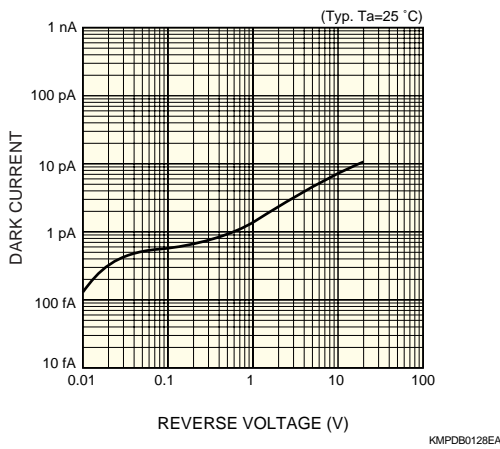
■ Spectral response



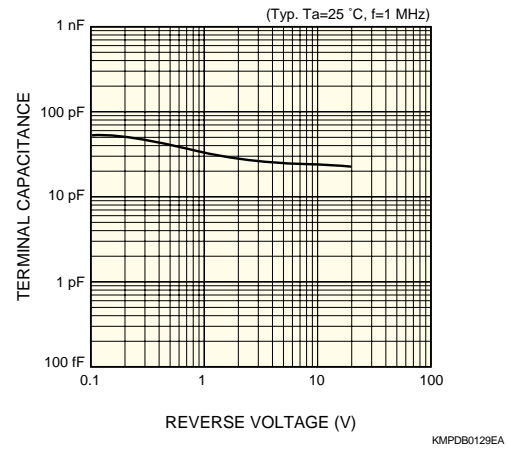
■ Photo sensitivity temperature characteristic



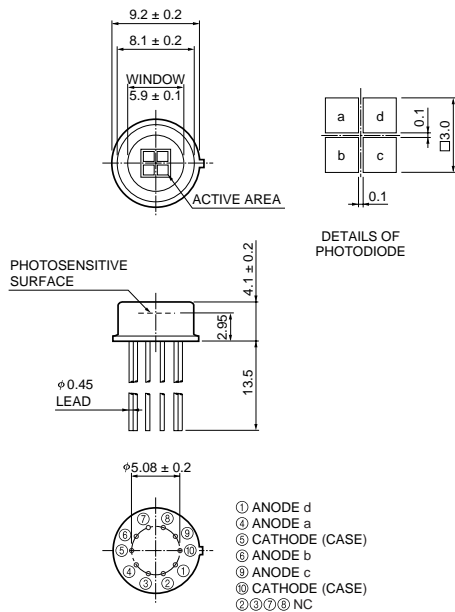
■ Dark current vs. reverse voltage



■ Terminal capacitance vs. reverse voltage



■ Dimensional outline (unit: mm)



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