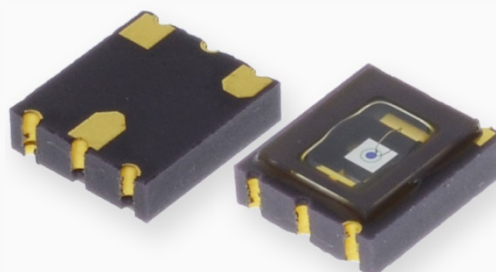




## APD230-LCC

- Silicon Avalanche Photodiode
- 230  $\mu\text{m}$  Active Area
- Fast Rise Time
- High Gain



### Description

**APD230-LCC** is a silicon semiconductor avalanche photodiode with an active area of 230  $\mu\text{m}$ . It features extremely fast rise time of 250 ps, high gain at low bias voltage, and low capacitance. **APD230-LCC** is typically used for **Laser Range Finding** and **LIDAR** applications.

### Maximum Ratings

| Parameter             | Symbol    | Values |                      | Unit               |
|-----------------------|-----------|--------|----------------------|--------------------|
|                       |           | Min.   | Max.                 |                    |
| Supply Voltage        | $V_{PD}$  |        | $0.95 \times V_{BR}$ | V                  |
| Forward Current       | $I_F$     |        | 1                    | mA                 |
| Power Dissipation     | $P_E$     |        | 1                    | mW                 |
| Storage Temperature   | $T_{STG}$ | - 55   | + 100                | $^{\circ}\text{C}$ |
| Operating Temperature | $T_{OP}$  | - 50   | + 85                 | $^{\circ}\text{C}$ |

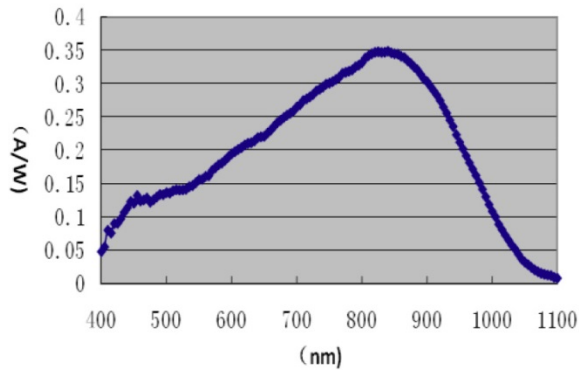
### Characteristics ( $T_{CASE} = 25^{\circ}\text{C}$ )

| Parameter   | Symbol      | Values |       |      | Unit                  |
|---|-------------|--------|-------|------|-----------------------|
|   |             | Min.   | Typ.  | Max. |                       |
| Spectral response range   | $\lambda$   | 400    |       | 1100 | nm                    |
| Peak sensivity wavelength   | $\lambda_P$ |        | 800   |      | nm                    |
| Photosensitive area   | $\emptyset$ |        | 230   |      | $\mu\text{m}$         |
| Photosensitivity ( $\lambda=800\text{nm}$ , $\Phi_e=1\mu\text{W}$ , $M=100$ )     | $R_e$       | 0.35   | 0.45  |      | A/W                   |
| Response time ( $\lambda=800\text{nm}$ , $f=1\text{MHz}$ , $R_L=50\Omega$ )       | $t_s$       |        | 0.25  | 1    | ns                    |
| Dark current ( $M=100$ )  | $I_D$       | 0.05   | 0.2   | 2    | nA                    |
| Cutoff frequency  | $f_C$       |        | 1000  |      | MHz                   |
| Terminal capacitance ( $M=100$ , $f=1\text{MHz}$ )                                | $C_t$       |        | 1.5   |      | pF                    |
| Optimum gain  | $M$         |        | 50-60 |      |                       |
| Breakdown voltage ( $I_R=10\mu\text{A}$ )   | $V_{BR}$    | 80     |       | 180  | V                     |
| Temp. coefficient of $V_{BR}$ ( $T_{OP}=-40^{\circ}\text{C}-85^{\circ}\text{C}$ ) | $\delta$    |        | 0.4   |      | V/ $^{\circ}\text{C}$ |

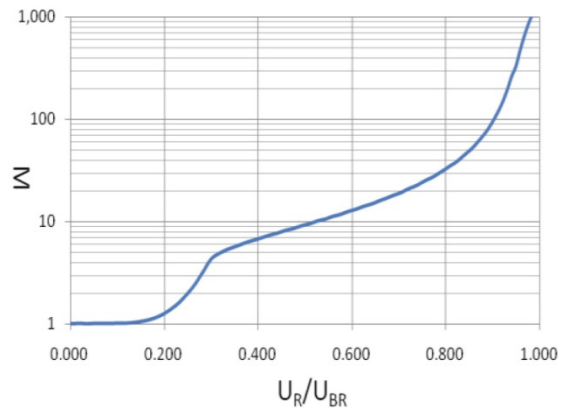


## Performance Characteristics

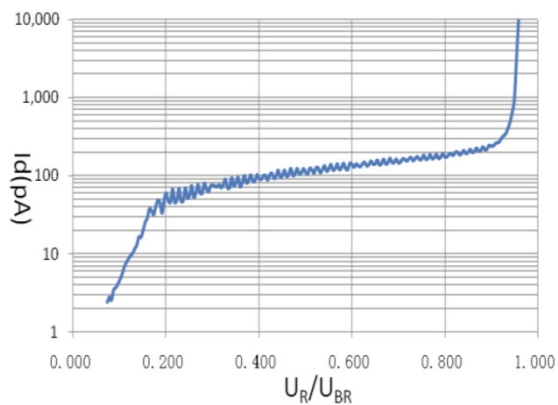
### Responsivity vs. Wavelength (0V)



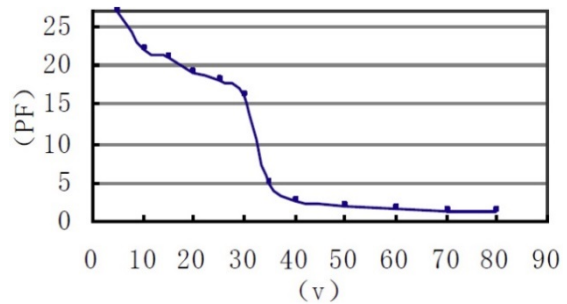
### Gain vs. $U_R/U_{BR}$



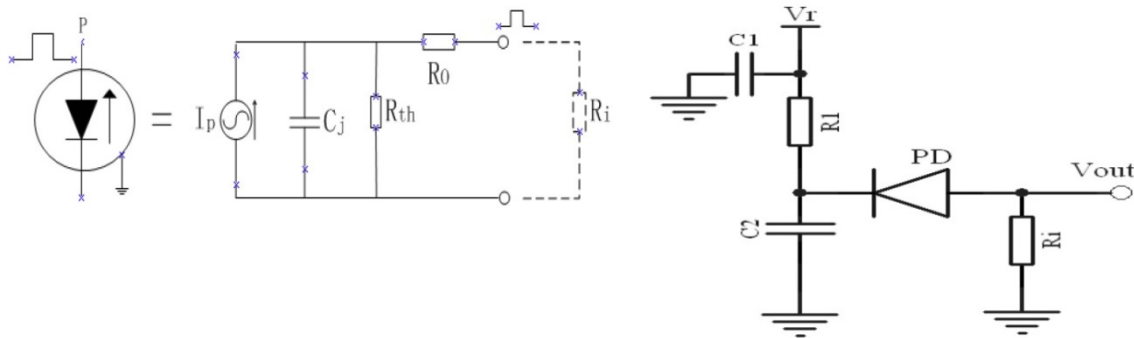
### Dark Current vs. $U_R/U_{BR}$



### Capacitance vs. operating Voltage

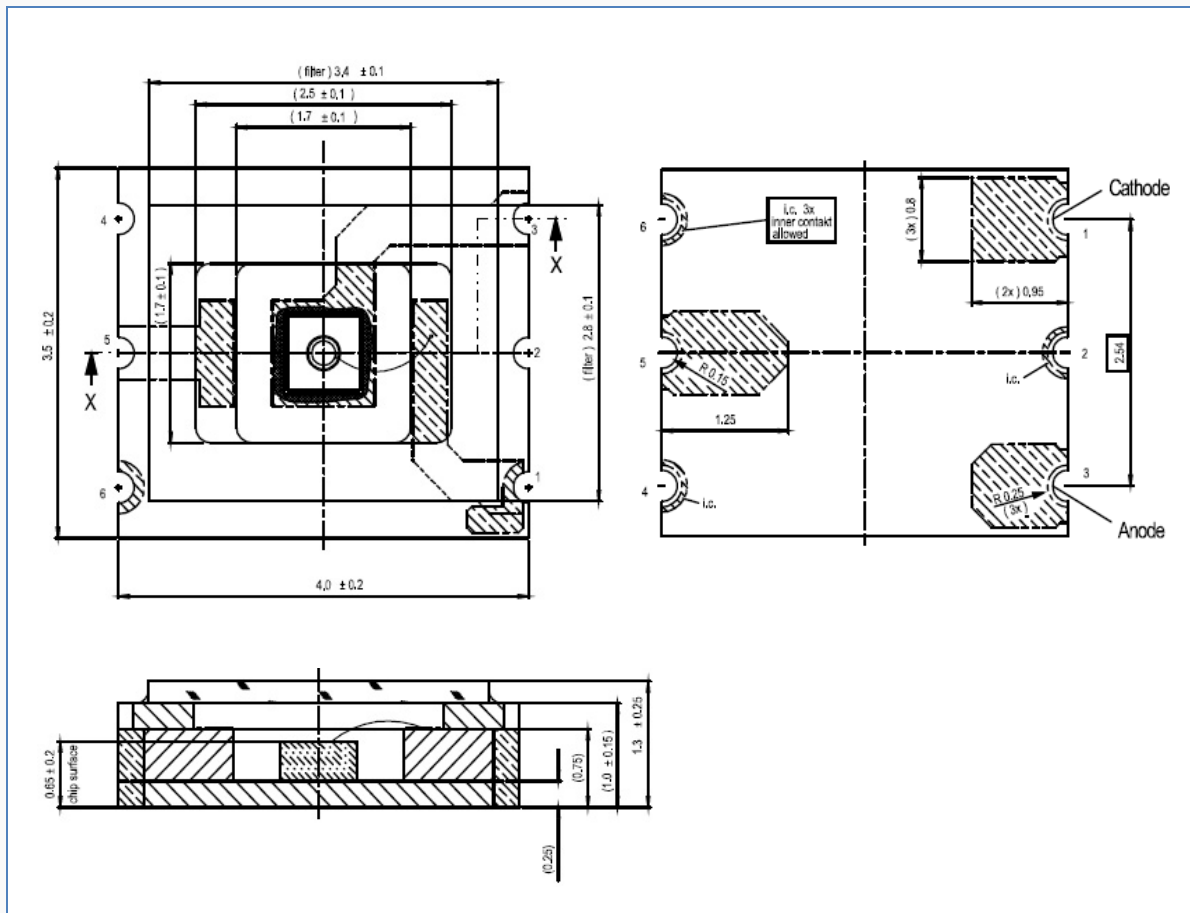


## Application Circuit





## Drawing



All dimensions in mm

## ESD Caution

Always do handle photodiodes with caution to prevent electrostatic discharge, the primary cause of unexpected semiconductor failure. ESD failures can be prevented by always wearing wrist straps, only using a grounded workplace, and following strict anti-static guidelines when handling the photodiode.

