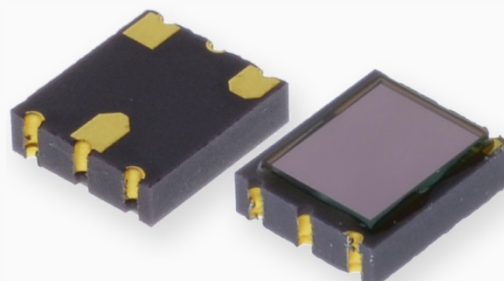




## APD500-LCC

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



### Description

**APD500-LCC** is a silicon semiconductor avalanche photodiode with an active area of 500  $\mu\text{m}$ . It features extremely fast rise time of 0.6 ns, high gain at low bias voltage, and low capacitance. **APD500-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	$^{\circ}\text{C}$

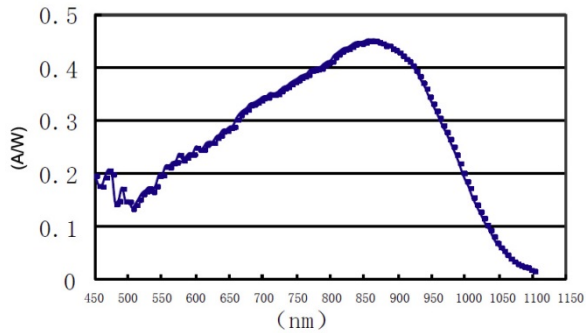
### Characteristics ( $T_{CASE} = 25^{\circ}\text{C}$ )

Parameter	Symbol	Min.	Values		Unit
			Typ.	Max.	
Spectral response range	$\lambda$	400		1100	nm
Peak sensivity wavelength	$\lambda_P$		850		nm
Photosensitive area	$\emptyset$		500		$\mu\text{m}$
Photosensitivity ( $\lambda=850\text{nm}, \Phi_e=1\mu\text{W}, M=100$ )	$R_e$	0.50	0.55		A/W
Response time ( $\lambda=800\text{nm}, f=1\text{MHz}, R_L=50\Omega$ )	$t_s$		0.6	1.5	ns
Dark current ( $M=100$ )	$I_D$	0.2	0.4	3	nA
Cutoff frequency	$f_C$		1000		MHz
Terminal capacitance ( $M=100, f=1\text{MHz}$ )	$C_t$		1.2		pF
Optimum gain	$M$		60-80		
Breakdown voltage ( $I_R=10 \mu\text{A}$ )	$V_{BR}$	100		220	V
Temp. coefficient of $V_{BR}$ ( $T_{OP}=-40^{\circ}\text{C}-85^{\circ}\text{C}$ )	$\delta$		0.9		V/ $^{\circ}\text{C}$

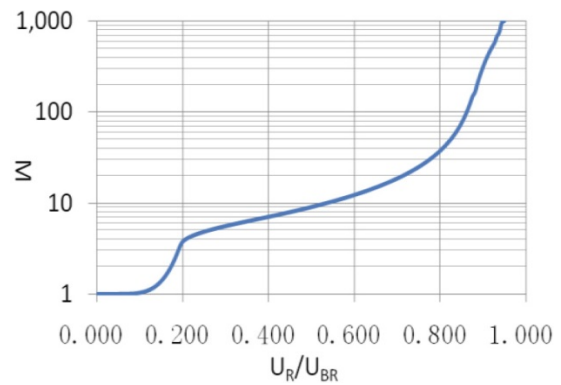


## Performance Characteristics

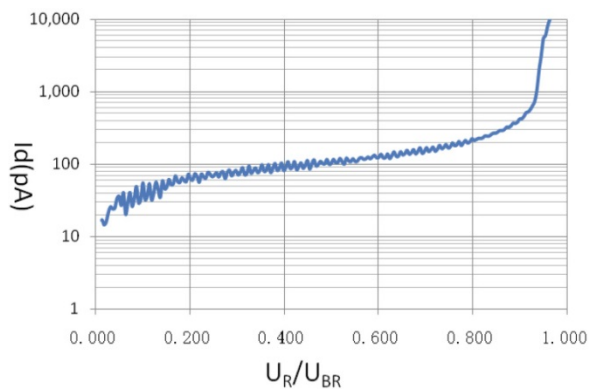
### Responsivity vs. Wavelength (0V)



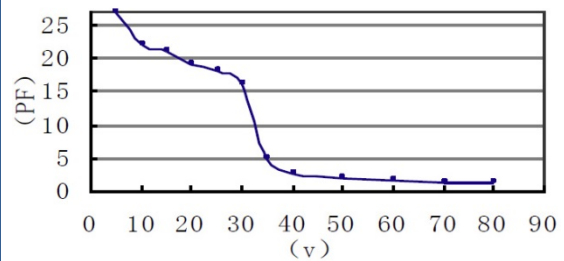
### Gain vs. $U_R/U_{BR}$



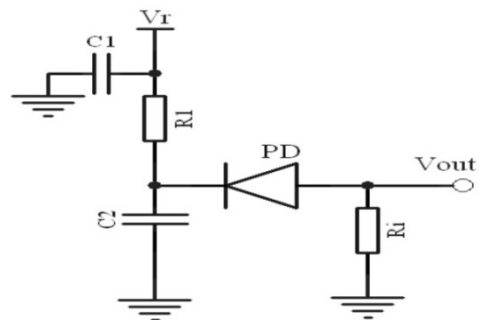
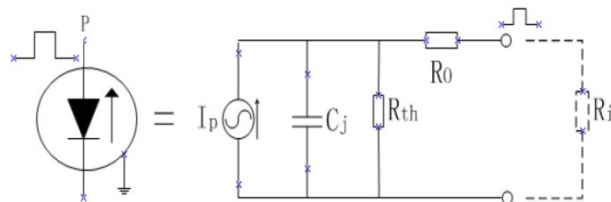
### Dark Current vs. $U_R/U_{BR}$



### Capacitance vs. operating Voltage

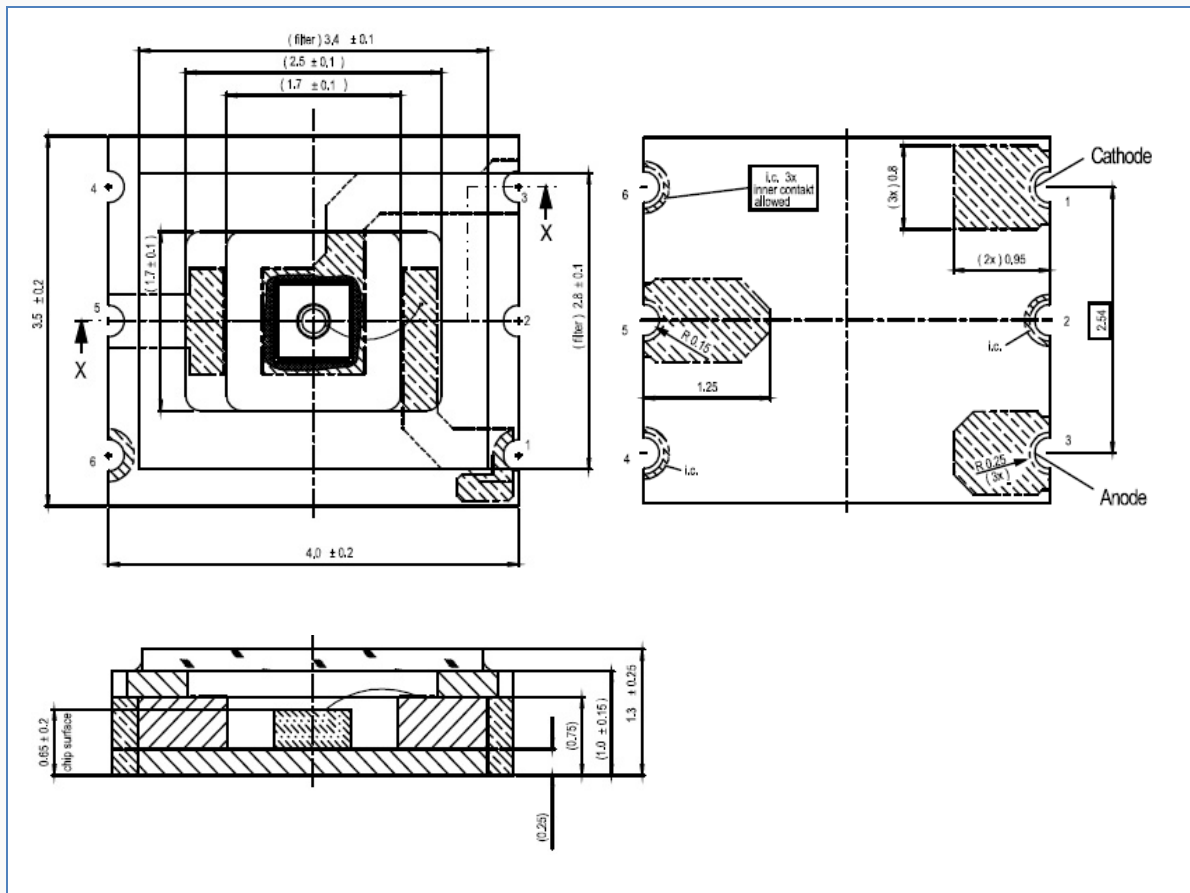


## Application Circuit





## 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.

