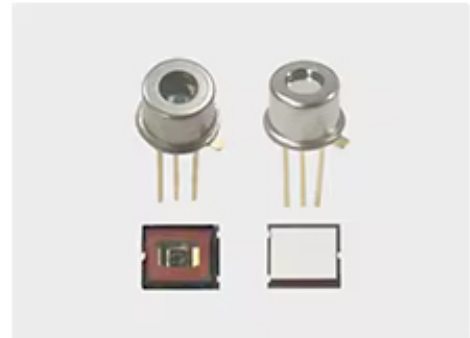


Silicon APD—905nm Series

Silicon avalanche photodiode with enhanced sensitivity for NIR light detection, peak sensitive wavelength is 905nm. The responsivity at 905nm is up to 55A/W, which is suitable for optical rangefinder, LiDAR etc applications.

Circular active area APD chip, diameter 230um, 500um and 800um are packaged in metal can TO-46 or ceramic SMD LCC3 package.

Integrated 905nm narrow filter is available.



◆ Features

- High responsivity at 905nm
- Various active area options
- Low breakdown voltage: 130V-160V available
- High speed, low noise

◆ Applications

- Laser range finder
- LiDAR
- Laser alarming

◆ Structure/ Absolute Maximum Ratings

Part No.	Package	Active area (um)	Operating voltage (V)	Operating temperature (°C)	Storage temperature (°C)	Soldering temperature (°C)	Reverse DC current (mA)
SAD230NM4	TO-46	Φ230	0.9×V _{BR}	-40~85	-45~100	260	0.25
SAD500NM4	TO-46	Φ500					
SAD800NM4	TO-46	Φ800					
SAD230NL3	LCC3	Φ230					
SAD500NL3	LCC3	Φ500					

◆ Electro-Optical Characteristics (@Ta=22±3°C)

Part No.	Spectral response range (nm)	Responsivity λ=905nm M=100 (A/W)	Dark current M=100 (nA)		Rise time λ=905nm R _L =50Ω (ns)	Operating voltage temperature coefficient (V/°C)	Capacitance M=100 f=1MHz (pF)	Breakdown voltage I _R =10μA (V)	
			Typ	Max				Min	Max
SAD230NM4	400~1100	55	0.2	1.0	0.6	1.1	1.0	130	220
SAD500NM4			0.4	1.0			1.2		
SAD800NM4			0.8	2.0			2.0		
SAD230NL3			0.2	1.0			1.0		
SAD500NL3			0.4	1.0			1.2		

◆ Typical Characteristic Curves (@Ta=25°C)

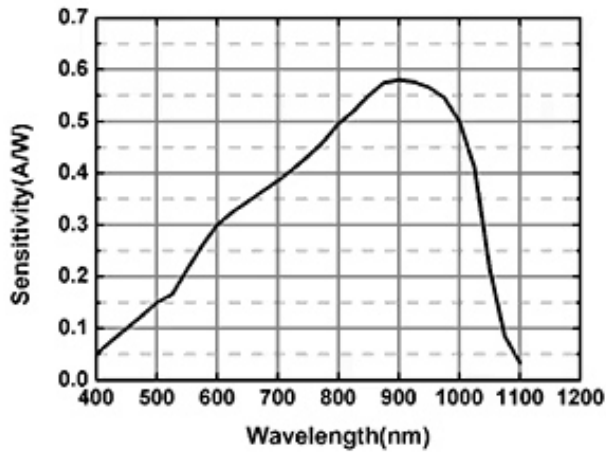


Figure 1 Responsivity vs. Wavelength

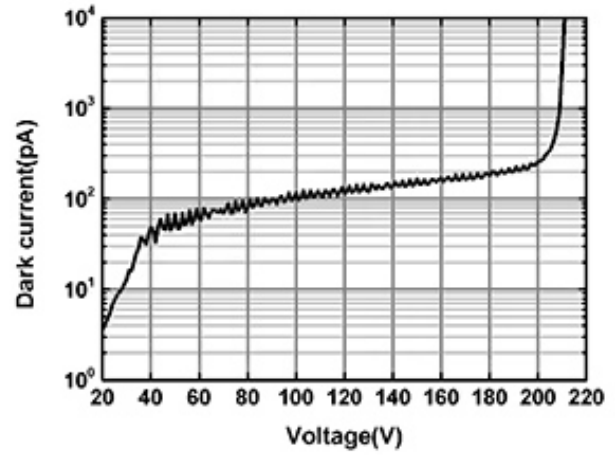


Figure 2 Dark current vs. voltage

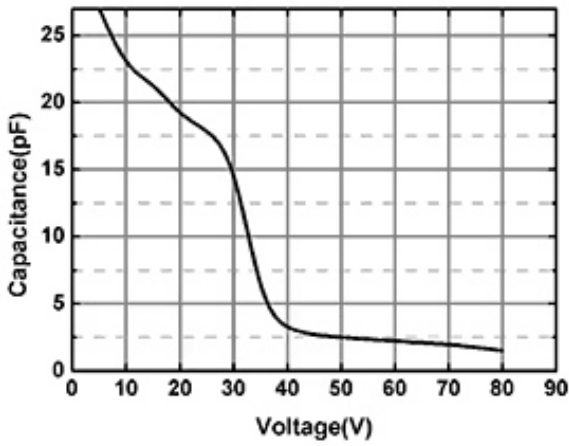


Figure 3 Capacitance vs. voltage

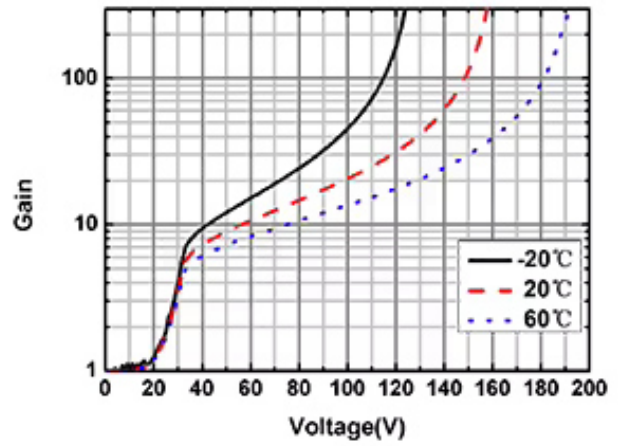


Figure 4 Gain vs. voltage with different temp.

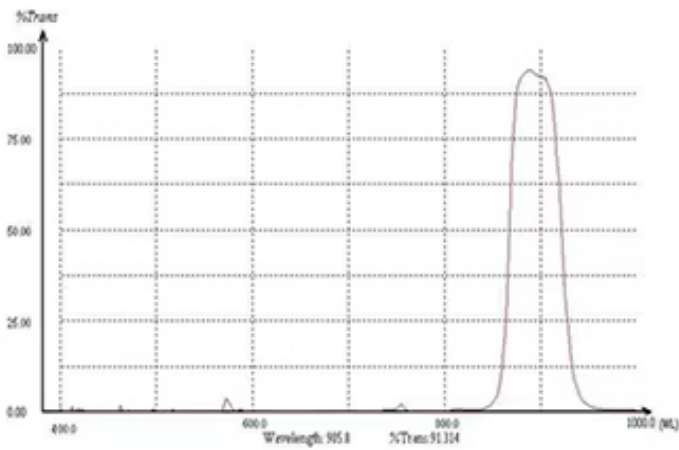
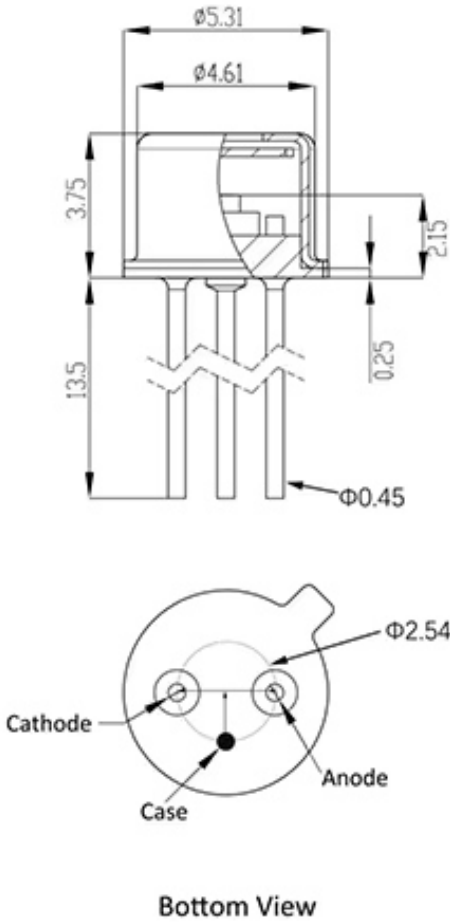


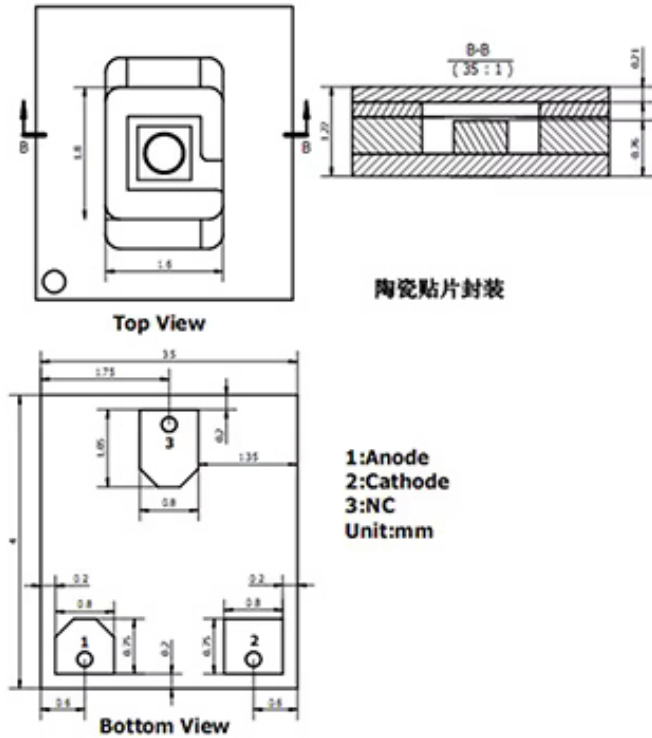
Figure 5 905nm narrow filter

◆ Package Drawings (unit: mm)

■ M4 (TO-46)



■ L3 (LCC3)



◆ Application Circuit

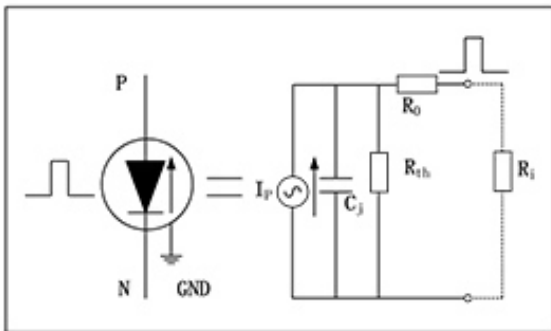


Figure6 Equivalent circuit diagram

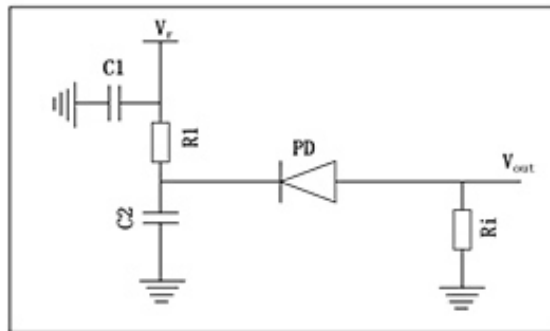


Figure7 Application circuit diagram

- Note: C₁— Filter capacitor
 C₂— By-pass capacitor
 R₁— Current-limiting resistance
 R_L— Sample resistance

◆ Order Information

SAD XXX N XX - X - X

Active area ←

230=Diameter 230um

500=Diameter 500um

800=Diameter 800um

Package ←

M4=TO-46

L3=LCC3

Filter ↓

0=No filter

F=905nm filter

→ Vbr

01=130-160V

02=160-200V

03=200-220V