

# 905nm Silicon Avalanche Photodiode (TO package)

## Feature and applications

- High speed, high gain, low junction capacitance, low noise
- Top illumination planar structure
- 500um active diameter
- 3 pins TO46 package
- Flat glass lens
- Built-in filter (905nm narrow band)
- For laser range finder, laser warning and laser radar applications



## Absolute values

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	TOP	-20	85	°C
Storage Temperature	T <sub>stg</sub>	-55	125	°C
Operating Voltage	V <sub>op</sub>		0.95×V <sub>BR</sub>	V
Soldering Temperature	S <sub>temp</sub>		260	°C
Power Dissipation			1	mW
Forward Current			1	mA

## Electrical Characteristics (@T<sub>c</sub>=22±3°C)

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Response Spectrum	λ	—	905			nm
Active Diameter	φ	—	500			μm
Responsivity	Re	φ <sub>e</sub> =1μW, M=100	50	55		A/W
Response time	t <sub>s</sub>	f=1MHz, R <sub>L</sub> =50Ω,		0.6		ns
Dark current	I <sub>b</sub>	M=100	0.1	0.4	1.0	nA
Total Capacitance	C <sub>tot</sub>	M=100, f=1MHz		1.2		pF
Gain	M			100		
Reverse Breakdown voltage	V <sub>BR</sub>	I <sub>R</sub> =10uA	80		200	V
Temperature coefficient	δ	T <sub>c</sub> = - 40°C ~ 85°C		0.9		V/°C

Equivalent circuit and application circuit

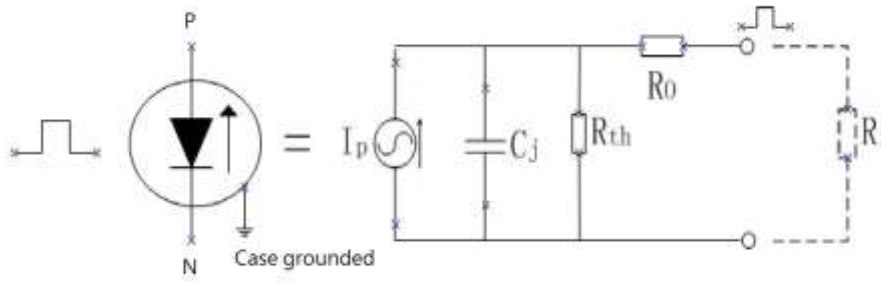


Figure 1, Equivalent circuit

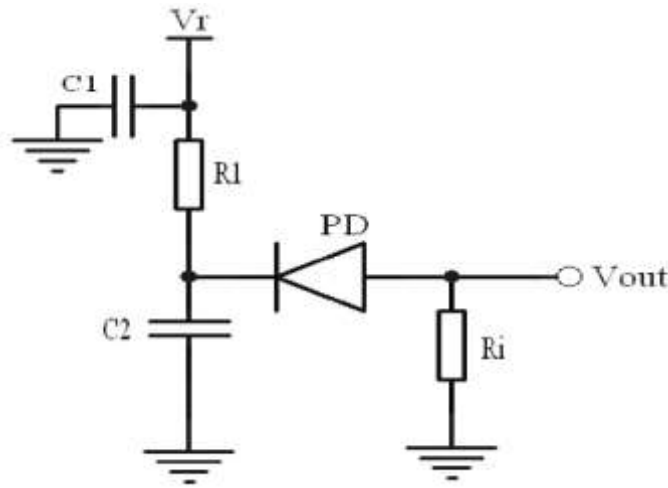


Figure 2, Schematic of readout option

Note

- C1 - Filter capacitor
- C2 - Bypass capacitor
- R1 - Current limit resistor
- Ri - Sampling resistor

Typical character curves

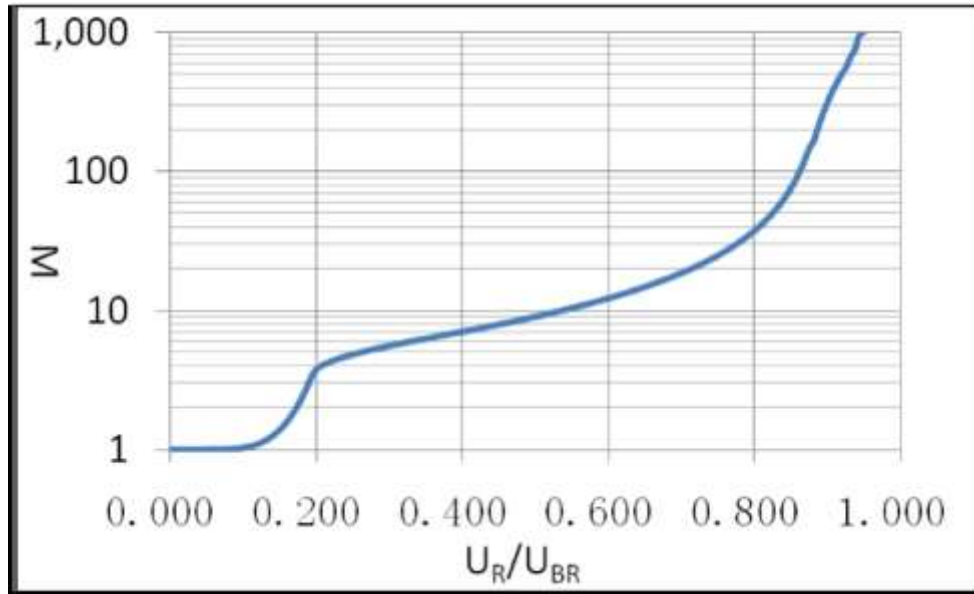


Figure 3, Gain curve ( $U_R/U_{BR}$  = operating voltage /breakdown voltage)

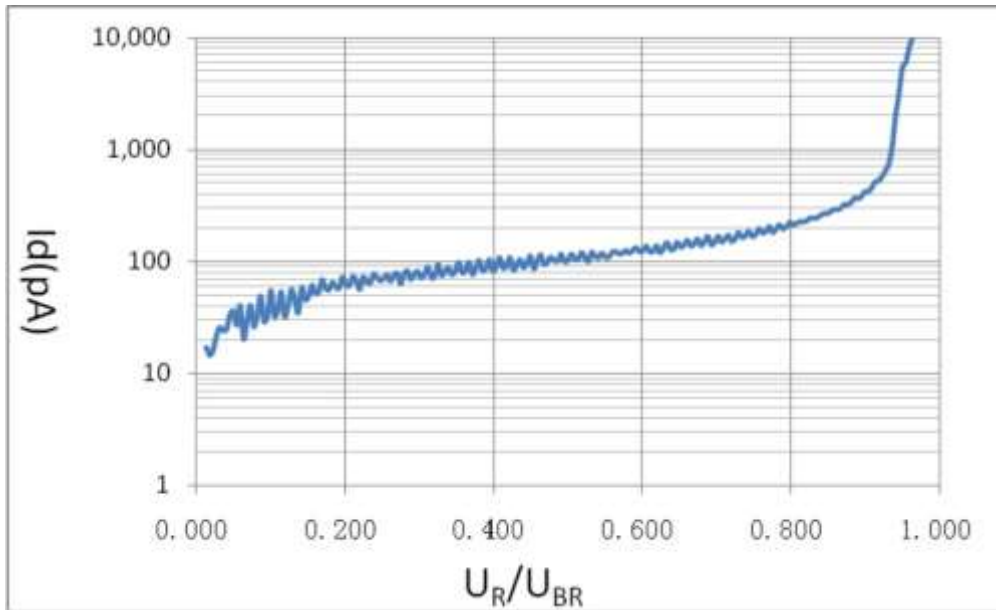


Figure 4, Dark current v.s.  $U_R/U_{BR}$

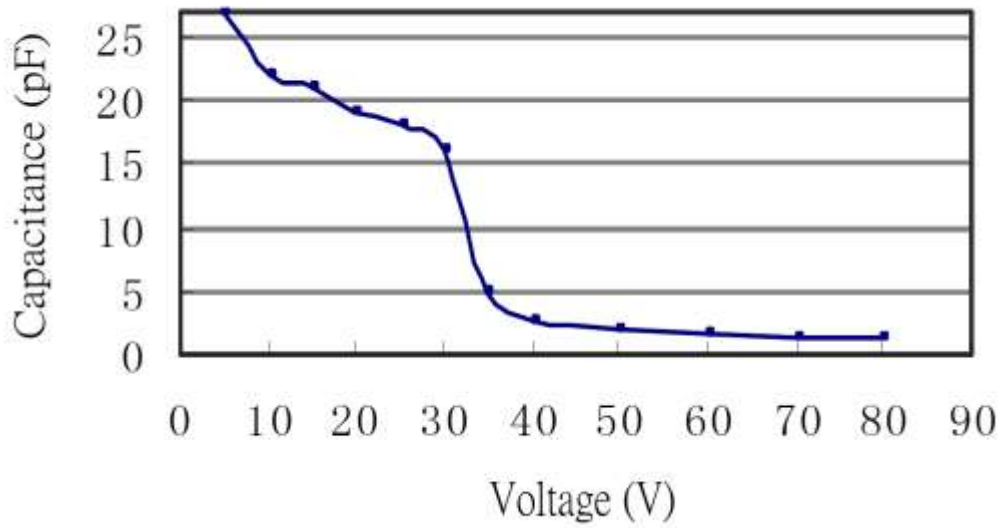


Figure 5, Capacitance v.s. operating voltage

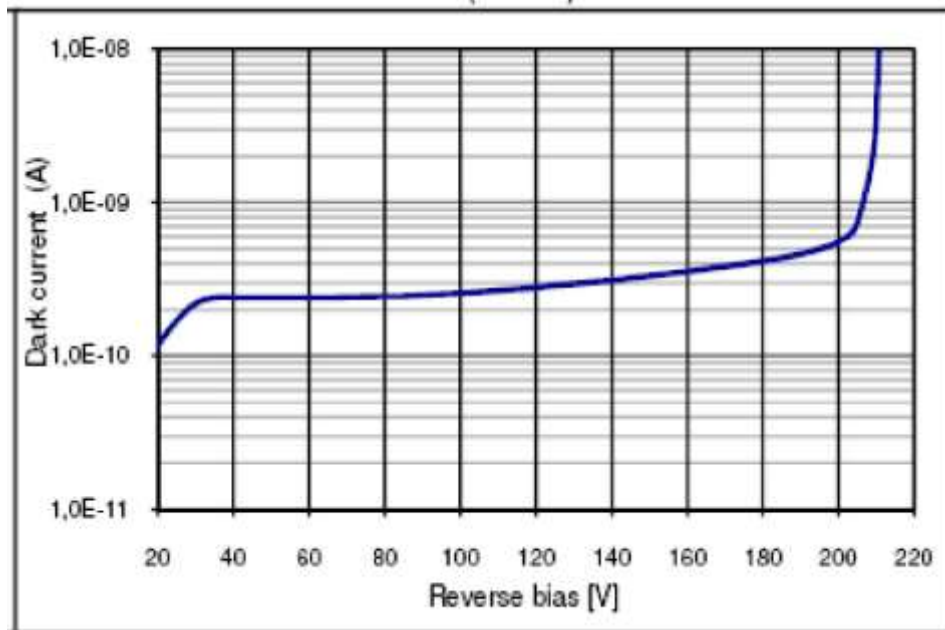


Figure 6, Dark current v.s. reverse bias voltage

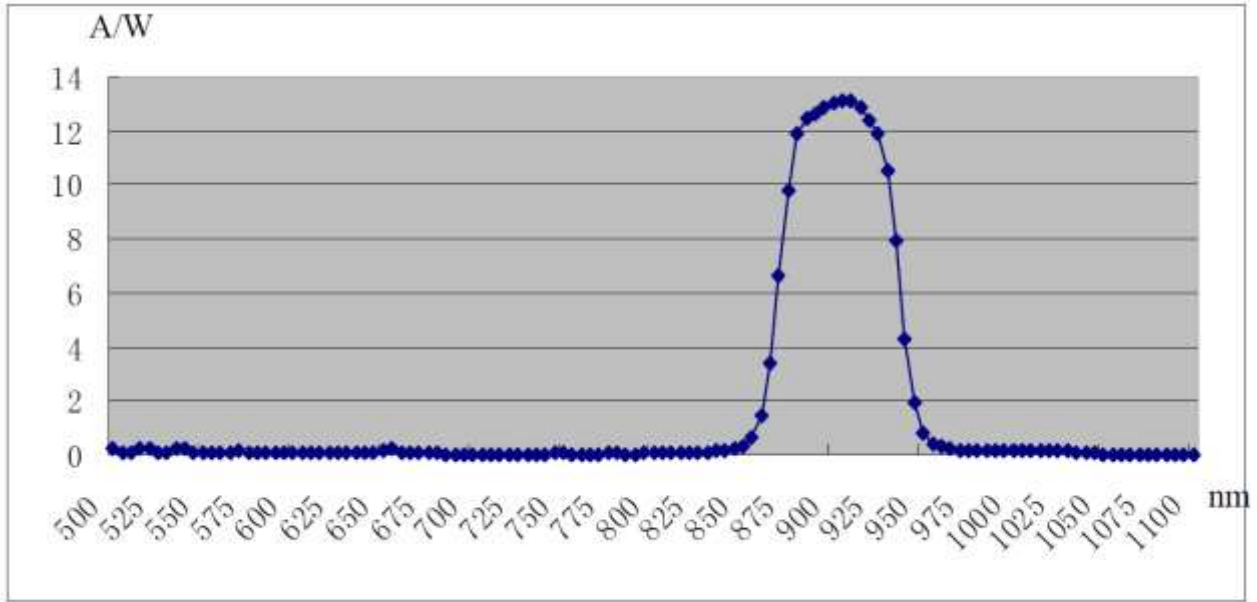
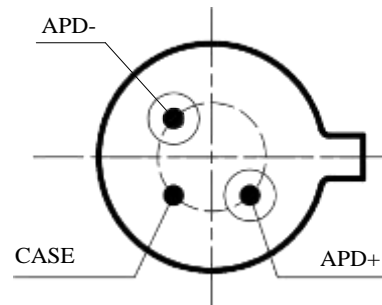
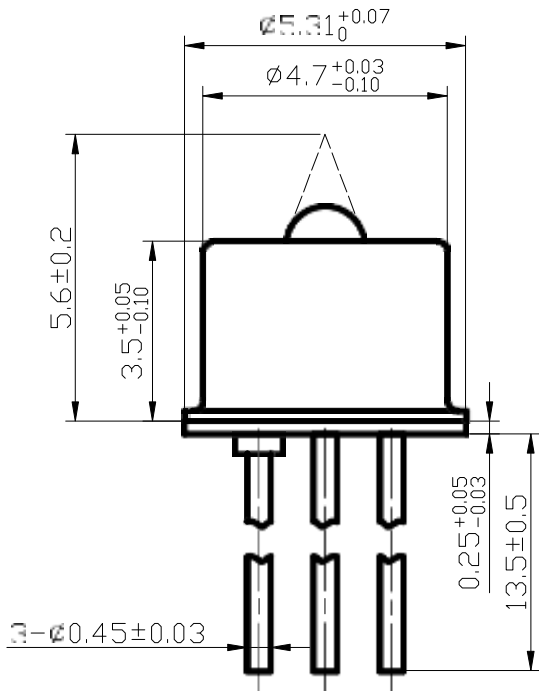
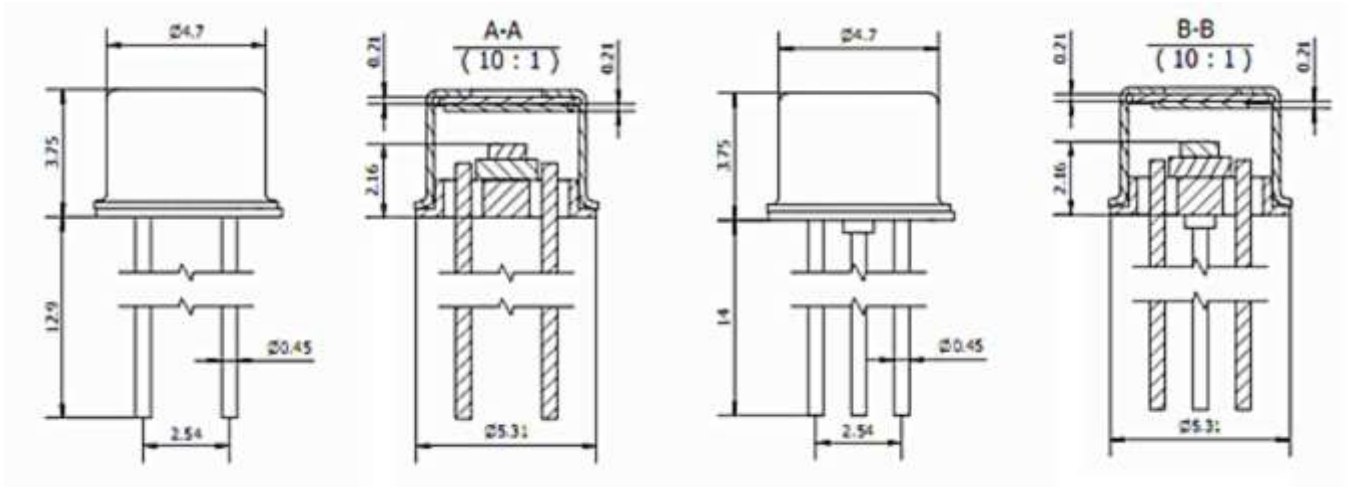


Figure 7, 905nm narrow band spectral response curve

Package, dimension and pin define



Bottom View  
D-type leader

**Notice**

1. Electrostatic discharges are harmful to the APD, ensure the grounding of interacting people, test instruments, test equipment and benches.
2. Use a stabilized power supply.
3. The solder temperature should be  $260 \pm 5^{\circ}\text{C}$  and the soldering time should be shorter than 5 seconds.
4. The forward operating voltage should be controlled under 1mA in order to avoid breakdown.