InGaAs SPAD 3pin TO46 detector



Description

High - temperature InGaAs/InP Geiger - mode avalanche photodiodes (GM - APD) are special devices for short - wave infrared single - photon detection and counting. This detector has been specially optimized for the single - photon detection performance in the temperature range of 0℃ and above. It can meet the technical requirements of high - efficiency and low - dark - count single - photon detection in fields such as quantum secure communication and weak light detection while significantly reducing the refrigeration requirements. It can realize the detection of single photons with wavelengths from 0.9 to 1.7μm, and meet the needs of equipment miniaturization and operation under different working conditions.

Features

- TO46 package with metal housing
- Suitable for high - speed gating mode (≥100MHz) and free - running mode applications
- High detection efficiency (>20% @ afterpulse probability below 2%)

- Low dark count rate at high temperature (optimal <2kHz @ 20% detection efficiency @ 0℃ @ 100MHz)

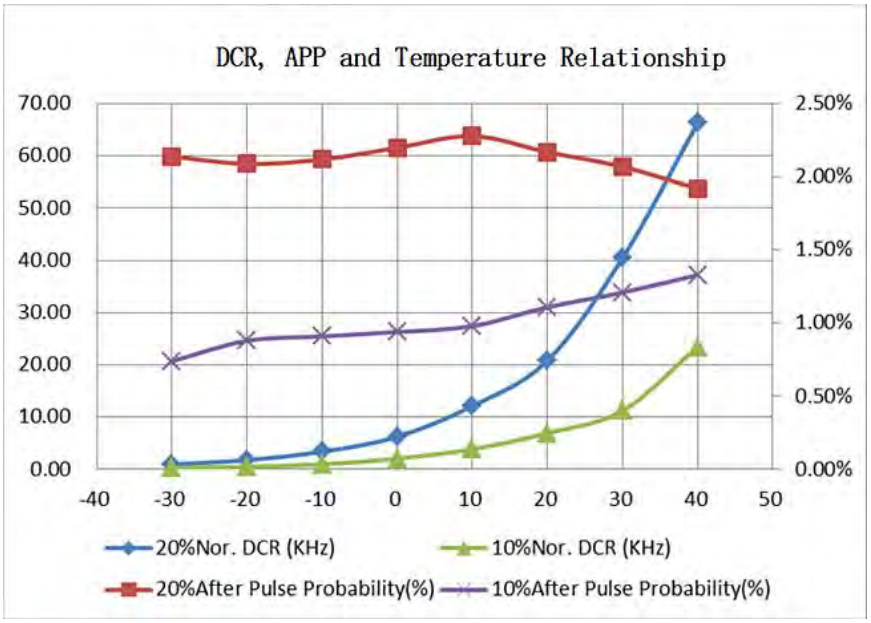
Advantages

- Quantum secure communication
- Weak light detection
- Laser ranging
- Biomedical

E/O Characteristics

Parameter/Symbol		Test Condition	Minimum	Maximum	Unit
DC Characteristics Tc=23±2℃	Breakdown Voltage，Vbr	Id=10μA	50	80	V
	Responsivity，Re	λ=1.55μm, Vr=Vbr—2V, Φe=1μW	8		A/W
	Dark Current，Id	Vr=Vbr—2V, Φe=0μW		1	nA
	Capacitance，Ctot	Vr=Vbr—2V, f=1MHz		0.25	pF
	Breakdown Voltage Temperature Coefficient，η	Top = -40~+30℃, I=10μA, Φe=0		0.15	V/℃
Geiger Characteristics Top=0℃	Photon Detection Efficiency，PDE	0.1ph/pulse, λ=1.55μm	20		%
	Normalized Dark Count Rate*，DCR	fg=100MHz, PDE=20%		10	kHz
	Afterpulse Probability，APP	fg=100MHz, PDE=20%		2.5	%

Typical Curves：

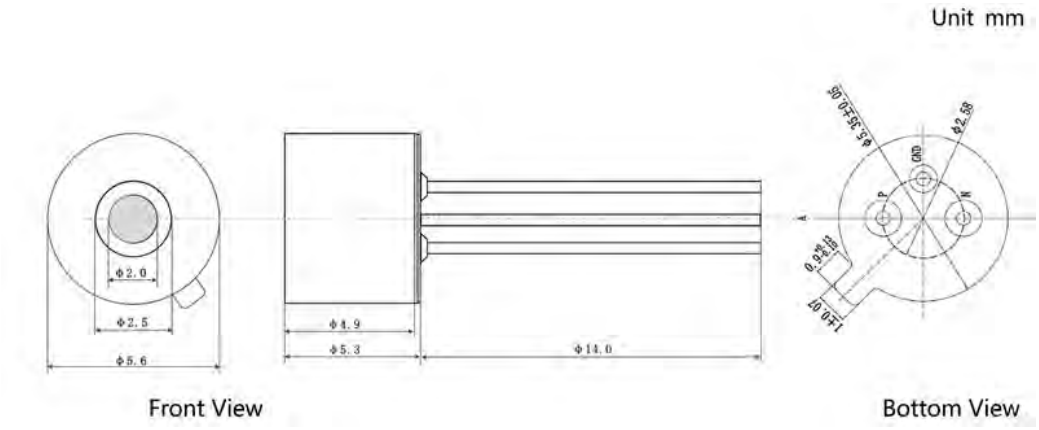


Absolute Maximum Ratings：

Items	Parameter/Symbol	Rating
Absolute Maximum Ratings	Storage Temperature， Tstg	- 50℃~ + 85℃
	(Operating) Ambient Temperature， Tc	- 50℃~ + 80℃
	Soldering Temperature， Tsld（time）	260℃（10s）
	DC Reverse Bias Voltage， Vr	Vbr
	Overbias Pulse Amplitude， Vg	10V
	Input Optical Power， Φe（continuous）	1mW
	Forward Current， If（continuous）	1mA
	Electrostatic Discharge Susceptibility，ESD	≥300V

Dimensions and Pin definitions

Mechanical Dimension &Pin Layout：



Note：Spherical LensΦ 2mm， Refractive Indexnd=2.0，TransmittanceT≥98% @1260~1650nm.