

900-1700nm InGaAs Geiger-mode avalanche photodiode with built-in TEC cooling



● Product Description

InGaAs avalanche photodiode (APD) is a dedicated device for short-wave near-infrared single photon detection. It can meet the technical requirements of quantum communication, weak light detection and other fields for high-efficiency and low-noise single photon detection, and realize single photon detection of 0.9 ~ 1.7 μ m wavelength.

● Part Number

IGA-APD-GM104-R-TEC

● Product features

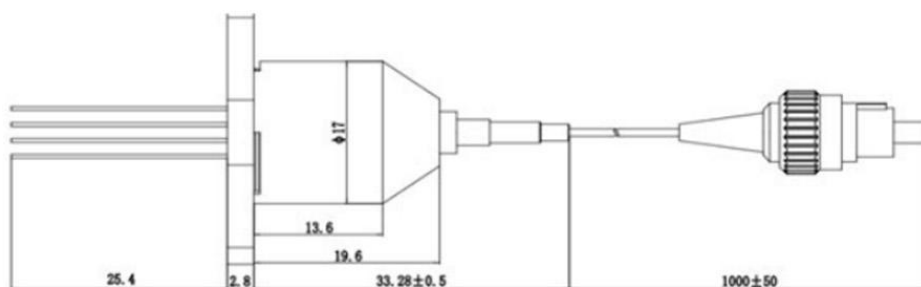
Spectral response range 0.9~1.7μm、 High detection efficiency, low dark count rate、 6 pin TO8

● Application area

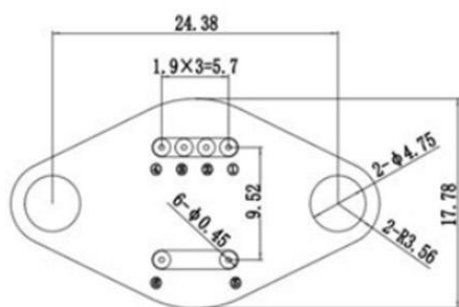
Weak light detection、 Quantum secure communication、 Biomedical

● Dimensional Drawing

Package shape, dimensions and pin definition TO8 (pigtail package)



Unit: mm



Pin	Function
1	APD chip negative pole
2	Thermistor
3	Thermistor
4	APD chip positive pole
5	TEC negative pole
6	TEC positive pole

TEC technical indicators

parameter	max	Unit
TEC current	0.7	A
TEC voltage	3.6	V
TEC ΔT	115	K

General Parameters

Linear mode parameters

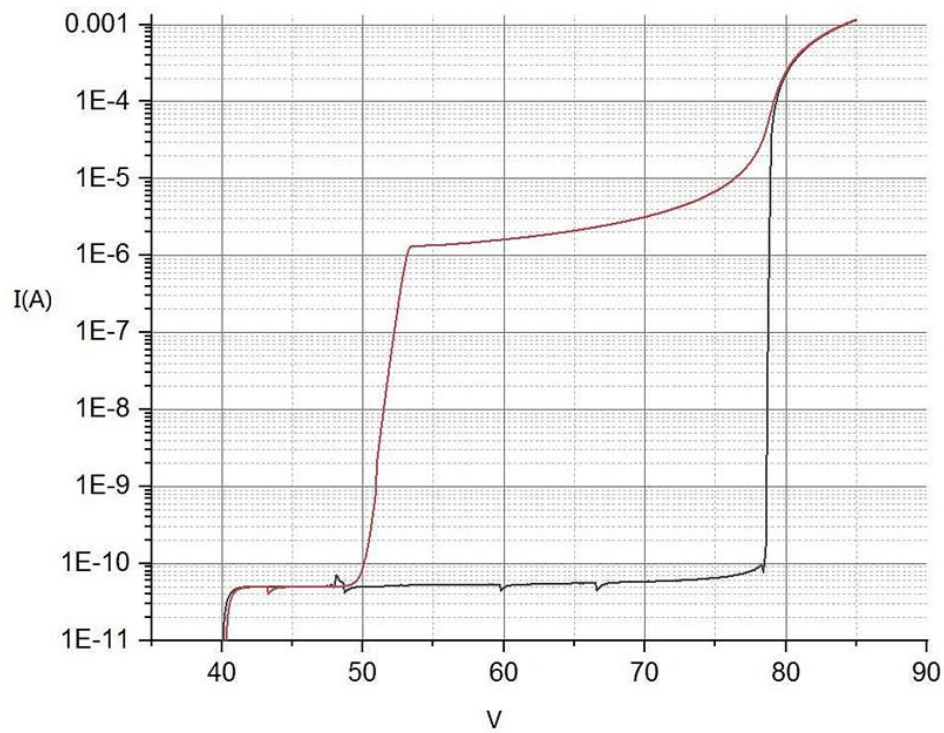
PN#				IGA-APD-GM104-TEC		
Parameter	Symbol	Unit	Test conditions	Min.	Typical	Max.
Reverse breakdown voltage	VBR	V	22°C±3°C , ID =10μA	60	80	90
Responsivity	Re	A/W	22°C±3°C, λ =1550nm , M =1	0.8	0.85	
Dark current	ID	nA	22°C±3°C, M =10		0.1	0.3
Capacitance	C	pF	22°C±3°C , M =10, f=1MHz			0.25
Breakdown voltage temperature coefficient	η	V/K	-40°C ~80°C, ID =10μA			0.15

Geiger mode parameters

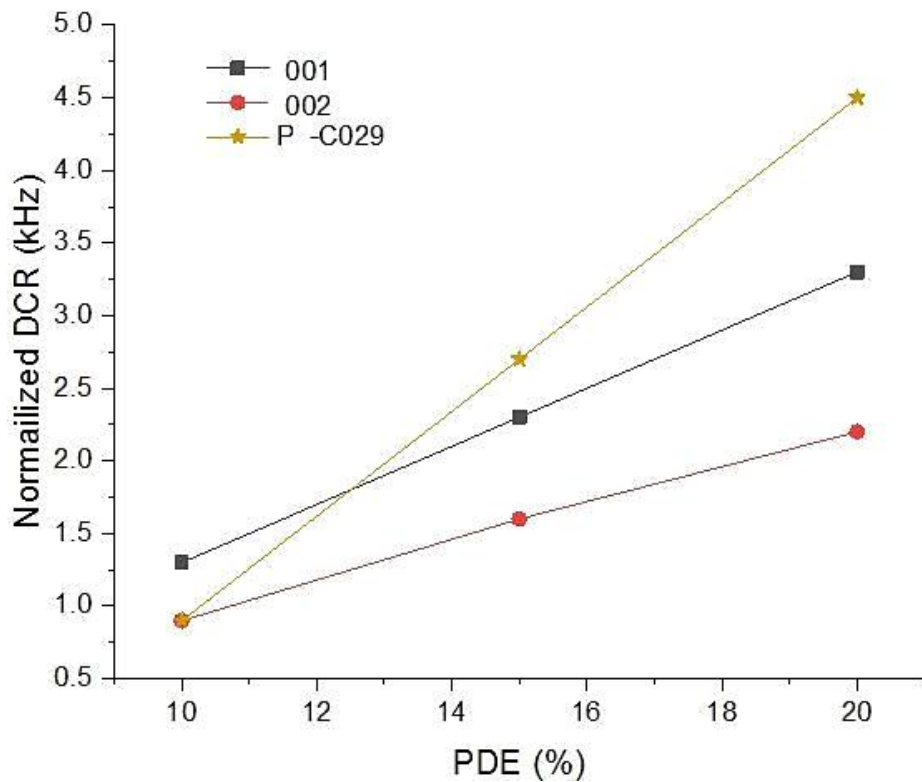
Parameter	Unit	Test conditions	Min.	Typical	Max.
Single photon detection efficiency PDE	%	-45°C, λ =1550nm, 0.1ph/pulse, Poisson distribution single photon source	20	-	
Dark count rate DCR	kHz	-45°C, 1ns gate width, 2MHz gated repetition rate, 1MHz optical repetition rate, PDE=20%	-	-	20*
After pulse probability APP		-45°C, 1ns gate width, 2MHz gated repetition rate, 1MHz optical repetition rate, PDE=20%	-	-	1× 10-3
Time jitter Tj	ps	-45°C, 1ns gate width, 2MHz gated repetition rate, PDE=20%	-	-	100

* Different grades and specifications are available

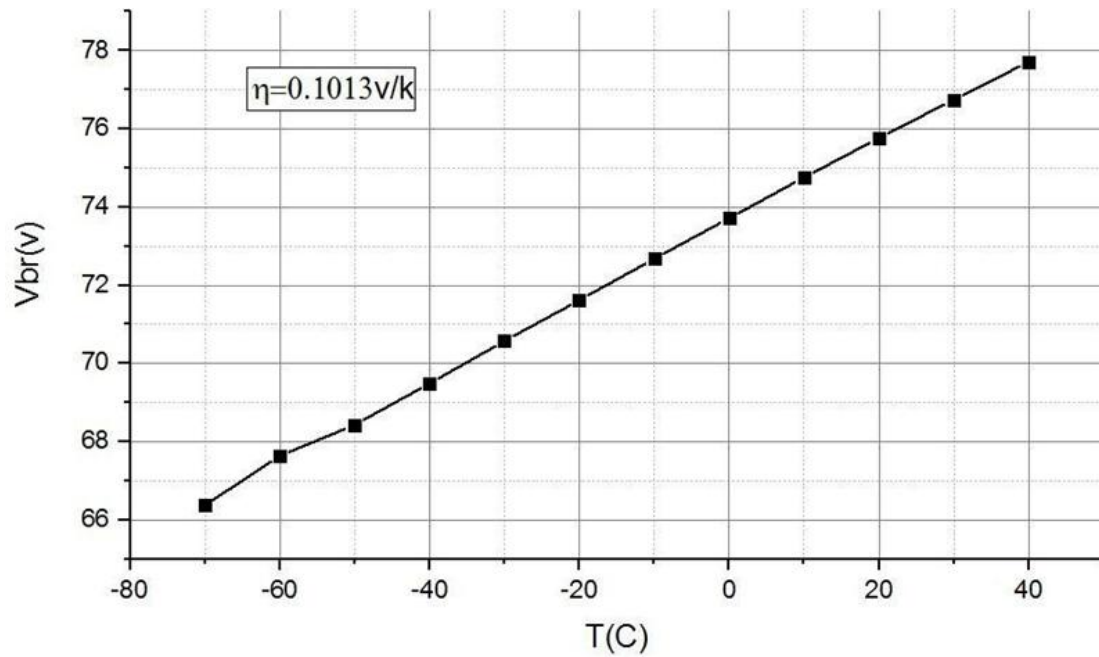
Room temperature IV curve



DCR-PDE (-45°C , $f_g=2\text{MHz}$)



Temperature coefficient



Capacitor voltage

