

## 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 $\mu$ m wavelength.



## ● Product features

Spectral response range 0.9~1.7  $\mu\text{m}$ 、 High detection efficiency, low dark count rate、 6 pin TO8

## ● Part Number

MP-GMD-B-I-9N-1

## ● Application area

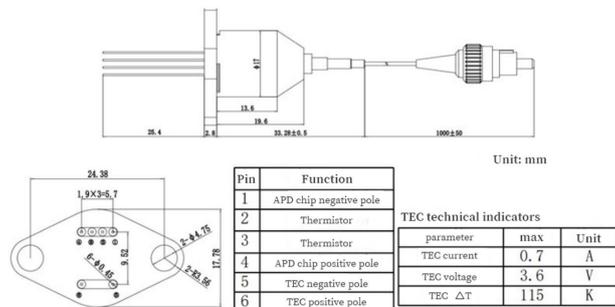
Weak light detection、 Quantum secure communication、 Biomedical

## ● Core parameters

Wavelength	Responsivity
0.9-1.7 $\mu\text{m}$	0.85A/W@1550nm

## ● Dimension Drawing

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





## ● General Parameters

### Linear mode parameters

Parameter	Symbol	Unit	Test conditions	Min.	Typical	Max.
Reverse breakdown voltage	$V_{BR}$	V	$22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , $I_D = 10\mu\text{A}$	60	80	90
Responsivity	$R_e$	A/W	$22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , $\lambda = 1550\text{nm}$ , $M = 1$	0.8	0.85	
Dark current	$I_D$	nA	$22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , $M = 10$		0.1	0.3
Capacitance	C	pF	$22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , $M = 10$ , $f = 1\text{MHz}$			0.25
Breakdown voltage temperature coefficient	$\eta$	V/K	$-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$ , $I_D = 10\mu\text{A}$			0.15

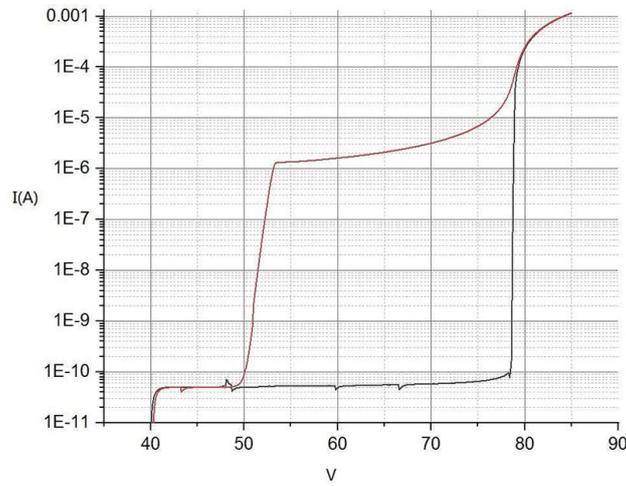
### Geiger mode parameters

Parameter	Unit	Test conditions	Min.	Typical	Max.
Single photon detection efficiency PDE	%	$-45^{\circ}\text{C}$ , $\lambda = 1550\text{nm}$ , 0.1ph/pulse, Poisson distribution single photon source	20	-	
Dark count rate DCR	kHz	$-45^{\circ}\text{C}$ , 1ns gate width, 2MHz gated repetition rate, 1MHz optical repetition rate, PDE=20%	-	-	20*
After pulse probability APP		$-45^{\circ}\text{C}$ , 1ns gate width, 2MHz gated repetition rate, 1MHz optical repetition rate, PDE=20%	-	-	$1 \times 10^{-3}$
Time jitter $T_j$	ps	$-45^{\circ}\text{C}$ , 1ns gate width, 2MHz gated repetition rate, PDE=20%	-	-	100

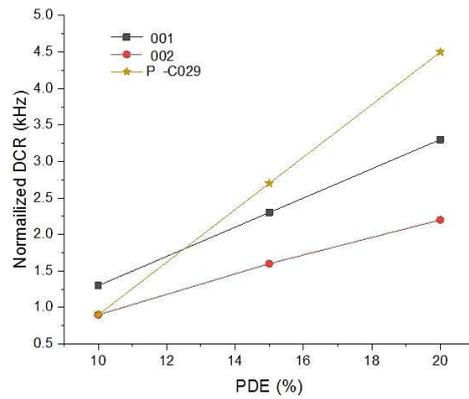
\* Different grades and specifications are available



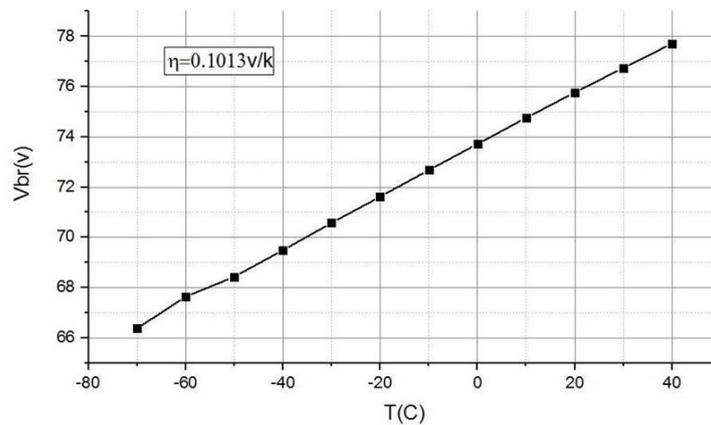
### Room temperature IV curve



### DCR-PDE(-45°C, fg=2MHz)



### Temperature coefficient





### Capacitor voltage

