

Single Photon Counting Avalanche Photodiode
PGA-284 Pigtail 1000nm – 1600nm



Description

OTRON PGA-284 is an avalanche photodetector designed specifically for single photon counting applications.

The device is intended for use at voltage biases above the breakdown voltage (in Geiger-mode) so that a single photon incident on the detector will give rise to a macroscopic current pulse.

PGA-284 is fiber pigtailed TO package.

Features

- * Designed specifically for single photon counting
- * Optimized for 1.0um to 1.6um wavelengths

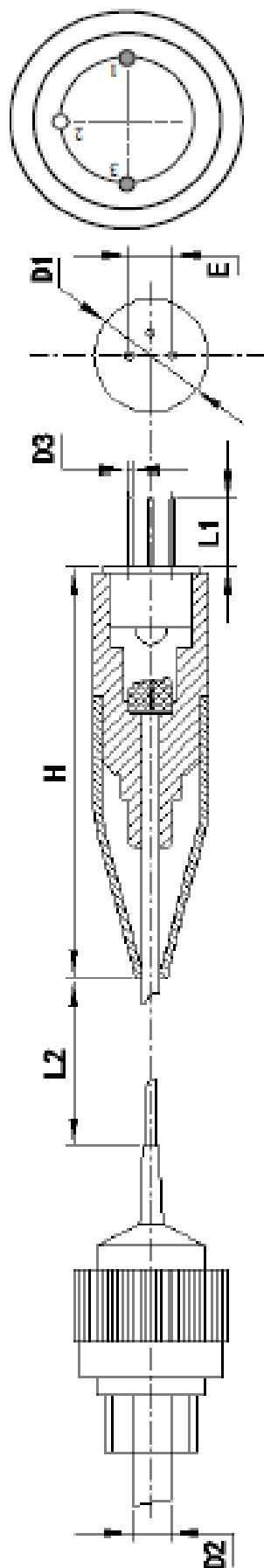
Applications

- * Quantum optics/ Quantum computing
- * Spectroscopy and fluorescence measurements
- * 3D Lidar



Package Drawing

All dimensions in mm



1: Anode 2: Case (Ground) 3: Cathode

D1: 6.40~6.60

D2: 2.45~2.55

D3: 0.40~0.50

L1: 18.00~19.00

L2: 500Min.

H: 20~26

E: 2.54



Absolute Maximum Ratings

Parameter	Conditions	Min.	Max.	Units
Forward current	Continuous bias		1	mA
Forward voltage	Continuous bias		1	V
Reverse current	Continuous bias		1	mA
Reverse voltage	Continuous bias		-(Vbr+5)	V
	Pulse bias(Gated operation)		-(Vbr+10)	
Optical Power	Continuous bias		1	mW
Storage temperature		-55	85	C

Opto-Electronic Characteristics

Linear Mode Parameters (@Tc=22±3 °C)						
Parameters	Sym.	Test conditions	Min	Ty p	Max	Unit
Response Spectrum	λ	—	1000~1650			nm
Responsivity	Re	$\lambda=1.55\mu\text{m}$, $V_R=V_{BR}-2\text{V}$, $\phi_e=1\mu\text{w}$	10		14	A/W
Reverse breakdown voltage	V_{BR}	$I_D=10\mu\text{A}$, $T_c=22^\circ\text{C}$	65		75	V
Operating voltage temperature coefficient	γ	$T_c=-60\sim+30^\circ\text{C}$, $I_D=10\mu\text{A}$		0.1		V/°C
Dark current	I_D	$\phi_e=0\mu\text{w}$, $V_R=V_{BR}-2\text{V}$			3.0	nA
Total capacitance	C_{tot}	1MHz, $V_R=V_{BR}-2\text{V}$			0.2	pF

Parameter	Test conditions	TGA-284		Unit
		Min	Max	
Dark Count Rate, (DCR)	$f_{gate}=50\text{kHz}$, $T_{gate}=10\text{ns}$, SPDE=10%		10	kHz
Detection Efficiency,(SPDE)	$f_{gate}=f_{pulse}=50\text{kHz}$, $T_{gate}=10\text{ns}$, DCR=10kHz $\lambda=1.55\mu\text{m}$, 0.1 photon per pulse	10		%
Afterpulsing(APP)	@2us, $f_{pulse}=50\text{kHz}$, $T_{gate}=10\text{ns}$, SPDE=10%, $\lambda=1.55\mu\text{m}$, 0.1 photon per pulse		2	%



- * Operating temperature $T_A = -35^\circ\text{C}$ for Geiger mode
- * V_{ob} (over bias voltage): 1.0~2.0V
- * V_{dc} (DC working voltage): $(V_{br}-1V) \sim (V_{br}-2V)$

Typical Characteristics Curve

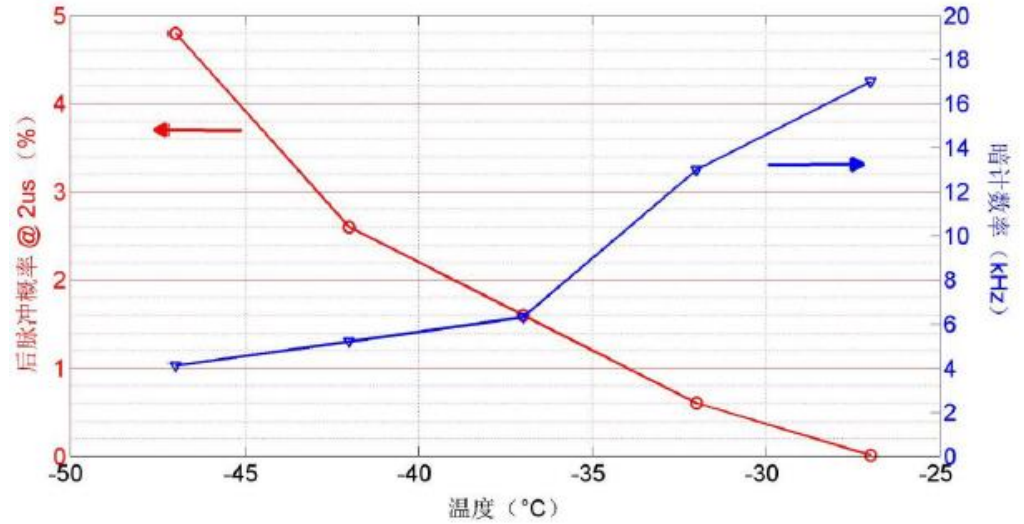


Fig. 1 DCR and APP vs Temperature when PDE=10%

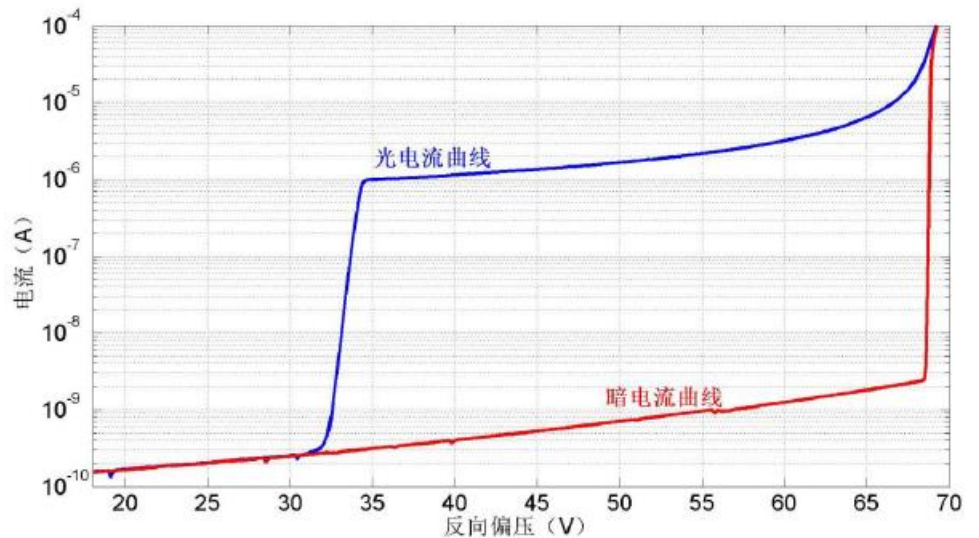


Fig.2 Photocurrent and dark current vs reverse voltages

Fiber

Standard Singlemode fiber 9/125
Optional Multimode fiber 50/125