

APD210 Avalanche Photodetector

1. Overview

Avalanche photodetector (APD) are designed to provide greater sensitivity and lower noise than standard PIN detectors, and are well suited for low optical power level applications. In general, avalanche photodiode utilize an internal gain mechanism to increase sensitivity. A high reverse bias voltage is applied to the diode to create a strong electric field. When an incident photon creates an electron-hole pair, the electric field accelerates the electrons, resulting in the creation of secondary electrons from collisional ionization. The resulting avalanche of electrons will produce a gain factor of several hundred times, denoted by the multiplication factor M, which is a function of reverse bias and temperature. In general, the M factor increases with decreasing temperature and decreases with increasing temperature. Similarly, the M factor will increase as the reverse bias voltage increases and decrease as the reverse bias voltage decreases.

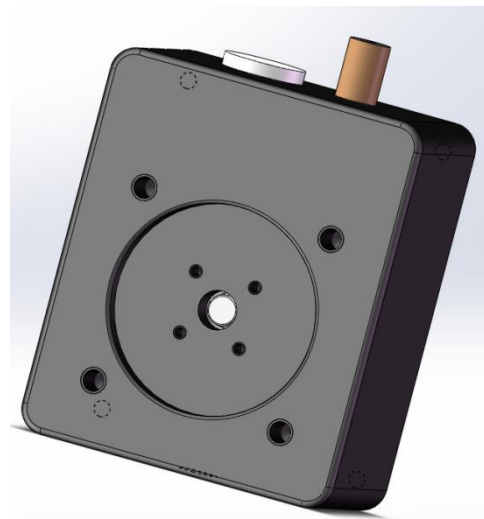
The APD210 has an integrated thermistor that adjusts the bias voltage to compensate for the effect that temperature changes have on the M-factor.

2. Features

- Temperature Compensation
- Optional FC flange
- Maximum bandwidth up to 1.8 GHz
- 30mm optical cage system

3. Applications

- Detecting weak light signals
- Laser Radar
- Detecting Ultrafast Laser Pulses
- Laser communication



4. Specifications

Items	APD210A-1G	APD210A-1.8G	APD210C-1G
Materials	Si	Si	InGaAs
Wavelength	400-1000nm	400-1000nm	1000-1700nm
Photosensitive diameter	200um	200um	200um
Responsivity @M=1	0.48A/W @ 760nm	0.48A/W @ 760nm	0.9A/W @ 1550nm
Bandwidth ^a	DC-1GHz	DC-1.8GHz ^c	DC-1GHz
Rise time ^a	400ps	250ps	400ps
Gain ^b	4.8x10 ⁴ V/W	2.4x10 ⁴ V/W	1.2x10 ⁴ V/W
Saturated Optical power	50uW	100uW	210uW

Noise voltage ^a	4mVpp	4mVpp	4mVpp
Maximum Output Voltage ^b	2.5V	2.5V	2.5V
NEP		2.4pW/√Hz	
Operating voltage	9-12V		
Operating Current	<200mA		
Output Impedance	50Ω		
Output coupling mode	DC		
Output connector	SMA female		
Operating temperature	-10~65°C		
Storage temperature	-40~85°C		

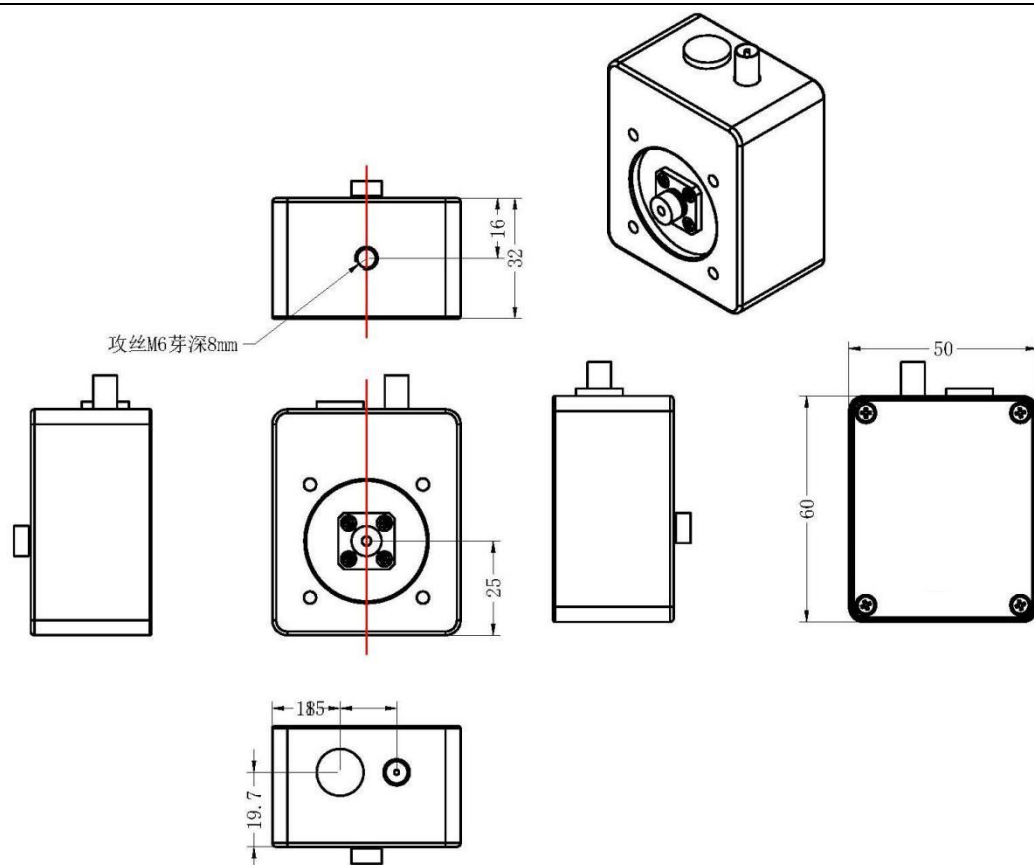
Remarks:

a : For 50Ω loads

b : For high resistance loads

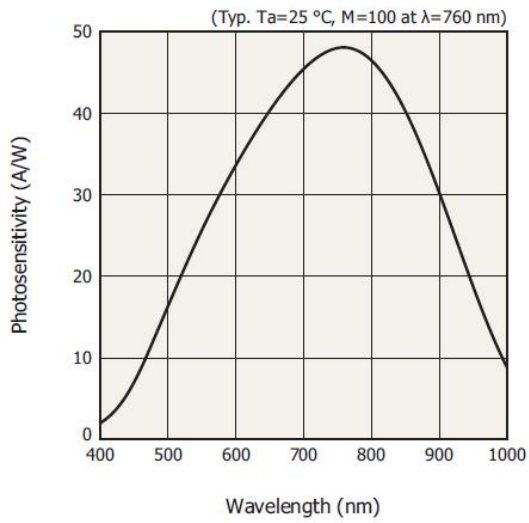
c : 200mV small signal bandwidth

5. Mechanical dimensions

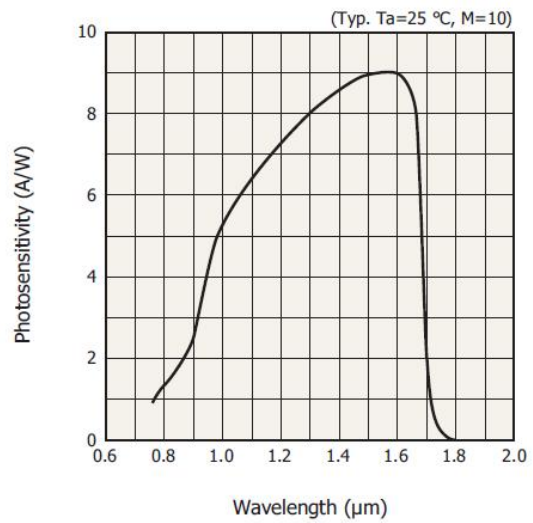


Remarks:
FC flange is optional

6. Typical Response Curve



APD210A



APD210C

Note: Response curves are typical values for reference only.