

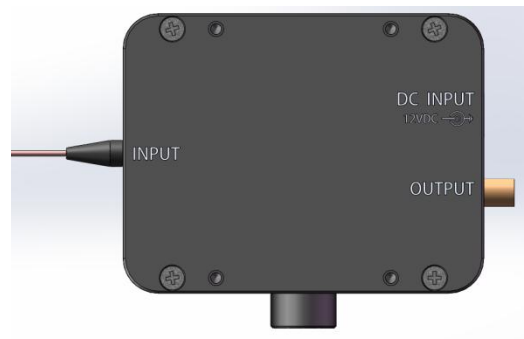
APD20 Avalanche Photodetector

1. Overview

The APD20 is a fiber-coupled avalanche photodetector for use with FC-connected fiber optic cables in optical systems. The device consists of a photodiode, high voltage power supply, transimpedance amplifier, RF connector, etc., encapsulated in an aluminum housing. The FC flange facilitates coupling to a fiber optic light source, and an SMA connector is used at the output to reduce size and maximize frequency response with a maximum bandwidth of 400 MHz. The detector is available in two wavelength ranges, 400-1000 nm and 1000-1700 nm.

2. Features

- Covers wavelength range of 400-1700nm
- M-factor temperature compensation
- Connects to singlemode (SM) or multimode (MM) fibers
- FC fiber input connector
- SMA output connector



3. Applications

- Detecting weak light signals
- Distributed Fiber Optic Sensing
- Detection of outlier laser beat frequency signals

4. Specifications

Items	APD20A-10M	APD20A-50M	APD20A-200M	APD20A-400M
Materials	Si			
Wavelength	400-1000nm			
Input connector	Multimode fiber with FC/APC connectors			
Responsivity @M=1	0.5A/W @850nm			
Bandwidth ^b	DC-10MHz	DC-50MHz	DC-200MHz	DC-400MHz
Rise time ^b	40ns	8ns	2ns	1ns
Gain ^a	1.4x10 ⁷ V/W	2.7x10 ⁶ V/W	1.2x10 ⁶ V/W	0.52x10 ⁶ V/W
Saturated Optical power	0.23uW	1.3uW	2.5uW	5.8uW
Noise voltage ^b	18mVpp	18mVpp	18mVpp	18mVpp
NEP	0.11pW/√Hz	0.23pW/√Hz	0.28pW/√Hz	0.64pW/√Hz

Item	APD20C-10M	APD20C-50M	APD20C-200M	APD20C-400M
Materials	InGaAs			

Wavelength	1000-1700nm			
Input connector	Single-mode fiber with FC/APC connectors			
Responsivity @M=1	0.9A/W @1550nm			
Bandwidth^b	DC-10MHz	DC-50MHz	DC-200MHz	DC-400MHz
Rise time^b	40ns	8ns	2ns	1ns
Gain^a	$3.2 \times 10^6 \text{V/W}$	$0.65 \times 10^6 \text{V/W}$	$4.0 \times 10^5 \text{V/W}$	$1.8 \times 10^5 \text{V/W}$
Saturated Optical power	0.98uW	4.8uW	8uW	16.7uW
Noise voltage^b	18mVpp	18mVpp	18mVpp	18mVpp
NEP	0.42pW/√Hz	0.71pW/√Hz	0.84pW/√Hz	1.8pW/√Hz

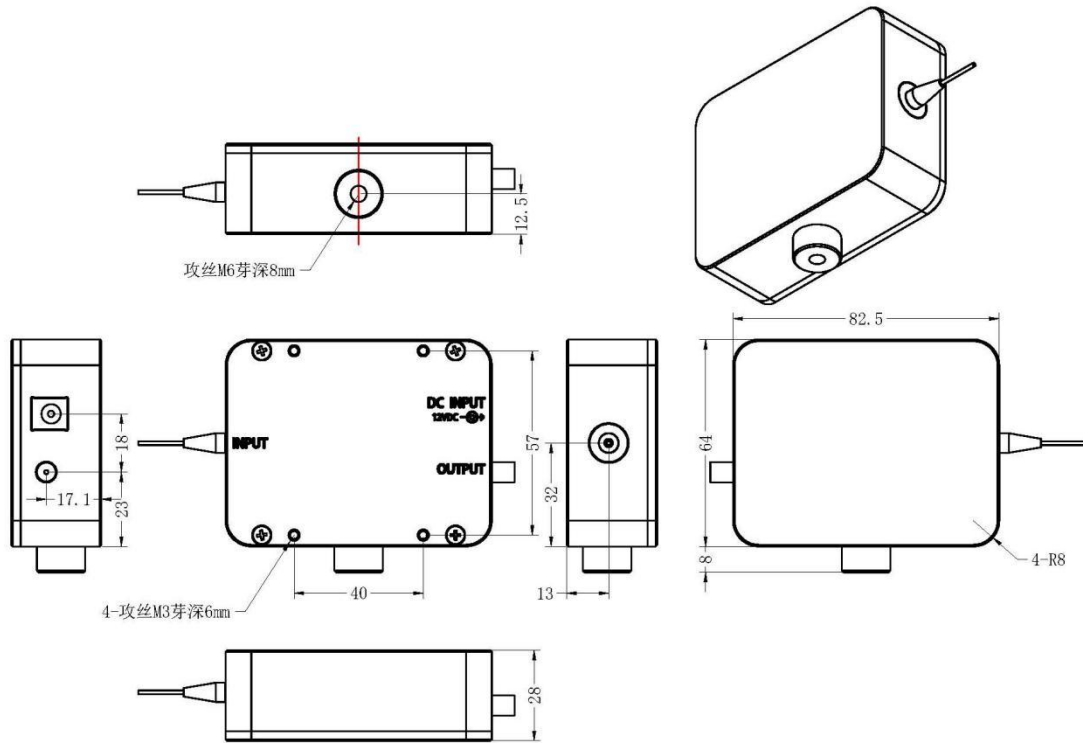
Params	Detector Common Parameters
Maximum output amplitude^a	3.2V
Operating voltage	9-12V
Operating Current	<200mA
Output Impedance	50Ω
Output coupling mode	DC
Output connector	SMA female
Operating temperature	-10~65°C
Storage temperature	-40~85°C

Remarks:

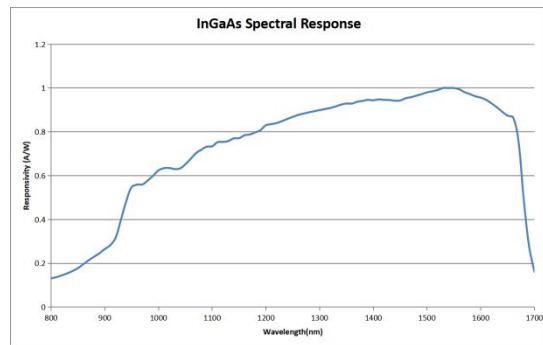
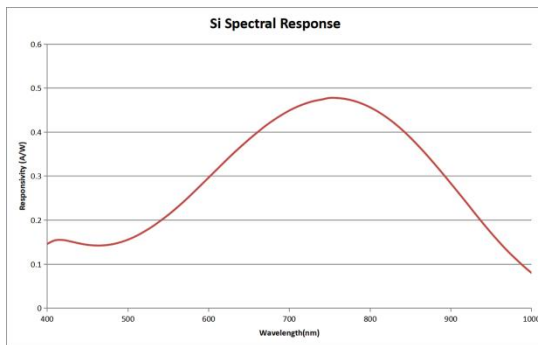
a: For high resistance loads

b: For 50Ω loads

5. Mechanical dimensions



6. Response curve



Note: Response curves are typical values for reference only.