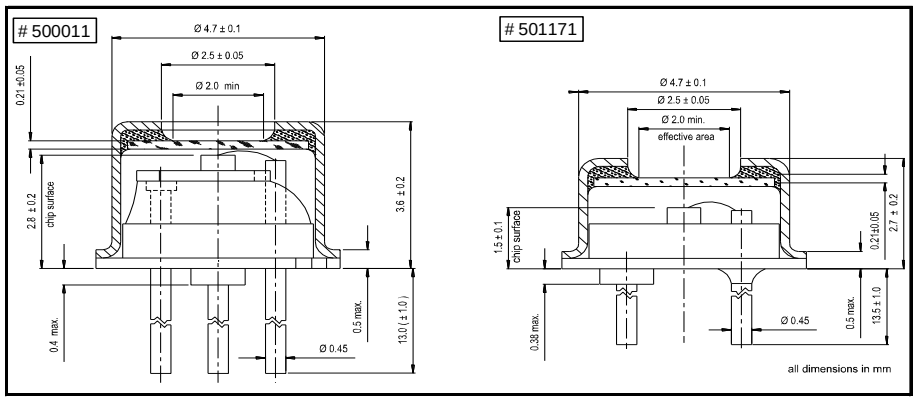
First Sensor

First Sensor APD Data Sheet

Part Description AD100-8 TO

Order # 500011; 501171

Version 28-10-11



Features

- APD with 0.008 mm² active area
- 100 µm diameter active area
- High gain at low bias voltage
- Fast rise time, low capacitance
- Optimum gain: 50-60

Description

Circular active area APD chip with 100 µm diameter. Metal can type hermetic TO52 package with clear glass window. Two TO52 types available, customization on request.

Application

- Laser range finder
- High speed photometry
- High speed optical communications
- Medical equipment

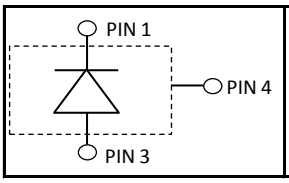
RoHS

2002/95/EC

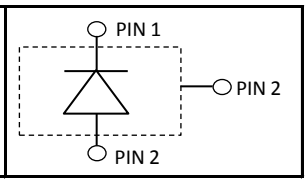
Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T_{STG}	Storage temp	-55	125	°C
T_{OP}	Operating temp	-40	100	°C
M_{max}	Gain (I_{PO} = 1 nA)	200		
I_{PEAK}	Peak DC current		0.25	mA

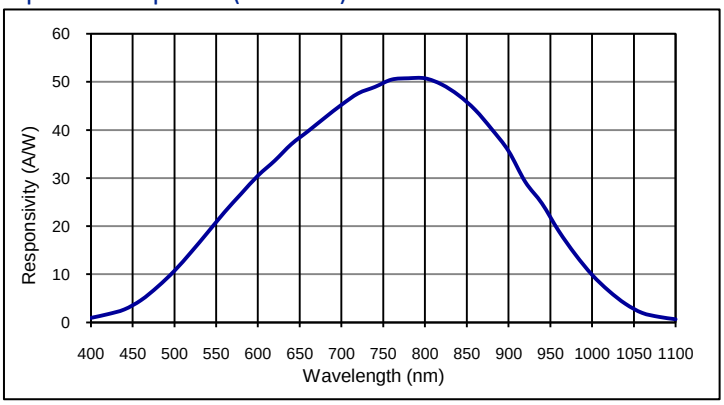
Schematic 500011



Schematic 501171



Spectral response (M = 100)



Electro-optical characteristics @ 23°C

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Active area			diameter 100		µm
	Active area			0.00785		mm²
I_D	Dark current	M = 100		0.05	0.1	nA
C	Capacitance	M = 100		0.5		pF
	Responsivity	M = 100; λ = 800 nm	45	50		A/W
t_R	Rise time	M = 100; λ = 905 nm; R_L = 50 Ω			0.18	ns
	Cut-off frequency	-3dB	2			GHz
V_{BR}	Breakdown voltage	I_R = 2 µA, V_{BR} - binning available*	80		160	V
	Temperature coefficiant	Change of V_{BR} with temperature	0.35	0.45	0.55	V/K
	Excess noise factor	M = 100		2.2		
	Excess noise index	M = 100		0.2		

*please add a "01" to the order numer for VBR-class 80V-120V and a "02" for VBR-class 120V-160V

European, International Sales:

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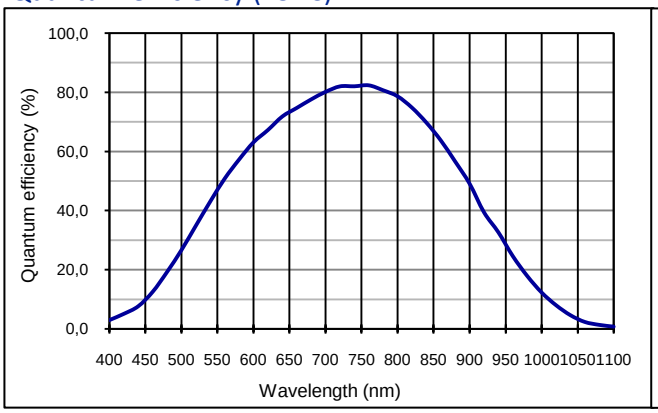
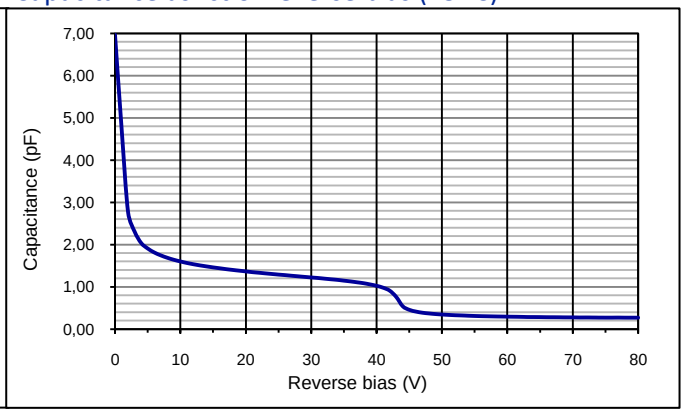
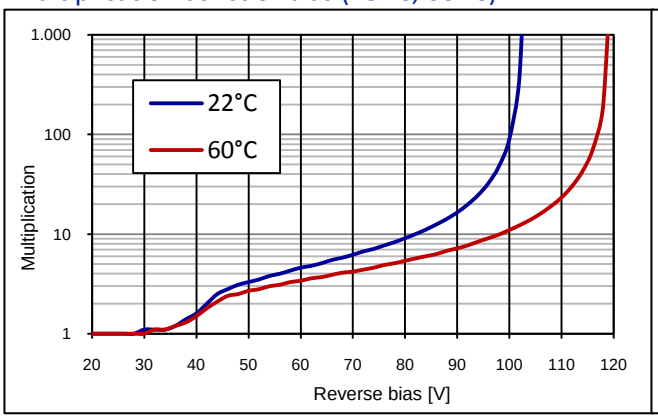
Quantum efficiency (23 °C)



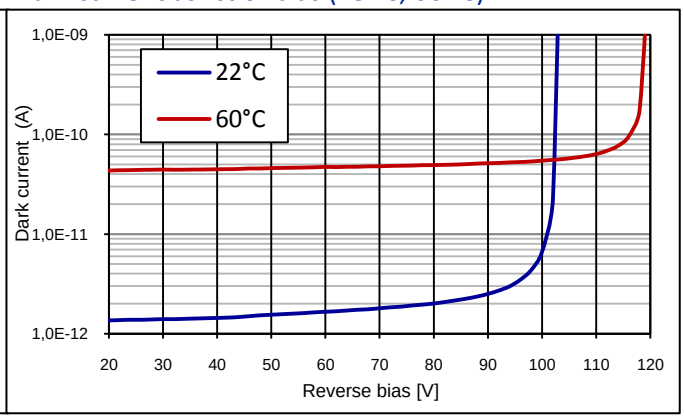
Capacitance as fct of reverse bias (23 °C)



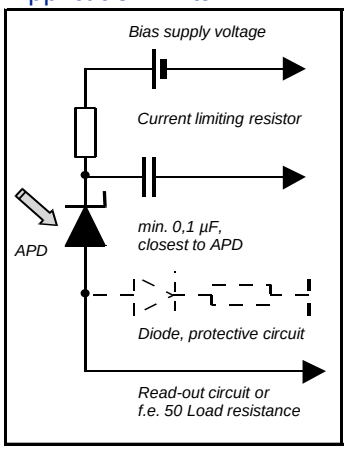
Multiplication as fct of bias (23 °C, 60 °C)



Dark current as fct of bias (23 °C, 60 °C)



Application hints:



- Current should be limited by a protecting resistor or current limiting - IC inside the power supply
- For low light level applications blocking of ambient light should be used
- For high gain applications bias voltage should be temperature compensated
- Please consider basic ESD protection while handling
- Use low noise read-out - IC
- For further questions please refer to document "Instructions for handling and processing"
- Optimum gain: 50-60

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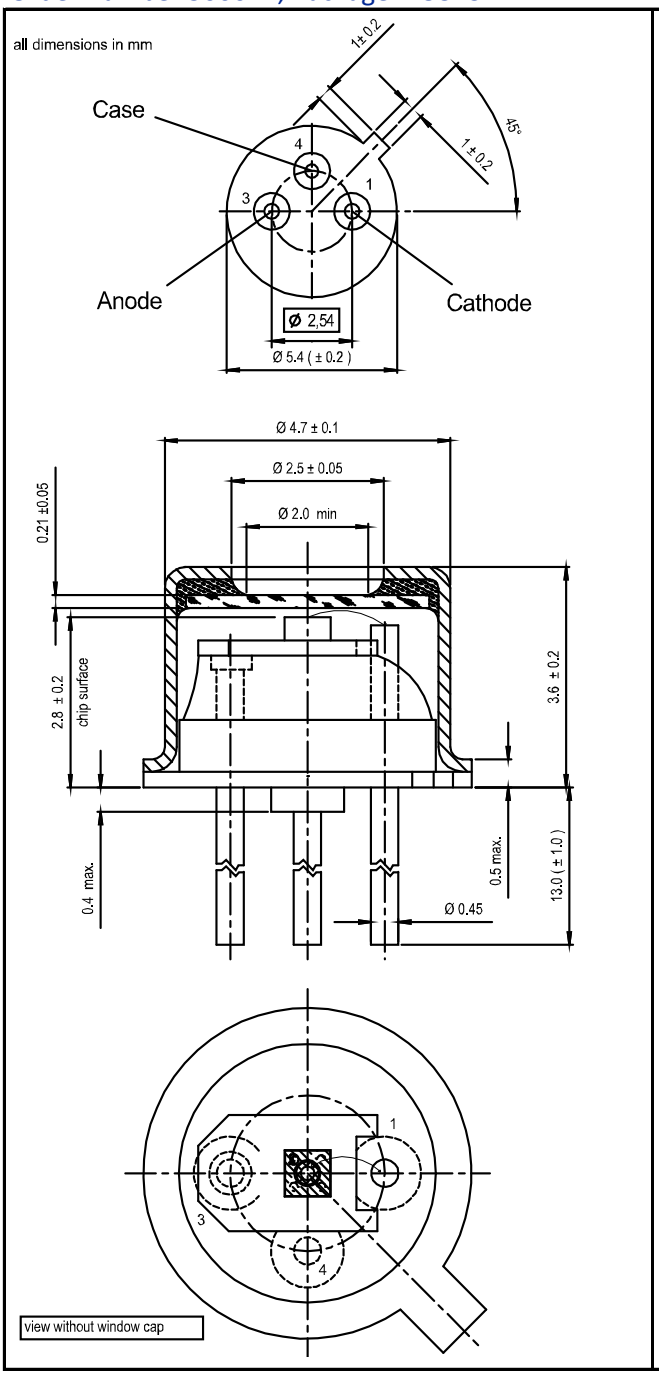
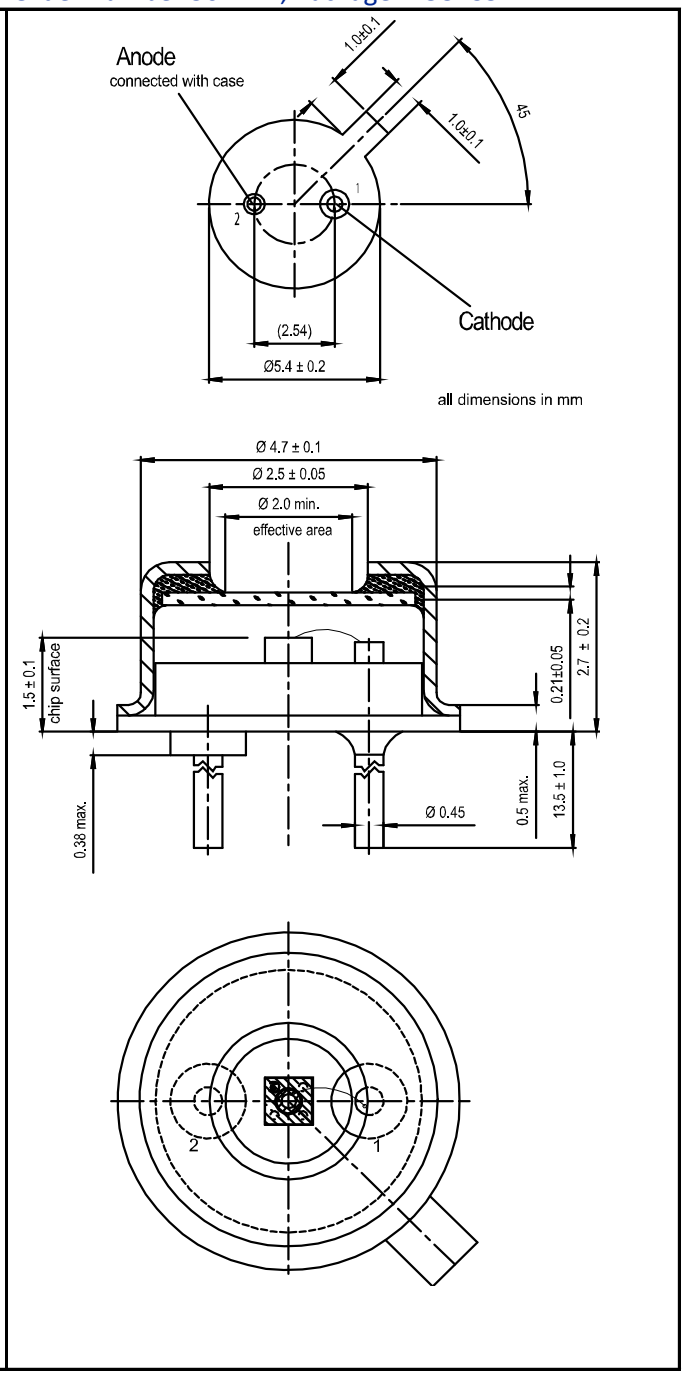
Order number 500011, Package: TO52S1



Order number 501171, Package: TO52S3



Package dimension:

Small quantities: Foam pad, boxed (12 cm x 16.5 cm)

Disclaimer: Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

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