

### Features

- APD with 0.2 mm<sup>2</sup> active area
- Slow multiplication curve
- QE > 80% @ 750 nm-910 nm
- Fast rise time, low noise
- Optimum gain: 50-60

### Description

Circular active area APD chip with NIR enhanced sensitivity. Metal can type hermetic TO52 package with clear glass window. Four TO52 types available.

### Application

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

### RoHS

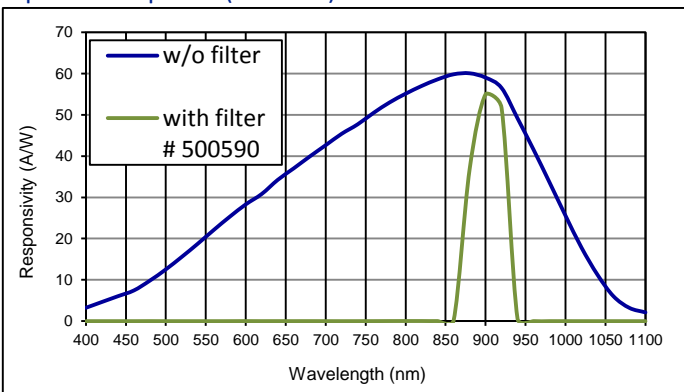
2002/95/EC



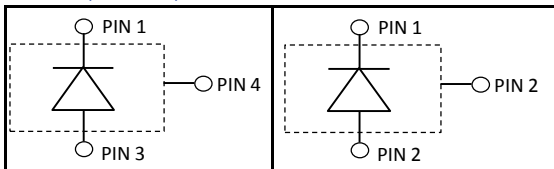
### Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T <sub>STG</sub>	Storage temp	-55	125	°C
T <sub>OP</sub>	Operating temp	-40	100	°C
M <sub>max</sub>	Gain (I <sub>PO</sub> = 1 nA)	200		
I <sub>PEAK</sub>	Peak DC current		0.25	mA

### Spectral response (M = 100)



500031;500306;500590 500156



### Electro-optical characteristics @ 23 °C

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Active area		diameter 500			µm
	Active area		0.196			mm <sup>2</sup>
I <sub>D</sub>	Dark current	M = 100		0.8	2.0	nA
C	Capacitance	M = 100		1.2		pF
	Responsivity	M = 100; λ = 905 nm	48	52		A/W
	Responsivity with filter	Article <b>500590</b> ; M = 100; λ = 905 nm	38	49		A/W
t <sub>R</sub>	Rise time	M = 100; λ = 905 nm; R <sub>L</sub> = 50 Ω		0.55		ns
	Cut-off frequency	-3dB		0.5		GHz
V <sub>BR</sub>	Breakdown voltage	I <sub>R</sub> = 2 µA, V <sub>BR</sub> - binning available*	160		240	V
	Temperature coefficient	Change of V <sub>BR</sub> with temperature	1.25		1.55	V/K
	Excess noise factor	M = 100		2.5		
	Excess noise index	M = 100		0.2		

\*please add a "01" to the order number for VBR-class 160V-200V and a "02" for VBR-class 200V-240V

#### European, International Sales:



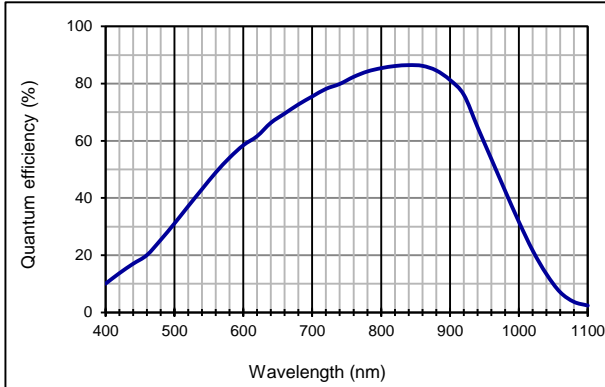
First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

#### USA:

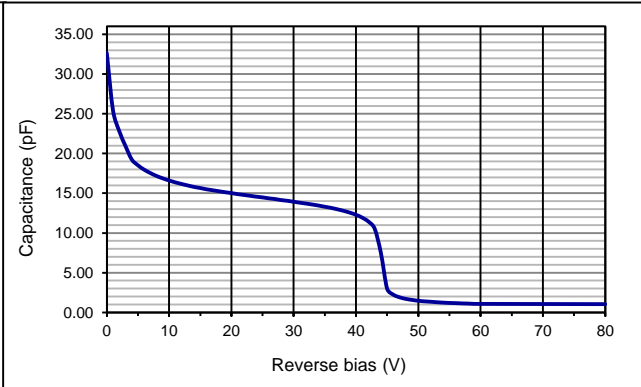


First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com

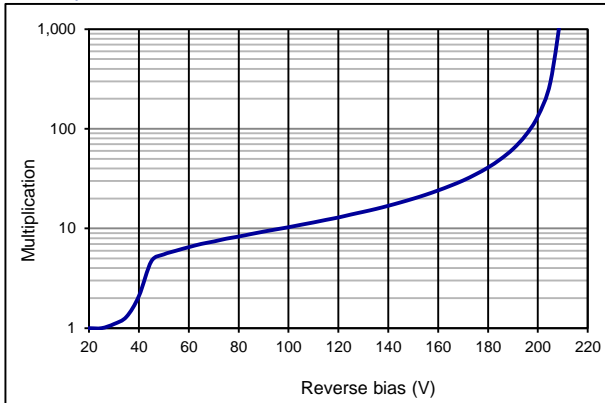
**Quantum efficiency (23 °C)**



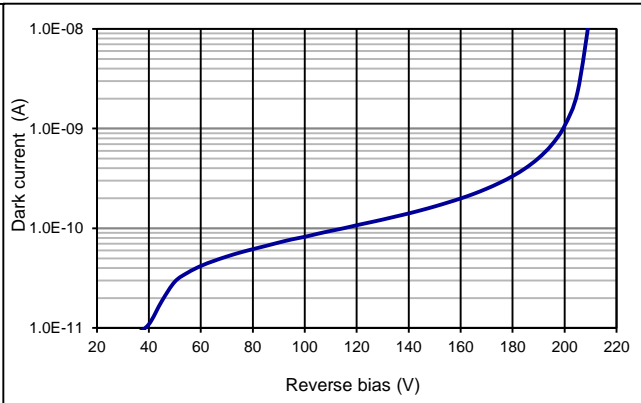
**Capacitance as fct of reverse bias (23 °C)**



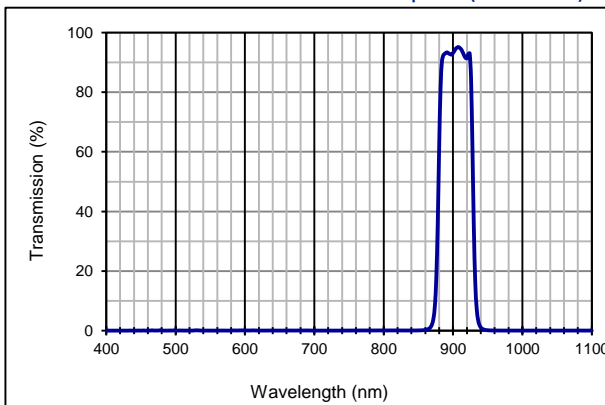
**Multiplication as fct of bias (23 °C)**



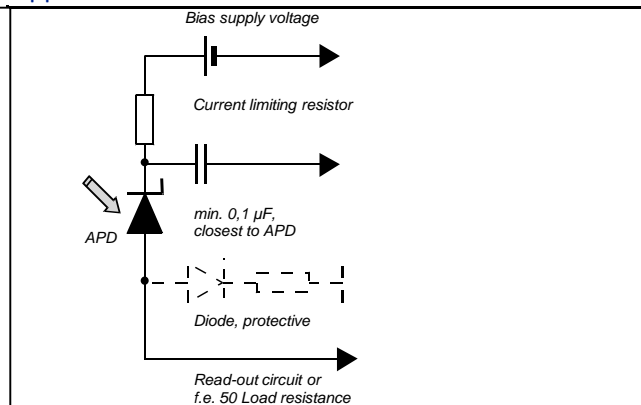
**Dark current as fct of bias (23 °C)**



**Filter characteristics 905 nm band pass (#500590)**



**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"

European, International Sales:



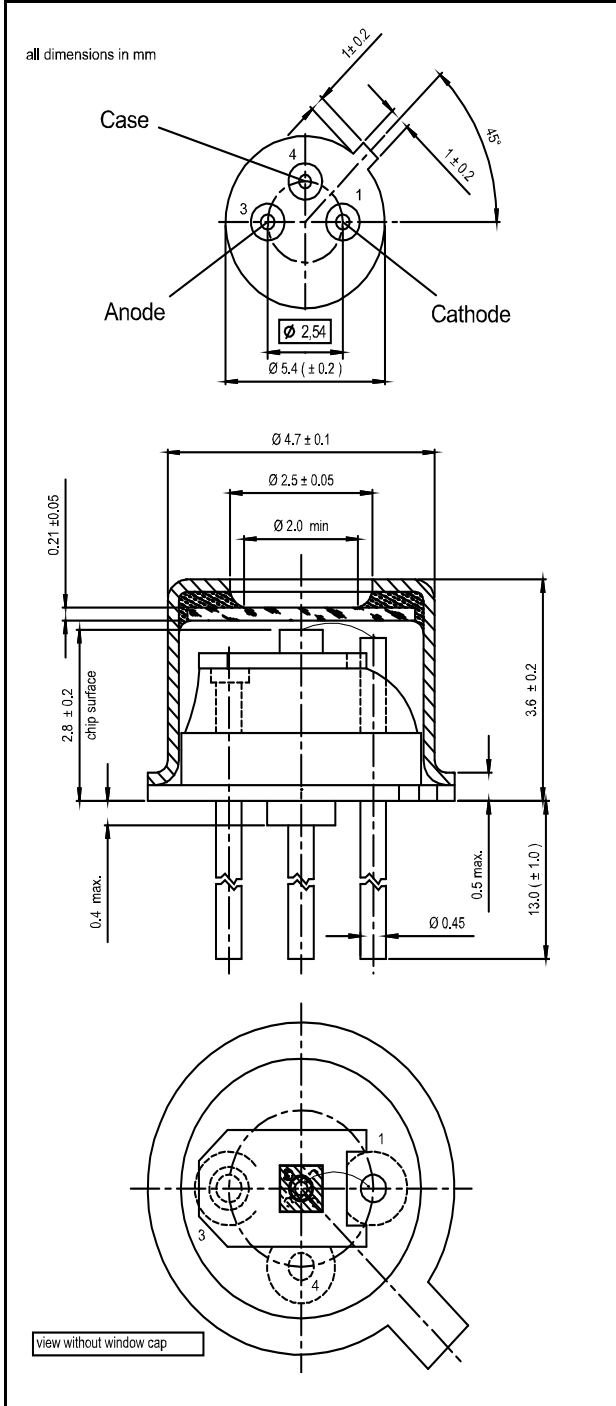
First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

USA:

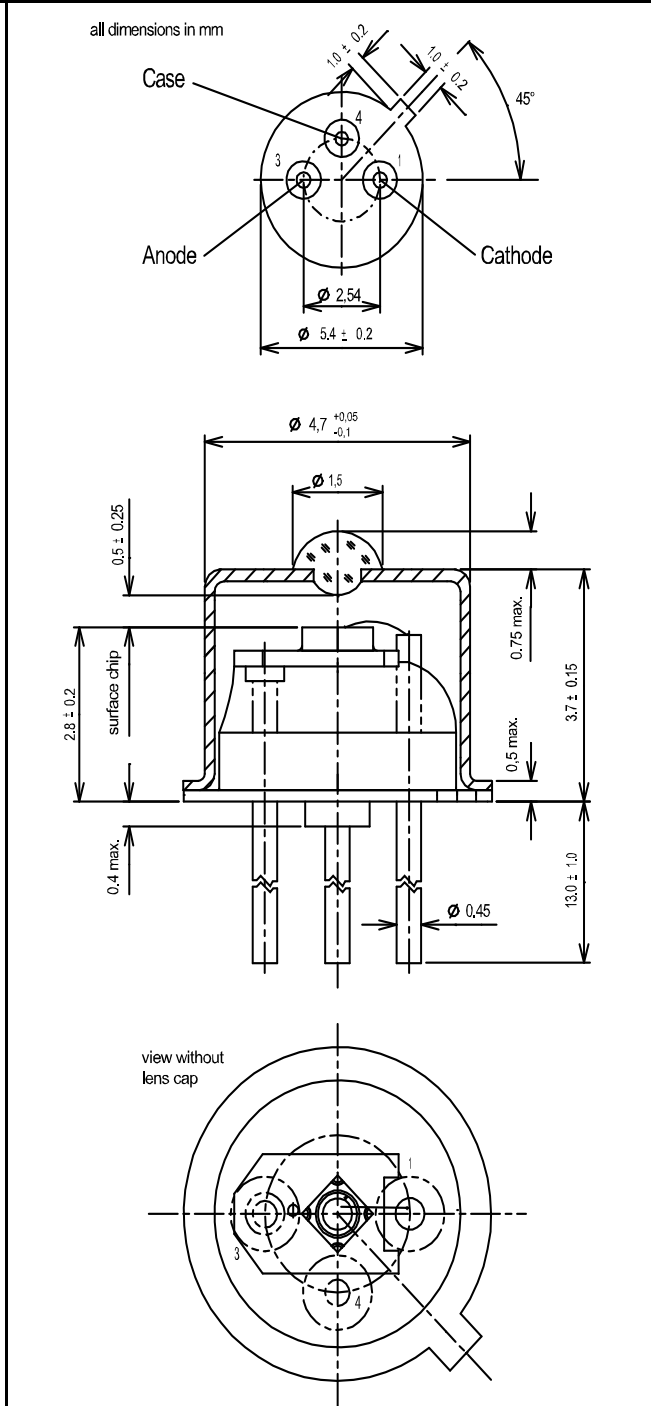


First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com

**Order # 500031, Package: TO52S1**



**Order # 500306, Package: TO52S2**



**European, International Sales:**



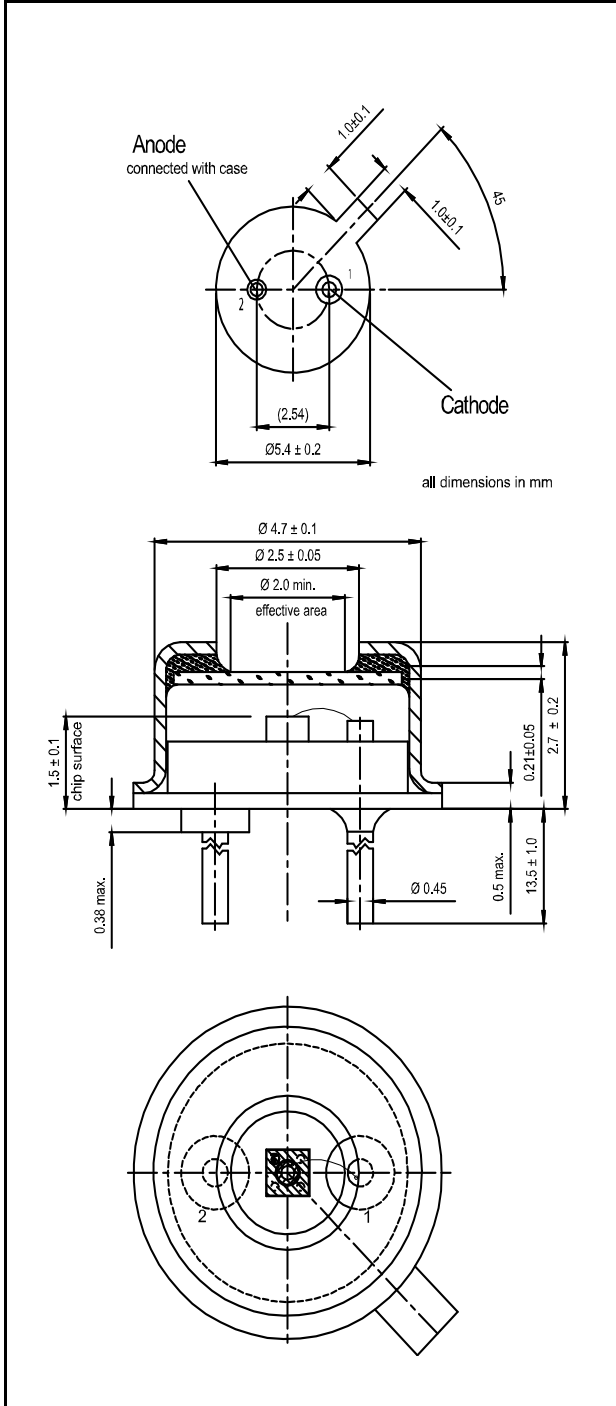
First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

**USA:**

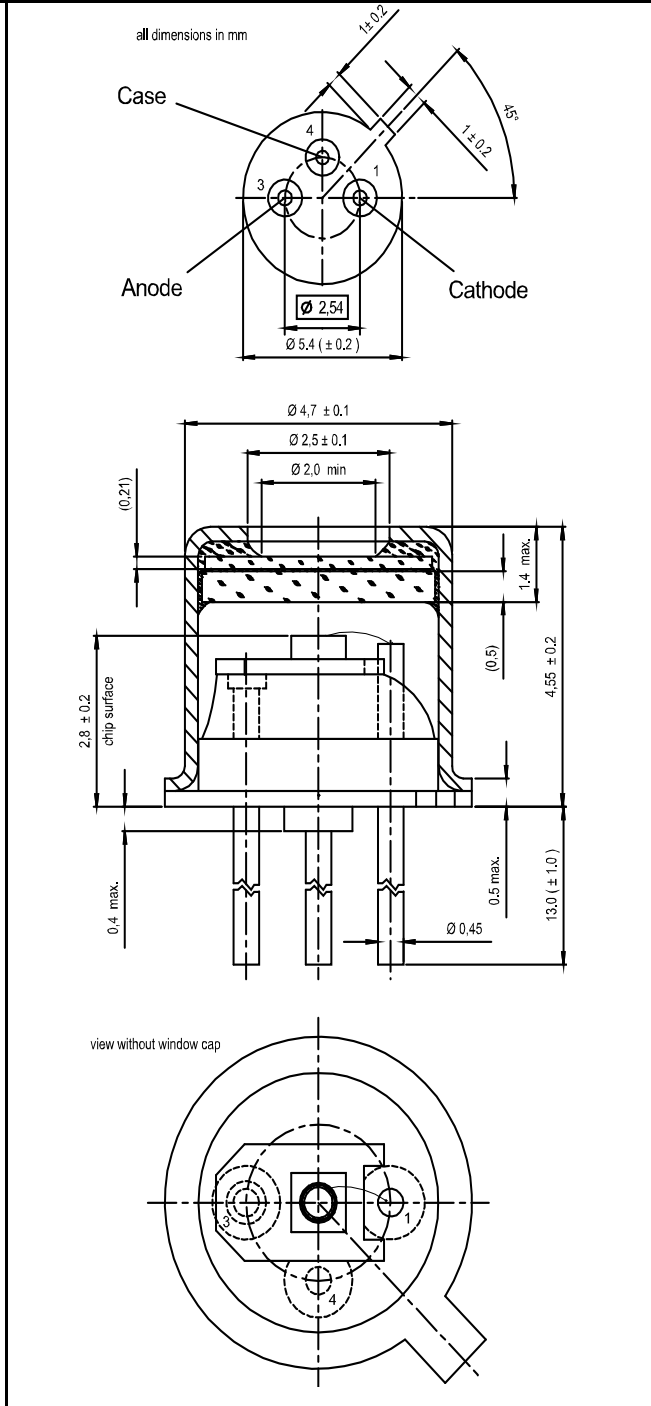


First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com

**Order # 500156, Package: TO52S3**



**Order # 500590, Package: TO52S1F2**



**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.

**European, International Sales:**



First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

**USA:**



First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com