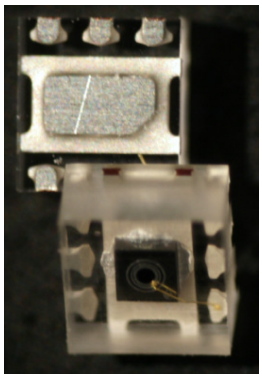
First Sensor

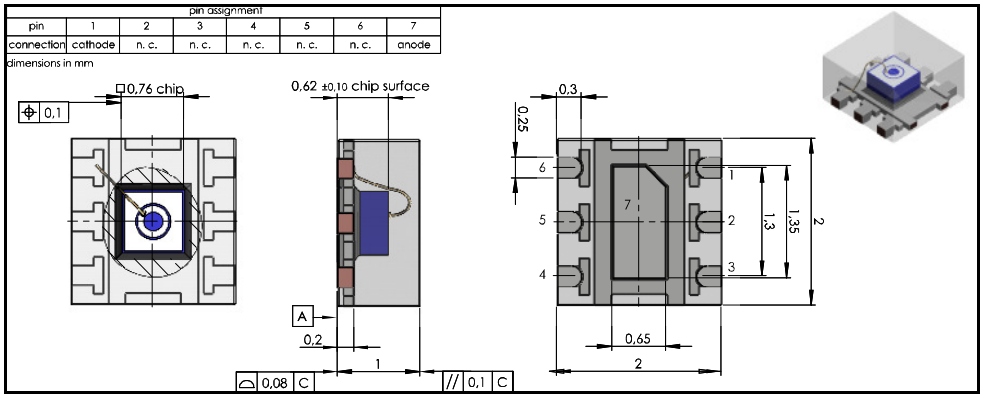
First Sensor APD Data Sheet

Part Description AD230-8 SMD

Order # 501496

Preliminary version 18-08-12





Features

- APD with 0.04 mm² active area
- 230 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 230 µm diameter. Clear QFN package with very compact design.Lead-free reflow solderable.

Application

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

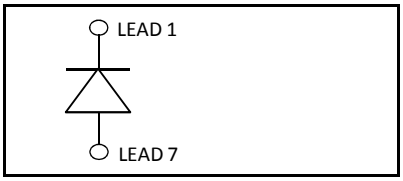
RoHS

2002/95/EC

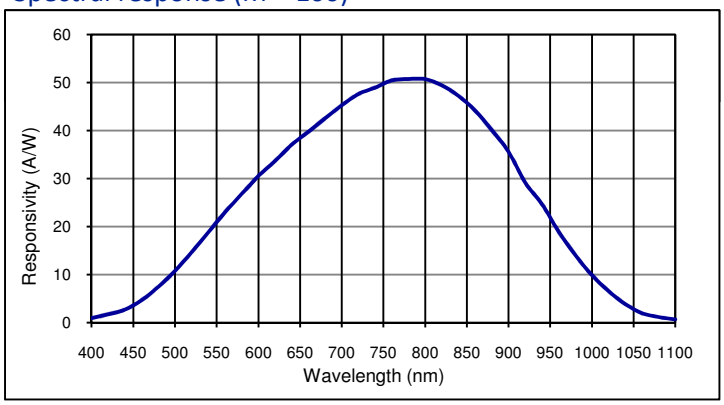
Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T_{STG}	Storage temp	-40	100	°C
T_{OP}	Operating temp	-25	85	°C
M_{max}	Gain (I_{P0} = 1 nA)	200		
I_{PEAK}	Peak DC current		0.25	mA

Schematic



Spectral response (M = 100)



Electro-optical characteristics @ 23°C

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Active area			diameter 230		µm
	Active area			0.04		mm²
I_D	Dark current	M = 100		0.3	1.0	nA
C	Capacitance	M = 100		1.2		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		0.45		V/K
	Excess noise factor	M = 100		2.2		
	Excess noise index	M = 100		0.2		

	Order number	V_{BR} range
*V_{BR}-classes	50149605	80 V-120 V
	50149606	120 V-160 V

European, International Sales:

First Sensor

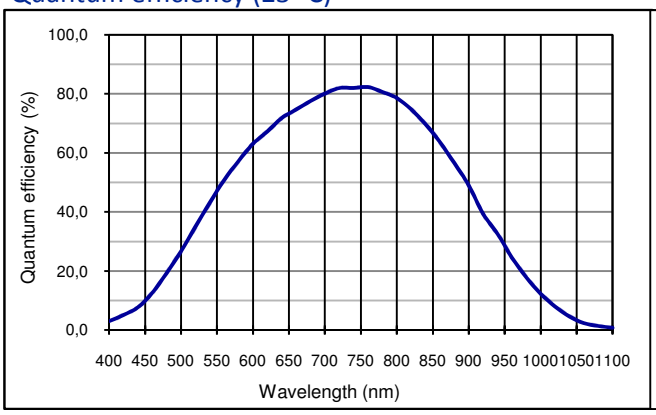
First Sensor AG
Peter-Behrens-Strasse 15
12459 Berlin
Germany
T +49 30 6399 2399
F +49 30 639923-752
sales.opto@first-sensor.com

USA:

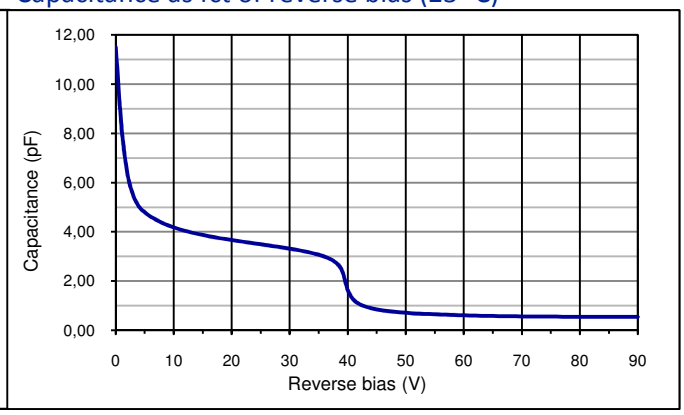
First Sensor

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

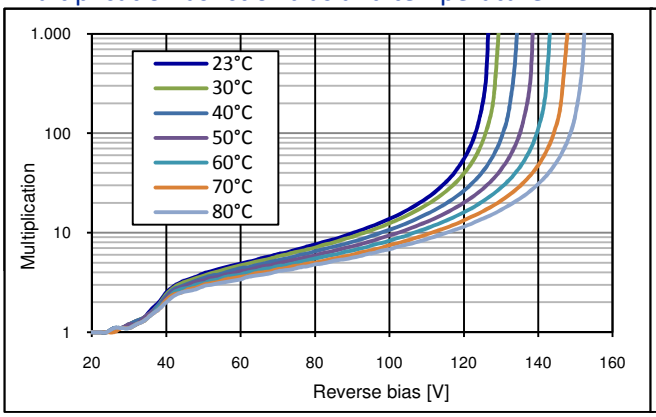
Quantum efficiency (23 °C)



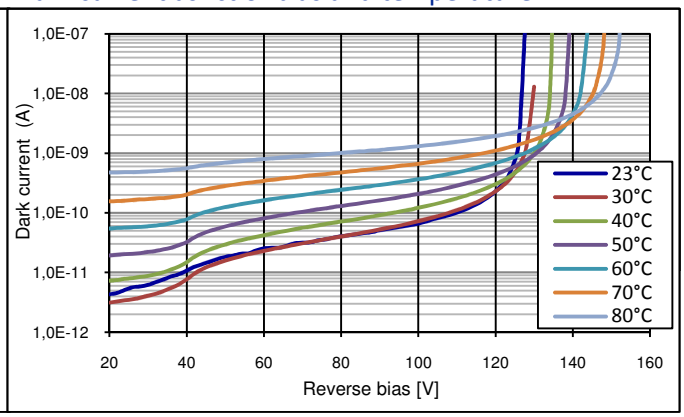
Capacitance as fct of reverse bias (23 °C)



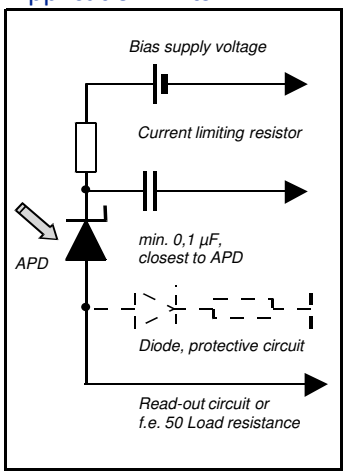
Multiplication as fct of bias and temperature



Dark current as fct of bias and temperature



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

Package dimension

tbd; large quantities on reel, small quantities in tray

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Germany
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USA:

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CA 91362 USA
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