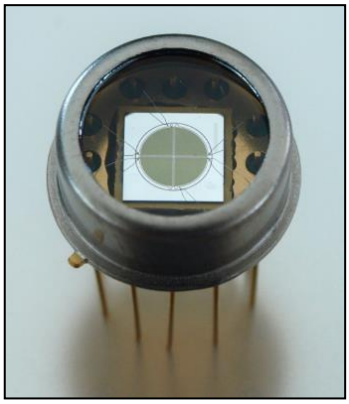
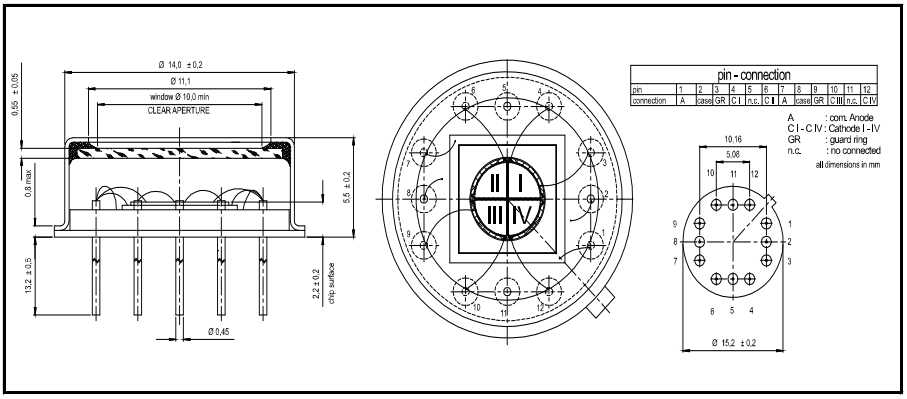
First Sensor





Features

- ø 4 mm total active area
- Segmented in 4 quadrants
- Slow multiplication curve
- QE > 80% @ 750 nm-910 nm
- Fast rise time, very low noise

Description

Segmented quadrant avalanche photodiode with enhanced NIR responsivity in hermetic TO type metal can. Very low dark current due to guard ring diode.

Application

- Pulsed 905nm laser detection
- Light source positioning
- Laser alignment

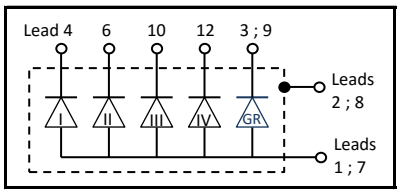
RoHS

20011/65/EU

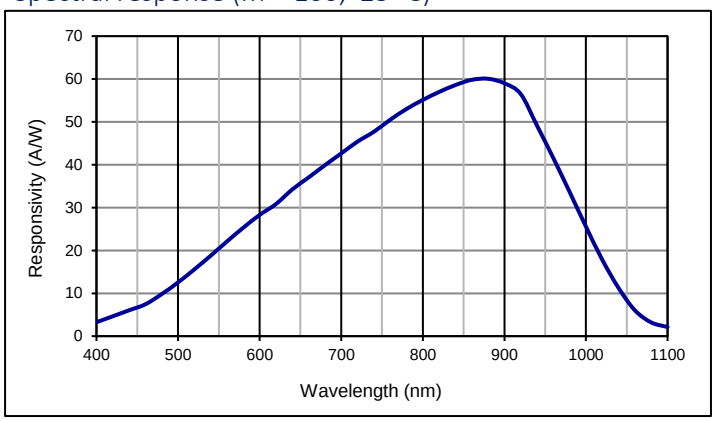
Absolute maximum ratings

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



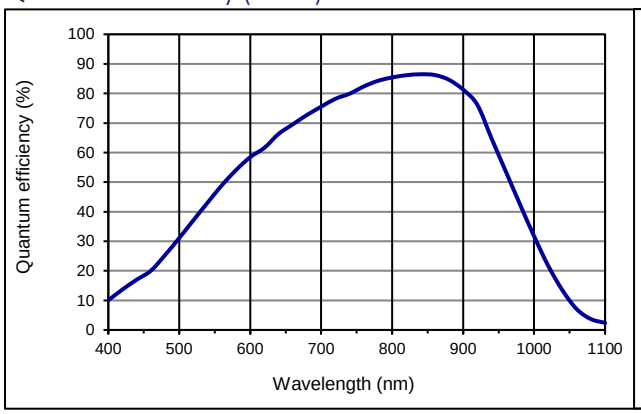
Spectral response (M = 100; 23 °C)



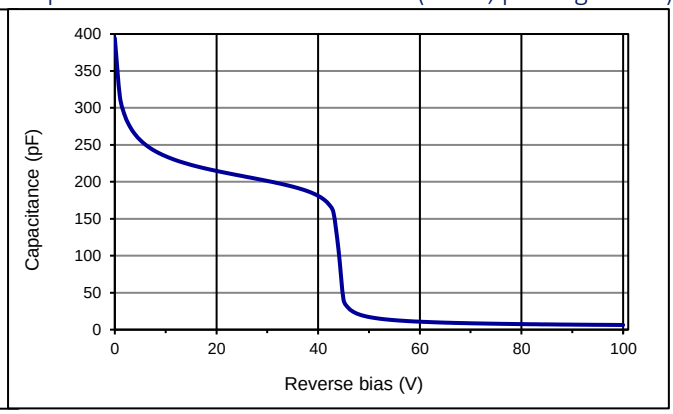
Electro-optical characteristics @ 23 °C

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	No of elements			4		
	Active area	segmented in 4 quadrants		ø 4000		µm
	Gap			110		µm
I_D	Dark current	M = 100; λ = 905 nm, per segement		4	30	nA
C	Capacitance	M = 100, per segment		7		pF
	Responsivity	M = 100; λ = 905 nm	52	58	60	A/W
t_R	Rise time	M = 100; λ = 905 nm; R_L = 50 Ω		2		ns
V_{BR}	Breakdown voltage	I_R = 2 µA	160		240	V
	Temperature coefficient	Change of V_{BR} with temperature	1.25		1.55	V/K
	Excess noise factor	M = 100		2.5		
	Photo current uniformity	M = 100		± 5		%
	Dark current uniformity	M = 100		± 5		%

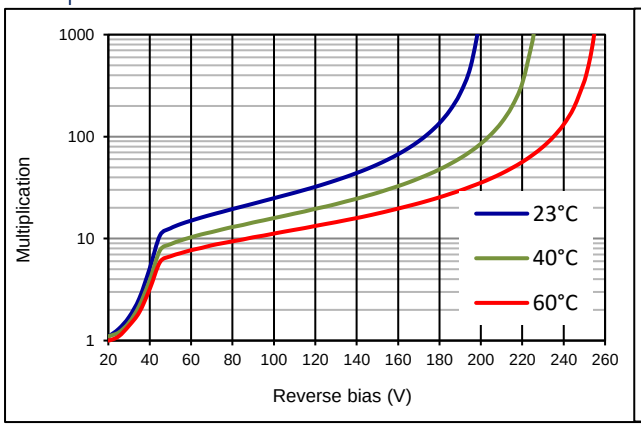
Quantum efficiency (23 °C)



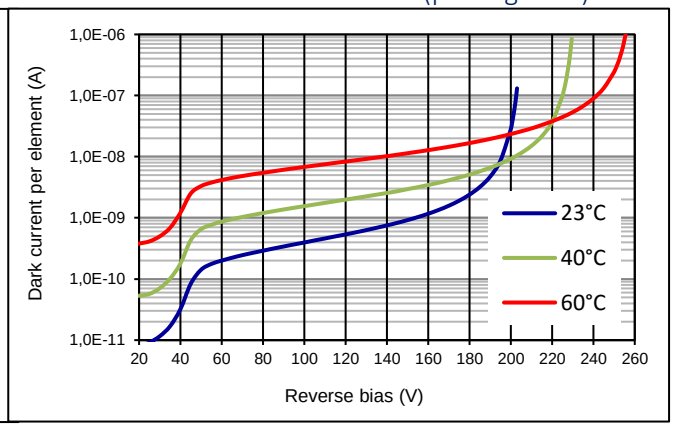
Capacitance as fct of reverse bias (23 °C, per segement)



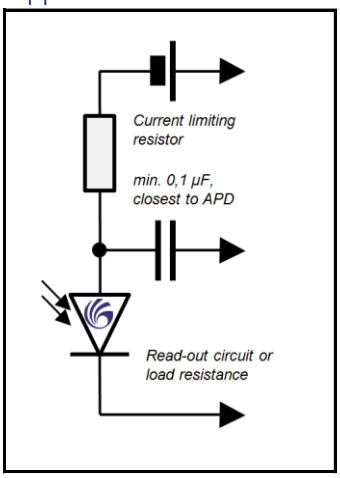
Multiplication as fct of reverse bias



Dark current as fct of reverse bias (per segment)

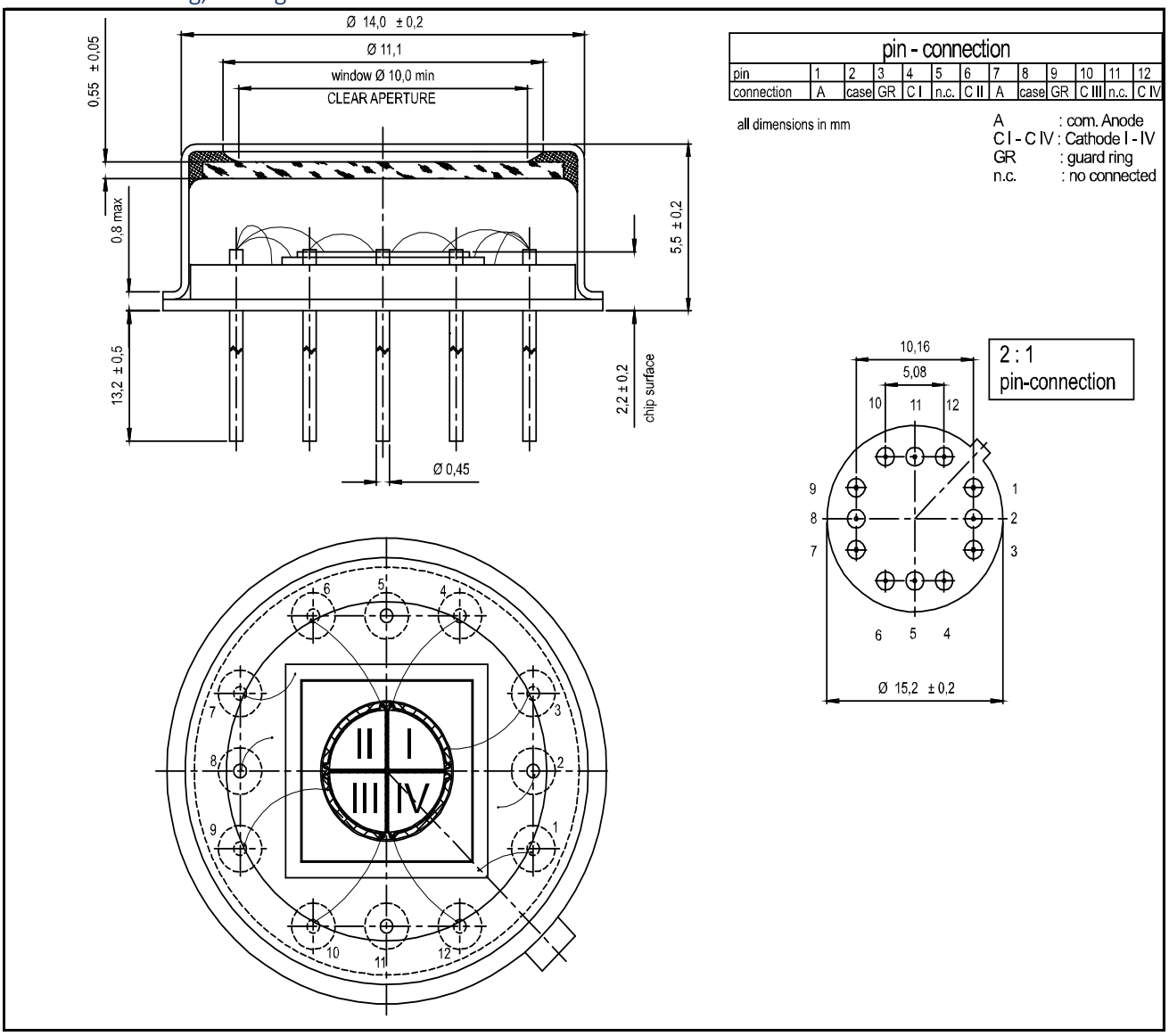


Application hints:



- Current should be limited by a protecting resistor or current limiting - IC inside the power supply
- Guard ring should be connected to ground
- 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" and application notes for APDs and APD-Arrays

Technical Drawing, Package: TO8Si



Package dimension

Small quantities: Chips on 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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

First Sensor:

3001214