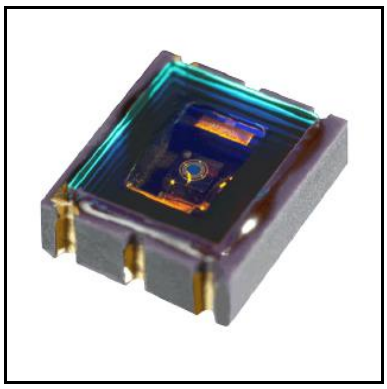
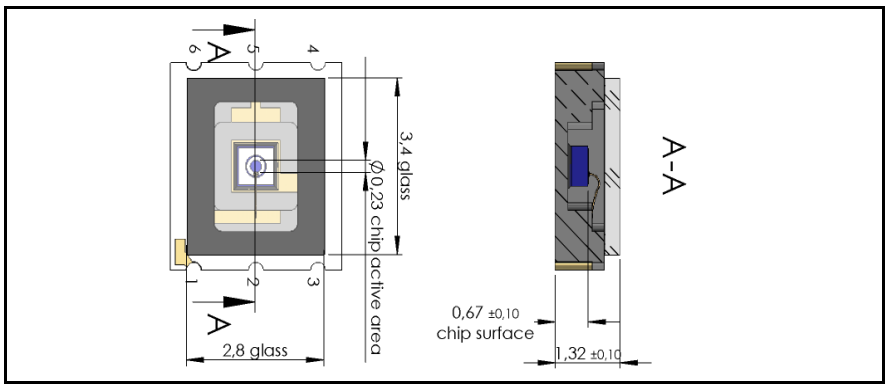
First Sensor





Features

- APD with 0.04 mm² active area
- 230 µm diameter active area
- Optimized for red light
- Fast rise time, low capacitance
- Slow gain curve

Description

Circular active area APD chip with 230µm diameter. Ceramic carrier type non hermetic SMD package with clear glass or filter window. Reflow solderable, MSL 1 classified. AR coating for 650 nm available.

Application

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

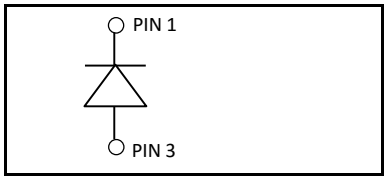
RoHS

2011/65/EU

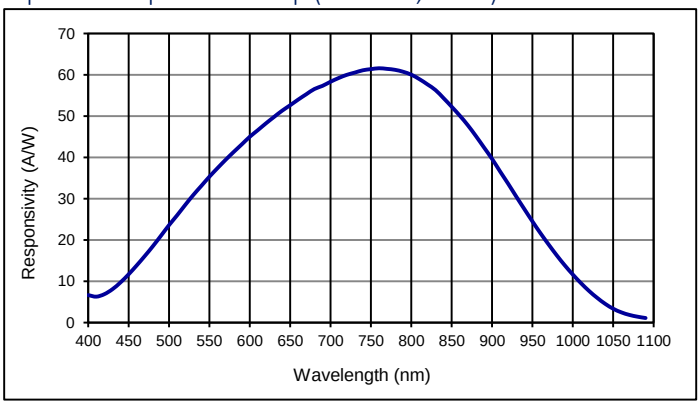
Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T_{STG}	Storage temp	-55	125	°C
T_{OP}	Operating temp	-40	100	°C
M_{max}	Gain (I_{P0} = 1 nA)	200		
I_{PEAK}	Peak DC current		0.25	mA

Schematic



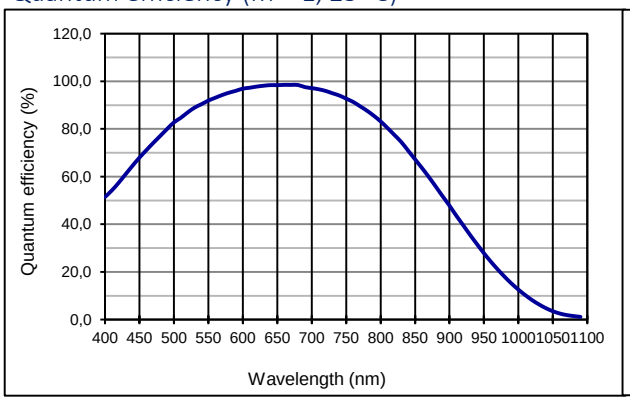
Spectral response on chip (M = 100, 23 °C)



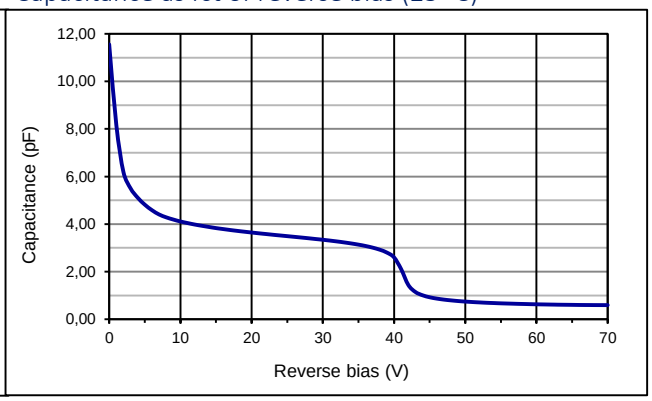
Electro-optical characteristics @ 23 °C

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Active area		diameter 230			µm
	Active area		0.04			mm²
I_D	Dark current	M = 100		0.2	0.5	nA
C	Capacitance	M = 100		0.6		pF
	Responsivity	M = 100; λ = 650 nm	48	53	54	A/W
t_R	Rise time	M = 100; λ = 650 nm; R_L = 50 Ω		0.18		ns
	Cut-off frequency	-3dB		2		GHz
V_{BR}	Breakdown voltage	I_R = 2 µA, other 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		

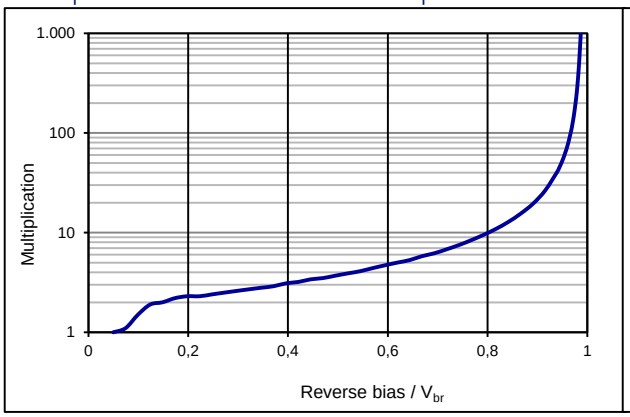
Quantum efficiency (M = 1, 23 °C)



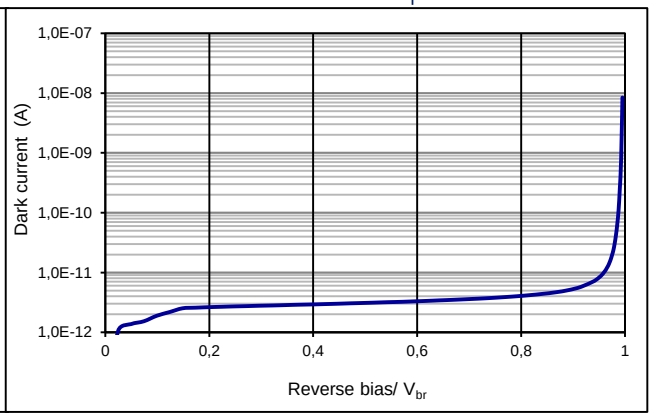
Capacitance as fct of reverse bias (23 °C)



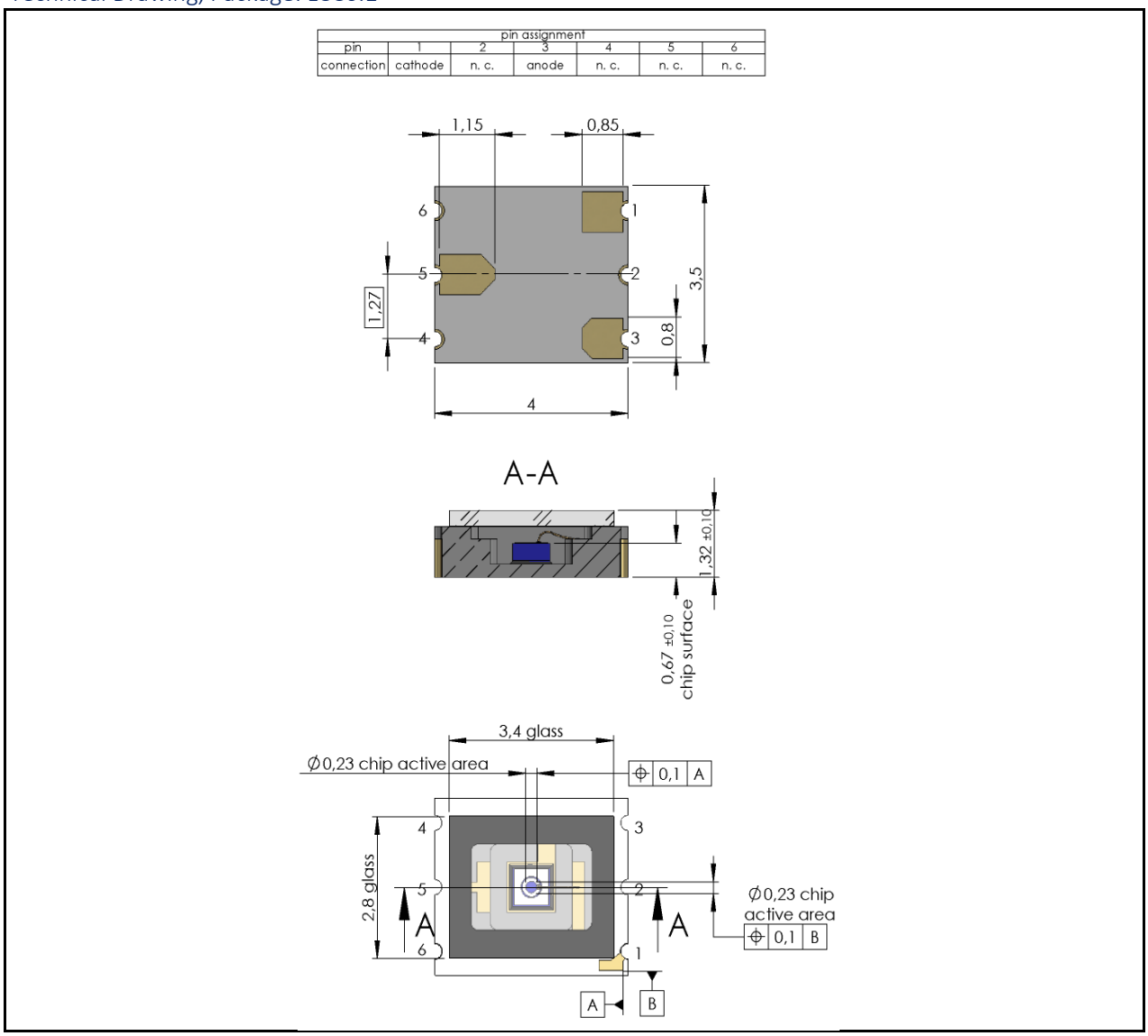
Multiplication as fct of bias and temperature



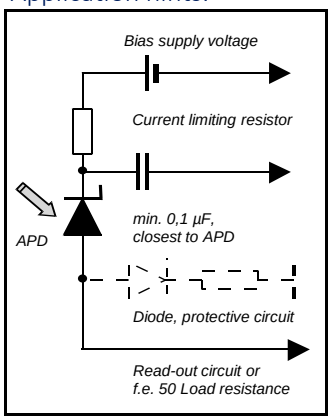
Dark current as fct of bias and temperature



Technical Drawing, Package: LCC6.1



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
- Optimum gain: 50-60
- This part is classified as MSL 1.
- For further questions please refer to document "Instructions for handling and processing"