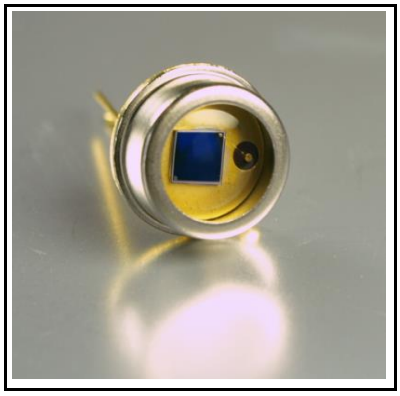
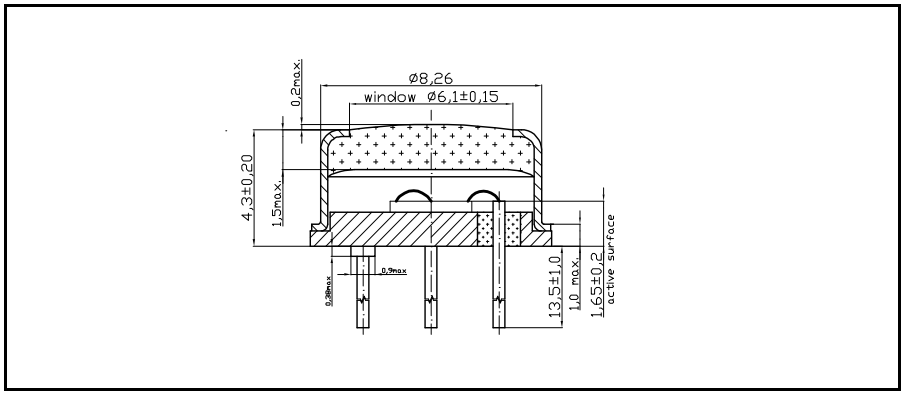
First Sensor





Features

- 7.56 mm² wavelength sensitive detector
- Two stacked p-n-junctions
- Operating range 450 - 950 nm

Description

Wavelength senisitive square active area PIN photodiode with 7.56 mm² active area. Metal can type hermetic TO5(i) package with clear glass window.

Application

- Precision photometry
- Analytical instruments
- Medical equipment
- Wavelength determination for monochromatic light

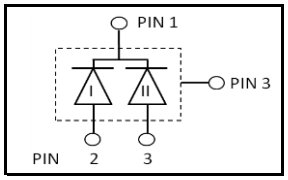
RoHS

2011/65/EU

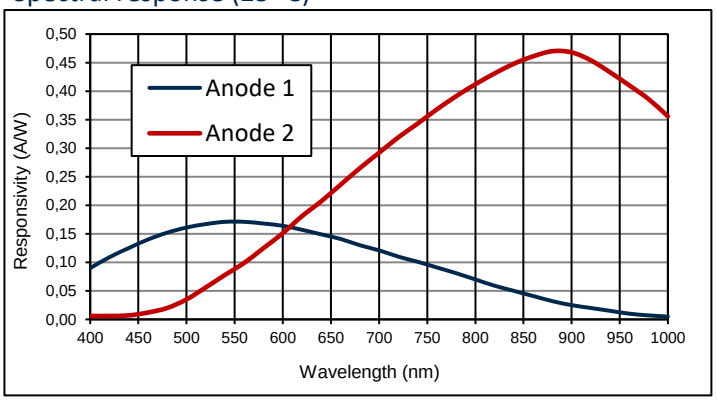
Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T_{STG}	Storage temp	-55	125	°C
T_{OP}	Operating temp	-40	100	°C
V_{max}	Max reverse voltage		5	V
I_{PEAK}	Peak DC current		10	mA

Schematic



Spectral response (23 °C)

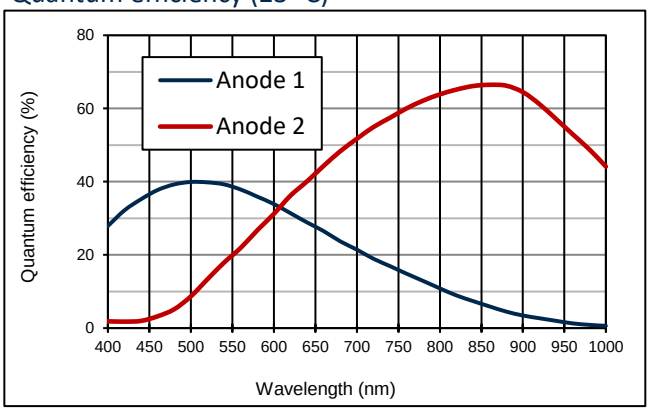


Electro-optical characteristics @ 23 °C

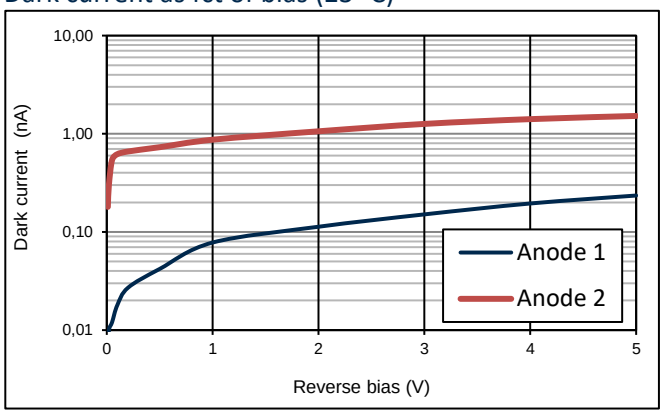
Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	Active area			2750 x 2750		µm
	Active area			7.56		mm²
I_D	Dark current	V_R = 5 V		10		nA
C	Capacitance	Diode 1; V_R = 0 V		1		nF
		Diode 2; V_R = 0 V		100		pF
	Responsivity	Diode 1; λ = 550 nm		0.2		A/W
		Diode 2; λ = 890 nm		0.45		A/W
t_R	Rise time	Diode 1; V_R = 0 V; λ = 850 nm; R_L = 1 kΩ		10		µs
		Diode 2; V_R = 0 V; λ = 850 nm; R_L = 1 kΩ		1		µs
	Shunt Resistance	Diode 1; V_R = 10 mV		2000		MΩ
		Diode 2; V_R = 10 mV		100		MΩ
V_{BR}	Breakdown voltage	I_R = 2 µA	5	10		V

-

Quantum efficiency (23 °C)



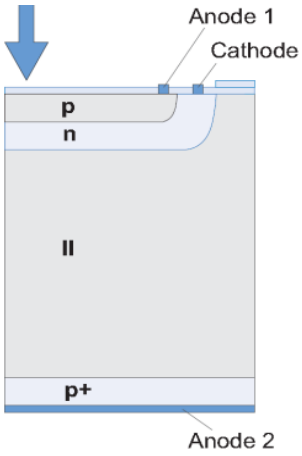
Dark current as fct of bias (23 °C)



Special charactertistics:

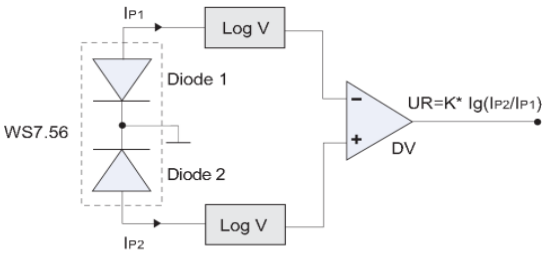
The WS7.56 wavelength sensor has two p-n junctions constructed vertically on a common silicon substrate.

The upper and lower diode have an enhanced blue and red response, respectively. Absorbed radiation between 450 and 900 nm generates two photocurrents proportional to the wavelength of the incident light. The quotient of the signals is independent of light level up to the saturation point. The wavelength of monochromatic light or the spectral density peak of polychromatic light can therefore be determined.



Application hints:

During photovoltaic operation (V_{rev}= 0 V) the quotient of photocurrents from anode 1 and anode 2 is constant for up to 150 µW irradiated power. This range can be increased to up to 3 mW when the reverse bias is raised. A recomended application circuit is shown to the right.



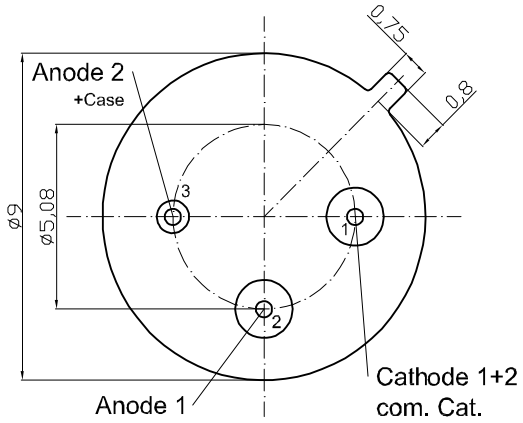
Log V	logarithmic amplifier
DV	difference amplifier
K	operating point factor

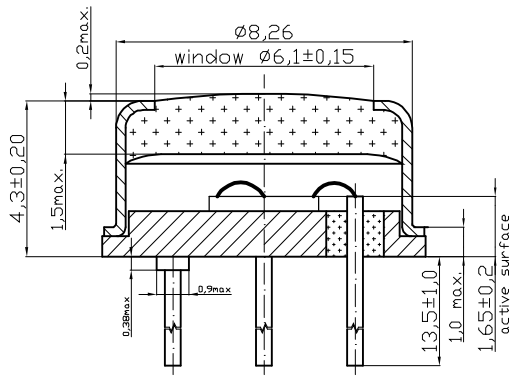
Handling precautions:

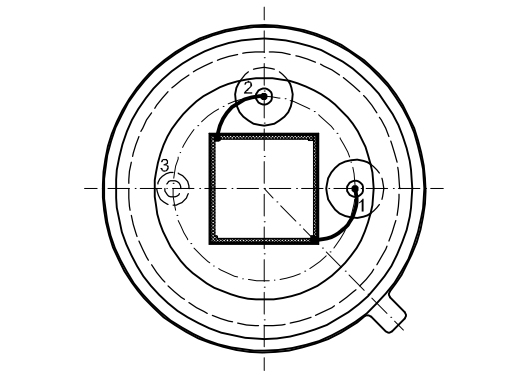
- Soldering temperature max. 260 °C for 10 s. The device must be protected against solder flux vapour.
- Minimum pin length is 2 mm.
- For ESD protection standard precautionary measures are sufficient.
- For further questions please refer to document "Instructions for handling and processing".

Order number 3001222, Package: TO5

pin connection				
PIn	1	2	3	
Connection	com Cathode	Anode 1	Anode 2+Case	







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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