

# Silicon Ion Implanted Alpha Particle Detectors

## Application

Ion Implanted Silicon Alpha Particle Detectors is a product for the precise alpha spectroscopy. The thin entrance window of the detector provides good energy resolution even in close location of the alpha radioactive source and also provides high efficiency registration of alpha particles.

## Features

- The detectors can operate without hermetization due to location of P-N junction inside of the detector crystal
- Contacts are formed using ion-implantation method and provide thin, well-formed junction
- Relatively thin dead layer (less than 500 Å)
- High solidity entrance window
- Possibility working in vacuum
- Possibility of annealing the detectors up to 100 °C
- The detectors may be equipped with BNC or MICRODOT connectors adapted for different customer needs.
- The detectors are manufactured with open window as well as with metalized window.

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# Specification

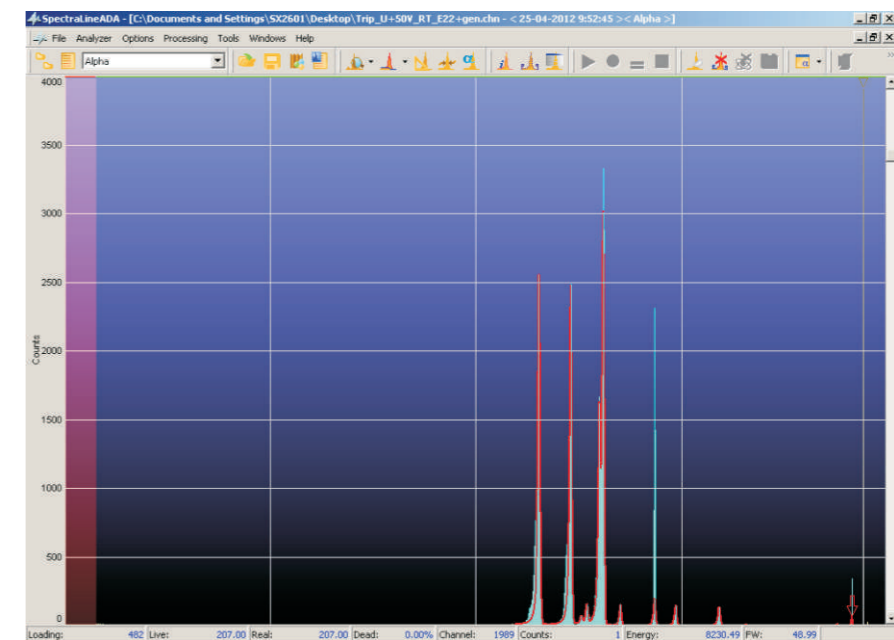
Detector area, mm <sup>2</sup>	Guaranteed energy resolution*, (keV)		Detector type	Thickness, μm	Detector bias voltage, V
	Alpha	Beta			
450	20	15	Open	400 +/- 30	50
	30	17	Metalized	400 +/- 30	
300 - 1200**			Open	400 +/- 30	50
			Metalized	400 +/- 30	

\* Shaping time – 1 μs.

\*\*The detectors of other sizes are available.

The Ion Implanted Silicon Alpha Particle Detectors with metalized coating of entrance window can be used as a part of radioactive aerosol monitors. This is special version of the detectors having following features:

- Allows the detector operation in ambient light
- The metal coating provides mechanical and chemical protection. The thickness of entrance window is less than 2 μm
- Opportunity of operation at bias voltage - from +15 to +24 V.



<sup>238</sup>Pu, <sup>239</sup>Pu, <sup>233</sup>U spectrum

Alpha Spectrometers include:

- Vacuum chamber with vacuum control system,
- Preamplifier,
- Amplifier,
- Discriminator,
- High voltage supply,
- Test-generator
- Digital multichannel analyzer.

Alpha spectrometer same as vacuum control are operated by software which also allows to process acquired spectra and analyze measurement results.