

# PRODUCT BRIEF

# LEAD SELENIDE INFRARED (PbSe) DETECTOR ARRAY (1 - 5 microns)

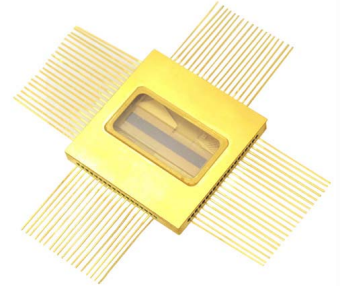
## Advantages

- New Automated Chemical Processing (ACP) produces higher yield at lower cost.
- Extremely high reliability under extreme conditions.
- Long shelf life.
- Hermetically sealed package to completely eliminate humidity attack on detection area.
- Wide range of electrical characteristics available.
- Wide range of sizes available.
- Immediate delivery.
- 100% tested.
- State of the art microelectronics fabrication capability.
- Specializing in high density arrays. 64/128 element, etc.

## Overview

Agiltron manufactures state-of-the-art lead sensitivity Selenide devices (PbSe) for room temperature operation as well as thermoelectrically cooled operation for spectroscopy from 1 to 5 microns. The linear arrays are with 64/128/256 element. These devices can be supplied with integrated optical filters, pre-amplifiers or multiplexed amplifiers for applications. Thermoelectronic cooler and thermistor are built in for temperature stabilization.

Listed below is typical 64 element electrical characteristics of PbSe Array of Agiltron Automated Chemical Processing (ACP) detectors.



Parameter	Typical Performance
Operating Wavelength Range:	1 to 5 Microns (PbSe)
Operating Temperature:	-4 °C (TEC stabilized)
Number of Elements:	64 detector elements
Element Size:	Pixel width 230 microns, pixel height 2570 microns, and pixel pitch 320 microns
Peak Detectivity:	$D^*$ : $1 \times 10^{10}$ (cm/Hz <sup>0.5</sup> /W <sup>-1</sup> )
Response Uniformity (pixel-to-pixel):	±15% of array signal mean

## Mechanical Features

PbSe Detector array is typically manufactured on quartz substrate. Devices can be supplied integrated with optical condenser elements, thermoelectric (TE) coolers, and processing electronics, all in a miniature package.

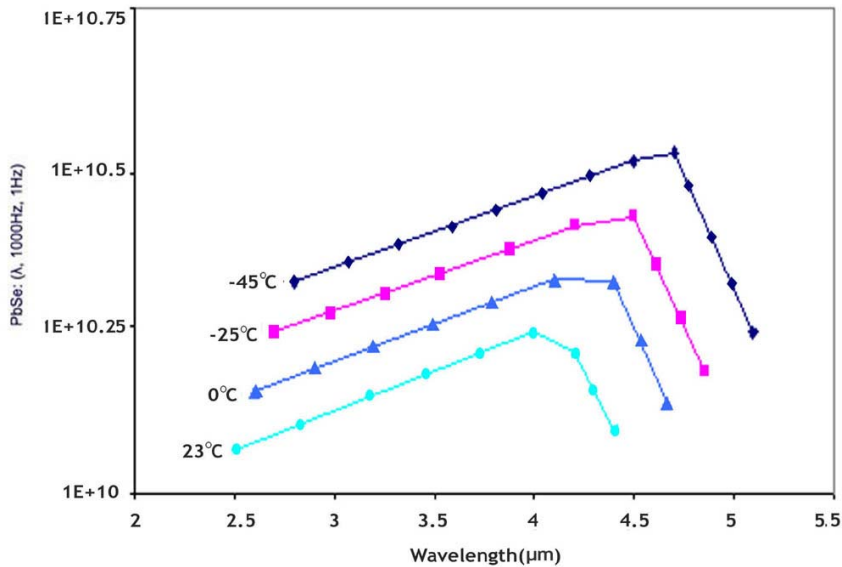
## Aging Characteristics

All stock detector arrays undergo a minimum four week aging period. Experience with detectors manufactured by the advanced process, including the above aging period, has shown the electrical characteristics to be stable to within 10% for over a year.



## Response of Detectors

The typical response for PbSe operates in 1 to 5 micron spectral region with time constants below 2  $\mu$ sec. TE-cooled packages are available with a response in the 1 to 5 micron region with increased  $D^*$ . Typical spectral response of standard PbSe detector is shown below.



## Ordering Information

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	Material Type	Elements	Type	Element size: width×height ( $\mu$ m)	Pixel pitch ( $\mu$ m)
	1=Lead Selenide (PbSe) 3=High Performance Lead Selenide (HP-PbSe)	042=42 elements 064=64 elements 128=128 elements 256=256 elements	00=Special 10=Packaged 11=1 stage cooler IP=Integrated preamp	Example: 230 $\mu$ m×2570 $\mu$ m=0230x2570	Example: 320 $\mu$ m=0320



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