

## PbS Detector (1-3Mm) LEAD SULFIDE INFRARED DETECTORS (1 - 3 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.
- Compact integrated filter/detector combinations.
- 100% tested.
- State of the art microelectronics fabrication capability.
- Specializing in high density arrays.

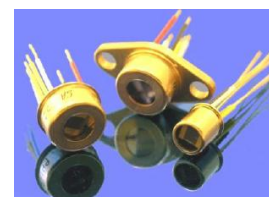


### Overview

Sensarrayinfrared manufactures state-of-the-art lead sulfide devices (PbS) for room temperature operation as well as enhanced sensitivity thermoelectrically cooled operation. These devices can be supplied with integrated optical filters, pre-amplifiers or multiplexed amplifiers for high density arrays.

Listed below are typical room temperature electrical characteristics of Automated Chemical Processing (ACP) PbS detectors.

PbS Type	Resistance (MΩ)	Time Constant (μ sec)	D* (λ, 200, 1) x 10 <sup>11</sup>	D* (λ, 620, 1) x 10 <sup>11</sup>	D* (λ, 2000, 1) x 10 <sup>11</sup>
1x1mm	0.5 – 2.0	200~400	0.5 – 0.6	0.7 – 1.0	0.6 – 0.8



### Mechanical Features

Detectors are typically manufactured on 0.020" - 0.030" quartz substrates. Devices can be supplied integrated with optical condenser elements, thermoelectric (TE) coolers, and processing electronics, all in a miniature package.

### Aging Characteristics

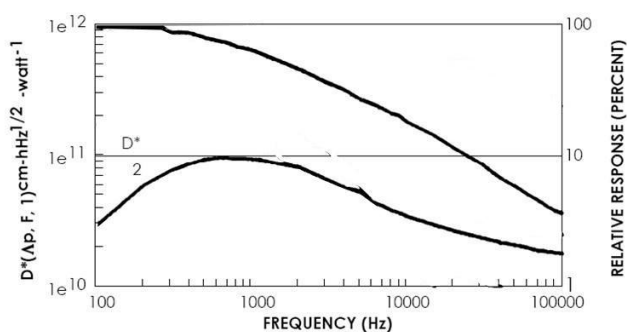
All stock detectors undergo a minimum four week aging period. Experience with detectors manufactured by the proprietary process, including the above aging period, has shown the electrical characteristics to be stable to within 10% for over a year.

## Available Stock Sizes for ACP-F PbS Detectors

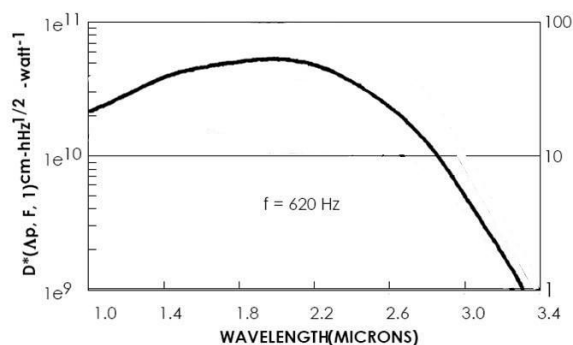
Size Code	Types 1A, 2, 3 Active Area LxW (inches)	Substrate Size (inches)	Size Code	Type 1B Active Area L x W (inches)	Substrate Size (inches)
PbS 1	.040 x .040	.250 x .250	PbS 1.1B	.040 x .040	.250 x .250
PbS 2.2	.080 x .080	.250 x .250	PbS 5.5B	.200 x .200	.350 x .350
PbS 3.3	.120 x .120	.250 x .250	PbS 11	.400 x .400	.500 x .500
PbS 4.4	.160 x .160	.250 x .250	Note: Above detectors will be shipped from stock two weeks ARO.		
PbS 5.5	.200 x .200	.350 x .350			
PbS 6.6	.240 x .240	.350 x .350			
PbS 8.8	.320 x .320	.450 x .450			
PbS 10.10	.400 x .400	.500 x .500			

## Response of PbS Detectors

The performance curves below show the spectral and temporal characteristics for uncooled Series PbS detectors. Long wavelength cutoff varies from 2.6 $\mu$  to 2.9 $\mu$

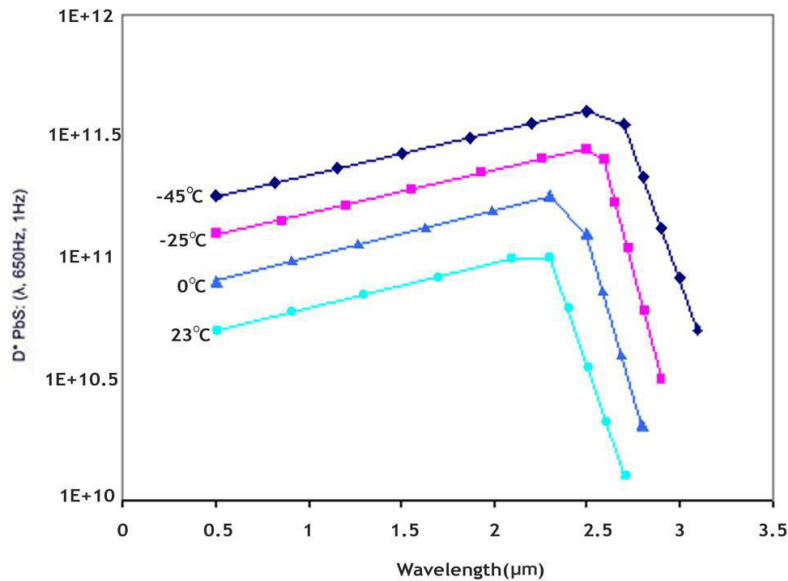


Peak  $D^*$  vs. Frequency for Nominal PbS Detectors as  
Indicative of Figure of Merit Variations Available



Typical Spectral Response Shows How Devices  
Can Be Tailored to User Spectral Requirements.

The typical response for PbS operates in 0.5 to 3 micron spectral region with time constants below 2  $\mu$ sec. TE-cooled packages are available with a response in the 0.5 to 3 micron region with increased  $D^*$ . Typical spectral response of standard PbS detector is shown below.



## Ordering Information : PBAD-A-B-C-D-E-F-G

### Ambient Detector

PBAD	A	B	C	D	E	F	G
	Material Type	Type	Package	Element Size	Window	AR Coated	Temperature Sensor
Ambient Detector	2=Lead Sulfide (PbS)	00=Flat Plate 01=Packaged IP=Integrated preamp.	0=special 1=TO-18 5=TO-5 7=TO-37 8=TO-8 9=TO-39	0=Special 1=1x1mm 2=2x2mm 3=3x3mm 4=4x4mm 5=5x5mm 6=6x6mm	0=Special 1=Spectral Filter 2=Quartz 3=Sapphire 4=Germanium 5=Silicon	0=No 1=Yes	00=No Thermistor TH=Thermistor TC=Thermist Calibrated

## Ordering Information : PBCD-A-B-C-D-E-F-G

### Cooled Detector

PBCD	A	B	C	D	E	F	G
	Material Type	Type	Package	Element Size	Window	AR Coated	Temperature Sensor
T.E.Cooled Detector	2=Lead Sulfide (PbS)	00=Special 01=1 stage 02=2 stage 03=3 stage IP=Integrated preamp.	0=special 5=TO-5 7=TO-37 8=TO-8 9=TO-39	0=Special 1=1x1mm 2=2x2mm 3=3x3mm 4=4x4mm 5=5x5mm 6=6x6mm	0=Special 1=Spectral Filter 2=Quartz 3=Sapphire 4=Germanium 5=Silicon	0=No 1=Yes	00=No Thermistor TH=Thermistor TC=Thermist Calibrated