

LEAD SULFIDE INFRARED DETECTORS 1.0 - 3.0 microns

SensArray 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 SensArray Automated Chemical Processing (ACP) PbS detectors.

PbS Type	Resistance (M Ω)	Time Constant (μ sec)	D* (λ , 200, 1) x 10 ¹¹	D* (λ , 620, 1) x 10 ¹¹	D* (λ , 2000, 1) x 10 ¹¹
1A	3.0 - 10.0	>400	1.5 - 2.0	1.1 - 1.5	6.0 - 8.0
1B	0.5 - 2.0†	>400	1.5 - 2.0	1.1 - 1.5	6.0 - 8.0
2	0.5 - 2.0	50-400	0.5 - 0.6	0.7 - 1.0	6.0 - 8.0
3	0.5 - 2.0	<50	0.3 - 0.4	0.4 - 0.5	4.0 - 6.0

† Using fine grid electrodes

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.

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.

Infrared Sensing & Imaging

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Aging Characteristics:

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

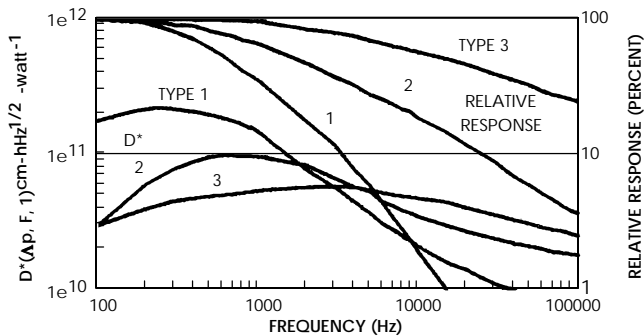
Available Stock Sizes for SensArray Type ACP-F PbS Detectors

Types 1A, 2, 3			Type 1B		
Size Code	Active Area L x W (inches)	Substrate Size (inches)	Size Code	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			
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			

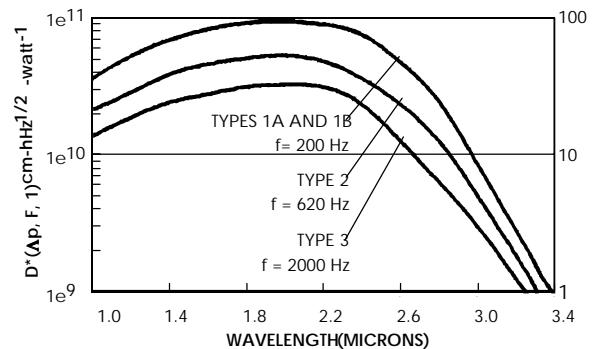
NOTE: Above detectors will be shipped from stock two weeks ARO.

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 μ m to 2.9 μ m depending on time constant.



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



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

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