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

Agiltron 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 Agiltron Automated Chemical Processing (ACP) PbS detectors.

<table>
<thead>
<tr>
<th>Element Size</th>
<th>Resistance (MΩ)</th>
<th>Time Constant (μ sec)</th>
<th>$D^*$ ($\lambda$, 200, 1) x 10$^{11}$ (cm•Hz$^{1/2}$•W$^{-1}$)</th>
<th>$D^*$ ($\lambda$, 620, 1) x 10$^{11}$ (cm•Hz$^{1/2}$•W$^{-1}$)</th>
<th>$D^*$ ($\lambda$, 2000, 1) x 10$^{11}$ (cm•Hz$^{1/2}$•W$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1x1mm</td>
<td>0.5 - 2.0</td>
<td>200-400</td>
<td>0.5 - 0.6</td>
<td>0.7 - 1.0</td>
<td>0.6 - 0.8</td>
</tr>
</tbody>
</table>

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.
Response of PbS Detectors

The typical response for PbS operates in 0.5 to 3 micron spectral region with time constants below 400 μsec. 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.

![Graph showing spectral response of PbS detectors](image_url)

Ordering Information

<table>
<thead>
<tr>
<th>PBAD-</th>
<th>Material Type</th>
<th>Type</th>
<th>Package</th>
<th>Element size</th>
<th>Window</th>
<th>AR Coated</th>
<th>Temperature Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2=Lead Sulfide (PbS)</td>
<td>00=Flat Plate</td>
<td>0=Special</td>
<td>0=Special</td>
<td>0=No</td>
<td>0=No Themistor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01=Packaged</td>
<td>1=TO-18</td>
<td>1=1x1mm</td>
<td>1=Yes</td>
<td></td>
<td>TH=Thermistor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IP=Integrated</td>
<td>5=TO-5</td>
<td>2=2x2mm</td>
<td></td>
<td></td>
<td>TC=Thermistor Calibrated</td>
<td></td>
</tr>
</tbody>
</table>