INDIUM ANTIMONIDE
1.0 - 5.5 MICRONS

The IS-series detectors are high performance Indium Antimonide photodiodes sensitive over the 1.0 to 5.5 micron spectral region. Operated at cryogenic temperatures, these units are background noise limited. They are available in a wide variety of element sizes and configurations. These units find applications in LIDAR instrumentation, temperature measurements, thermal imaging, IR-fiber based sensors, IR instrumentation (such as FT-IR spectroscopy) and general laboratory experimentation.

♦ **STANDARD ACTIVE AREAS:**

0.1 mm x 0.1 mm	1.0 mm dia.	4.0 mm dia.	0.25 mm x 2.0 mm
0.25 mm x 0.25mm	1.5 mm dia.	5.0 mm dia.	0.25 mm x 5.0 mm
0.25 mm dia.	2.0 mm dia.	7.0 mm dia.	0.5 mm x 2.0 mm
0.50 mm dia.	3.0 mm dia.	10.0 mm dia.	1.0 mm x 5.0 mm

♦ **CUSTOM ACTIVE AREAS:**
Fast turn-around of custom sizes and multi-element arrays is also available. Consult the factory for details.

♦ **PACKAGING:**
IS-series detectors are packaged in all EOS standard dewars. In addition, custom sizes, glass dewars, and special JT and closed-cycle cooler packages are available. Sapphire is the standard window material, with AR-coated silicon or germanium also available. All units can be provided with integral preamplifiers, cold filters, cold FOV apertures, and lens assemblies.

♦ **PERFORMANCE:**
The sensitivity of the IS-series detectors is typically limited by the shot noise from the background-generated photocurrent. The background radiation reaching the detector can be reduced by installing cold apertures and/or filters in front of the detector element. The peak D^* of the detector elements can be improved from a nominal value of 1×10^{11} (no background reduction) to greater than 1×10^{12} (narrow FOV and narrow bandpass cold filter).

♦ **TYPICAL OPERATING CHARACTERISTICS:**
For a standard detector packaged with a 60 degree FOV aperture:

D^*(Peak) ($cm \cdot Hz^{1/2} \cdot W^{-1}$)	Responsivity (A/W)	Short Circuit Current ($\mu A/mm^2$)	Open Circuit Voltage (mV)	Shunt Resistance ($M\Omega \cdot mm^2$)	Shunt Capacitance (pF/mm^2)
1.5×10^{11}	≥ 2.5	10	110	1	400

ELECTRO-OPTICAL SYSTEMS, INC.
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LEAD SALT
1 - 3 & 1 - 5 MICRONS

EOS offers room temperature and thermoelectrically cooled PbS and PbSe photoconductor detectors for operation in the 1-3 and 1-5 micron spectral ranges. The units have state-of-the-art sensitivity and are supported by accessories such as optical filters (longpass and bandpass), integral preamplifiers, temperature controllers and IR source assemblies. These units find application in industrial control systems, gas analyzers, thermal sensors, and general IR instrumentation.

Typical Specifications @ 22 °C

Detector Type	Active Area (mm SQE)	$D^*(\lambda_{pk})$ $(cm \cdot Hz^{1/2} \cdot W^{-1})$	Time Constant (μS)	Dark Resistance ($M\Omega/\square$)	Responsivity $@\lambda_{PEAK}$ (V/W)	Bias (V/mm)	Package	Temp (°C)
PbS	1, 2, 3, 5	1×10^{11}	250	1	4×10^5/mm	50	TO5,TO8	22
PbS		1.5×10^{11}	750	2.5	6×10^5/mm		TO5,TO8[2]	-20
PbS		3.5×10^{11}	1050	3.75	12×10^5/mm		TO8,T5[3]	-40
PbSe		2.5×10^9	2	0.8	1×10^4/mm		TO5	22
PbSe		9×10^9	9	1.6	1.3×10^4/mm		TO5[2]	-20
PbSe		1.4×10^{10}	15	3	2.2×10^4/mm		TO8,T5[3]	-40

Note: 1. Detector specifications at a bias voltage of 50 V/mm, and a 1 MΩ load resistor.

2. Package includes one stage TE cooler with thermistor, and optional heat sink.

3. Package includes two stage TE cooler with thermistor, and optional heat sink.

4. Consult factory for larger sizes, lower operating temperatures, or faster frequency response.

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