

InSb

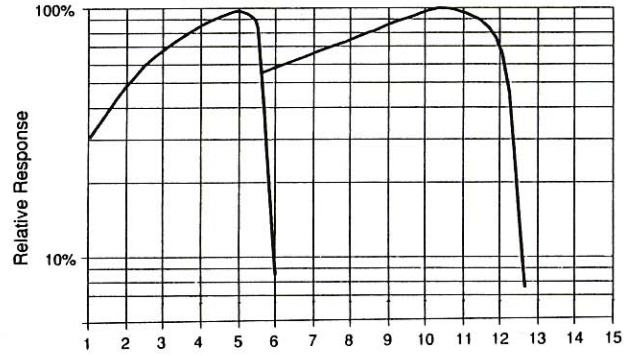
The photovoltaic Indium Antimonide detectors offered by InfraRed Associates, Inc. are p-n junctions formed by mesa techniques using single crystal material. This process yields the highest quality photodiodes which exhibit excellent electro-optical performance in the 1 μ m to 5.5 μ m wavelength region. These diodes are background limited (BLIP) detectors and their performance can be enhanced by spatial (cooled FOV stops) or spectral (cooled interference filters) reduction of the background.

The photovoltaic effect is the generation of a potential across the p-n junction when radiation of the proper wavelength is incident upon it. When the photon flux irradiates the junction, electron-hole pairs are formed if the photon energy exceeds the forbidden gap energy. The field sweeps the electrons from the p region to the n region, and holes from the n region to the p region. This process makes the p region positive and the n region negative, and will produce current flow in an external circuit. An equivalent circuit of the InSb detector is represented on the adjacent sheet. This consists of both a signal and noise current generator in parallel with a resistive and capacitive term.

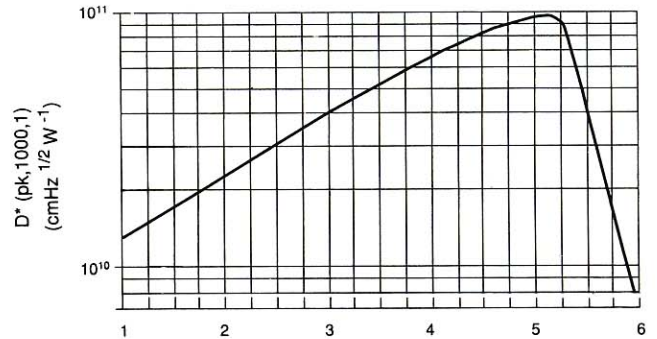
When background radiation shifts the operating curve by generating a constant output in the active element, the detector should be reversed-biased to bring it back to the optimum operating point: zero voltage. This can be achieved when operating with a matched preamplifier such as a IAP-1001. The detector preamplifier system operates in the detector noise limited mode. A dual output power supply is required.

Custom configurations and arrays designed to customer specifications are available. In addition, custom metal and glass dewars designed to function with various cooling techniques can be supplied.

DUAL SANDWICH InSb and MCT

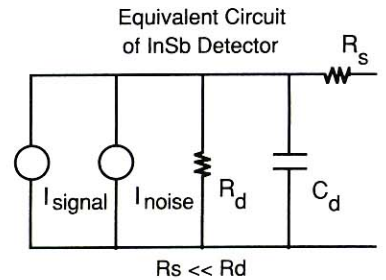
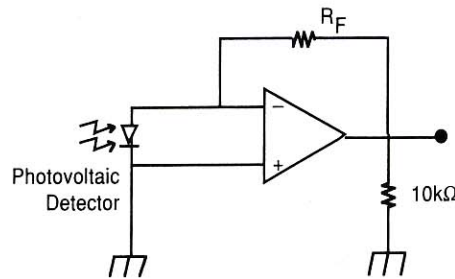


SPECTRAL DETECTIVITY OF InSb DETECTOR



Typical Applications

- Medical Thermography
- Thermal Imaging
- Spectroscopy
- Missile Guidance
- Radiometry
- Research
- IR Microscopy



Model Number	Active Area (mm ²)	FOV = 60°						Operating Temperature (K)	Standard Package	Standard Window
		D* (λ _p , 1000, 1) (cmHz ^{1/2} W ⁻¹)	Responsivity (λ _p) (A/W)	Resistance (R _d) (Ω)	Capacitance (C _d) (pF)	Short Circuit Current I _{sc} (μA)	Open Circuit Voltage V _{oc} (mV)			
IS-0.5	∅ 0.5/0.5	≥ 1E11	≥ 2	500k	100	2	80 to 125	77	MSL-6 MSL-12 OR MDL-6 MDL-12	Sapphire or Amtir
IS-1.0	∅ 1.0/1.0			350k	350	8				
IS-2.0	∅ 2.0/2.0			100k	1500	30				