InGaAs Focal Plane Arrays for Astronomical Applications

Introduction

InGaAs Focal Plane Arrays, working in the wavelength range from 900 nm to 2.2 μm, are normally not the detectors of choice in near infrared astronomical applications that require lowest noise and highest resolution. However, please be aware of the following product features and possibilities for your specific astronomy problem:

Product Features and Possibilities

InGaAs Focal Plane Arrays comprise a photosensitive InGaAs-pin-photodiode array combined with a Silicon CMOS Read Out Integrated Circuit (ROIC).

Standard Resolutions:

- 640 x 512
- 320 x 256
- 512 Linear

High Quantum Efficiency of > 70% by means of Backilluminated InGaAs/InP Epi technology

Comparatively low cost

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<tr>
<th>Item</th>
<th>Qty</th>
<th>Part #</th>
<th>Description</th>
<th>Price</th>
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<td>FPA 320x256</td>
<td>Indium-Gallium-Arsenide (InGaAs)-Area Array Detector; Resolution 320x256 pixels, 30 μm pixel size, data rate 30 MHz; Kovar metal package, 1-stage thermoelectric cooler; Spectral Range 0.9 μm – 1.7 μm</td>
<td>upon request</td>
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<td>2</td>
<td>1</td>
<td>FPA 640x512</td>
<td>Indium-Gallium-Arsenide (InGaAs)-Area Array Detector; Resolution 640 x 512 pixels, 25 μm pixel size, data rate 30 MHz; Kovar metal package, 1-stage thermoelectric cooler; Spectral Range 0.9 μm – 1.7 μm</td>
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Application Examples in Astronomy

- Near Infrared Image Acquisition
- Near Infrared Telescopes
- Surveillance
- Near Infrared Spectroscopy
- Humidity Analysis
- Surface Analysis of Objects, Materials

Summary

InGaAs Focal Plane Arrays should be considered as an option in near infrared astronomical applications, that do not call for highest-end noise performance, but require a responsive, fast, flexible, user-friendly and comparatively cost-effective imager solution.