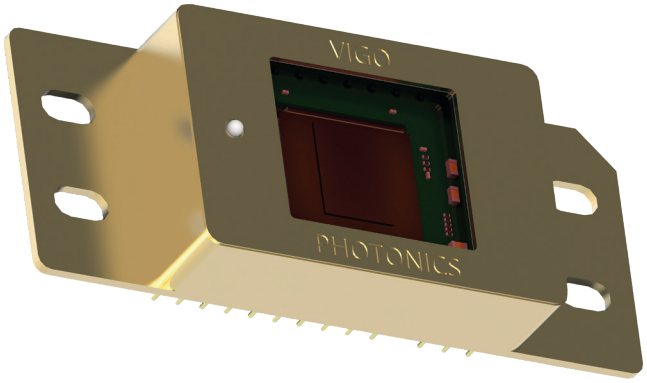
SWIR FPA InGaAs Detector

Temperature stabilized infrared SWIR detection module



640 x 512 - 15µm - SW PRODUCT RANGE

Muzzle Flash

System indicates visible and infrared blast caused by single shot

Early Warning System

Detect and indicate hostile laser pointing

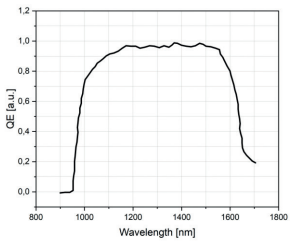
Round Observation System

Autonomy AI based visible and thermal vehicle observation system

OWN UNIQUE TECHNOLOGY

VIGO Photonics S.A. achieves the state of art performance for InGaAs/InP based uncooled SWIR photodetectors 640x512 format. FPA's are developed with Vigo Photonics S.A. **15 µm pixel technology** from epitaxy substrate to final encapsulation of detector housing. The **SWIR FPA detector** is a cost-effective detection module designed for unique and demanding applications. Small dimensions provide easy mechanical and thermal integration with the target device. Planar sapphire window work with precisely defined spectral range of **IR sourced** which have to be detected.

FIGURE 1. Spectral characteristics for FPA



HIGH QUANTUM EFFICIENCY

Thanks to improved epilayer design and quality AR coating, over 90% QE achieved with almost 100% fill factor. Please refer the QE graph below.

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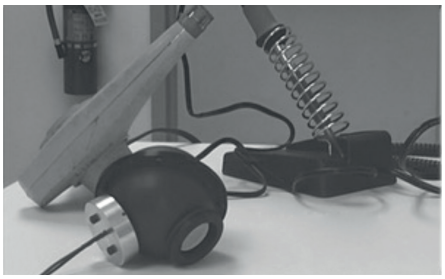
Why SWIR?
SWIR shows the reflected light and sees through the glass

SWIR

MWIR

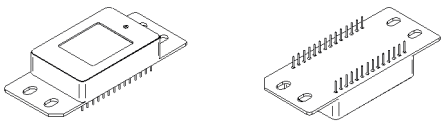


VISIBLE

DETECTOR PARAMETERS

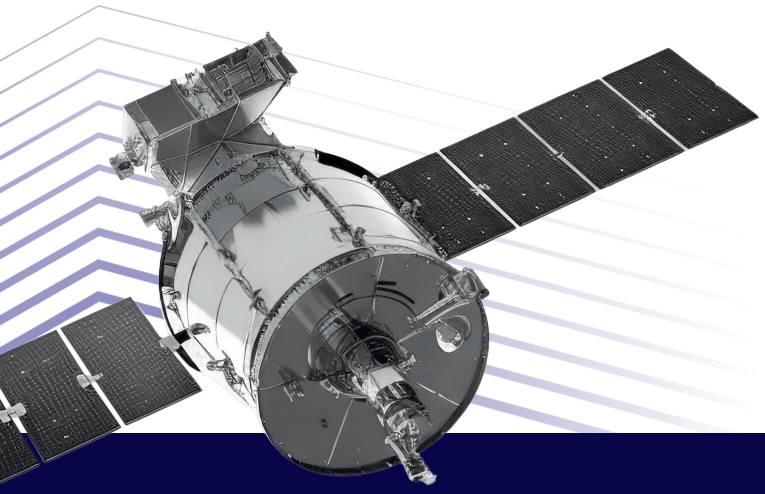
- Format: **640 x 512 px**
- Dark current: **< 1 nA/cm2**
- Operability: **> 99.5 %**
- Responsivity: > **1 A/W @ 1.55 µm**
- Spectral range: **0.9 µm – 1.7 µm**
- RoHS **compliance**

FIGURE 2. The SWIR FPA detection module



PACKAGED DETECTOR

- PS-28 housing
- Thermoelectric cooler (TEC)
- 28 output signals
- Filled by Nitrogen for extended service life
- Provided special humidity getter for extended service life



TYPICAL PERFORMANCES

Thermoelectric cooler
(measurement conditions - 283 K, nitrogen)

- Ceramics material: **Al2O3, top ceramics of the cooler**
- Assembly of the TEC: **Soldering, RoHS lead-free solders, melting point >200C**
- ΔTmax K (measurement in a nitrogen, 323K): **> 98 K**
- Qmax W (measurement in a nitrogen, 323K): **> 5,9W**
- Imax A (measurement in a nitrogen, 323K): **2,7 A**
- Umax V (measurement in a nitrogen, 323K): **6,7 V**

Window

- Material: **Sapphire**
- Coating: **AR coating, transmission > 92%**
- Surface finish: **60/40 SD**

MECHANICAL REQUIREMENTS

The module has to be mounted on a heatsink. Operations without a may damage the detector. All four holes have to be used to minimalize mechanical stress and provide a proper thermal connection between the module and the heatsink. If required, thermal grease or any thermal interface material can be used to improve heat transfer.