



Cardinal 1280 HD

1280x1024 / 10 μ m
InGaAs Detector

Defense Applications



General Description

The Cardinal 1280 HD is SCD next generation SWIR InGaAs 10 μ m pixel detector.

The Cardinal 1280 HD is a high resolution, high sensitivity InGaAs detector which enables EO IR systems to utilize the SWIR wavelength for low light imaging, very long range day surveillance at severe weather conditions (smoke, dust, fog, rain).

The detector integrates SCD's (patent protected) ALPD capability. The FPA consists of an all digital ROIC and state-of-the-art planar InGaAs P-I-N diode array.

The package includes a Thermo Electric Cooler (TEC) that can be utilized for cooling the FPA for low light level scenarios.

Applications

- High quality long range daylight SWIR Imaging
- Low light level imaging
- Active Imaging
- Laser "see-spot" – ALPD
- Airborne EVS
- Airborne and ground Payloads
- Driving Vision Enhancement (DVE)
- Non-Destructive Testing
- Covert Surveillance with 24/7 day operation

Main Features

- Standard daylight imaging with 2 gain levels
- Low light level with CTIA stage
- ALPD with 2x2 binning
- Active imaging





Preliminary Datasheet

Parameter	Value
Format & Pitch	1280x1024, 10µm
Spectral Range	0.6-1.7µm (VIS-SWIR)
Quantum Efficiency	> 80% at 1550nm
Dark current	< 1fA @ 280K
Pixel Operability	> 99.5%
NEP	< 0.5fW @ High Gain, 27msec integration time
Well capacity and ROIC noise (typical)	High gain – 10Ke, 40e with CDS Medium gain – 500Ke, 170e Low gain – 1Me, 350e
Maximum FR at full window (Medium and low gain modes)	150 F/s @ 13 bit resolution (70MHz clock rate) 500 F/s with Binning
Windowing	Flexible, 2 rows step
FPA Power Dissipation	< 150mW @ 60 F/s, Standard Imaging
Active Imaging time constant	2µsec @ CTIA stage
ALPD sensitivity	< 500e per pixel @ 90% operability
Ambient operating temperature	-40°C to 71°C
Ambient non-operating temperature	-54°C to 80°C
Package	Metallic (vacuum tight), 34x34x10 mm ³
Vacuum lifetime	> 14 years @ 25°C ambient
Cooling capability	$\Delta T \geq 40^{\circ}\text{C}$ @ 30°C ambient

Specifications are subject to changes without further notice