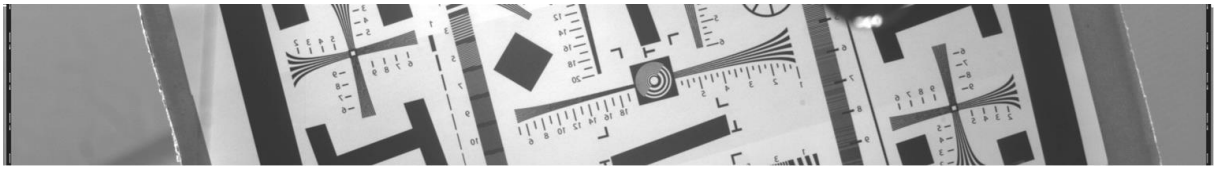
CAE302 “ELOIS”

The “ELOIS” (ESA developed *enhanced light offner image sensor*) combines a unique set of desired image sensor features. The sensor is optimized for hyperspectral pushbroom operation.



Features

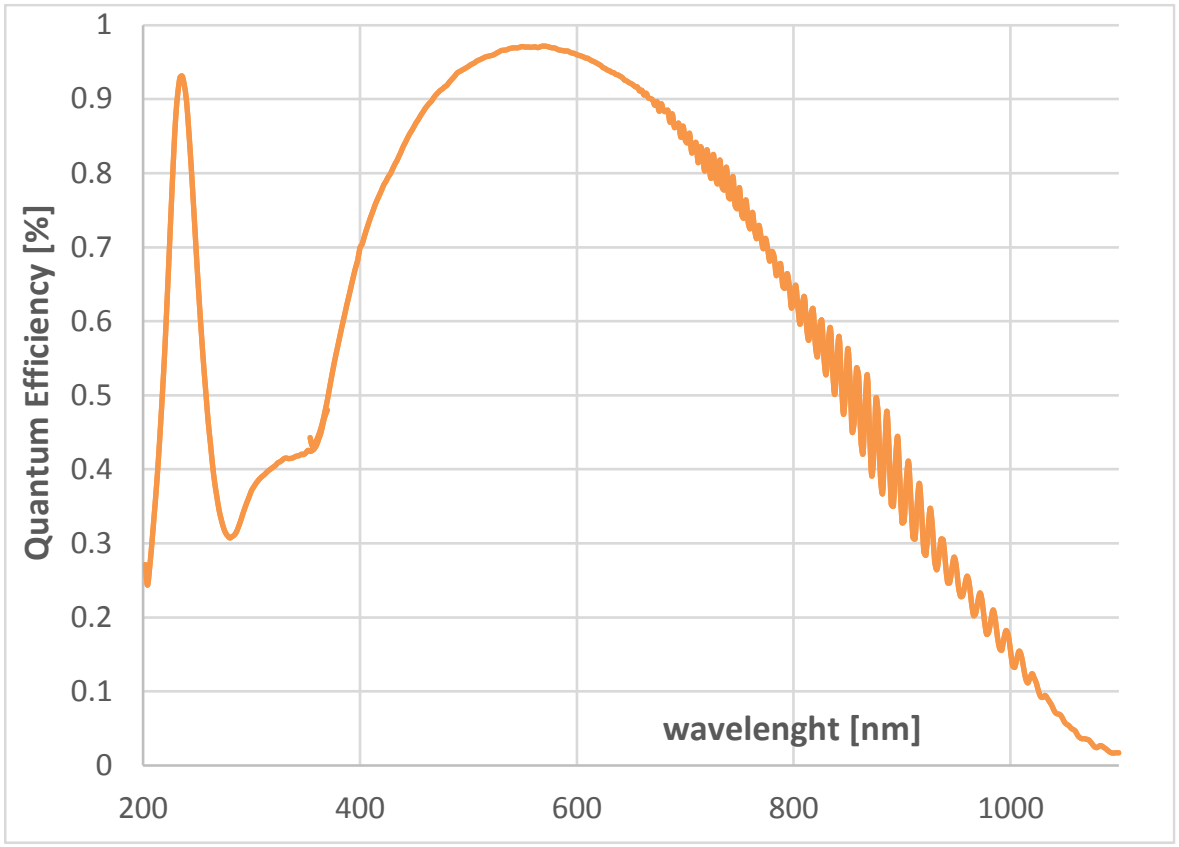
- 2048x256 pixels
- 15.5 µm pixel pitch
- Pixel rate & clock speed 20MHz on 4 parallel channels
- Max frame rate 205fps CDS / binned
- Rolling shutter; global shutter (IWR, ITR) by 2-pass readout
- TID and SEL rad-hard design
  Exceeding spec of 30kRad and 37 MeV.cm²/mg
- 4x1 binning in Y-direction
- experimental proton-resilient pixel approach
- QE > 90% by backside illumination
- Read noise using CDS 9 e^-_{RMS} (at 21°C, excluding contribution of CDS)
- Q_{FW} 40000 e^- and 200000 e^- programmable
- “True” High Dynamic Range method based on the patented “3-level TG” method, reaching a single exposure, single integration time, synchronous dynamic range ~ 90dB
- I_{dark} < 10 pA/cm^2 @ 25°C
- Power consumption 250mW including IO
- Operation temperature -40°C … +60°C
- Package 54-PGA
- Qualification: Subset of ESCC-9020

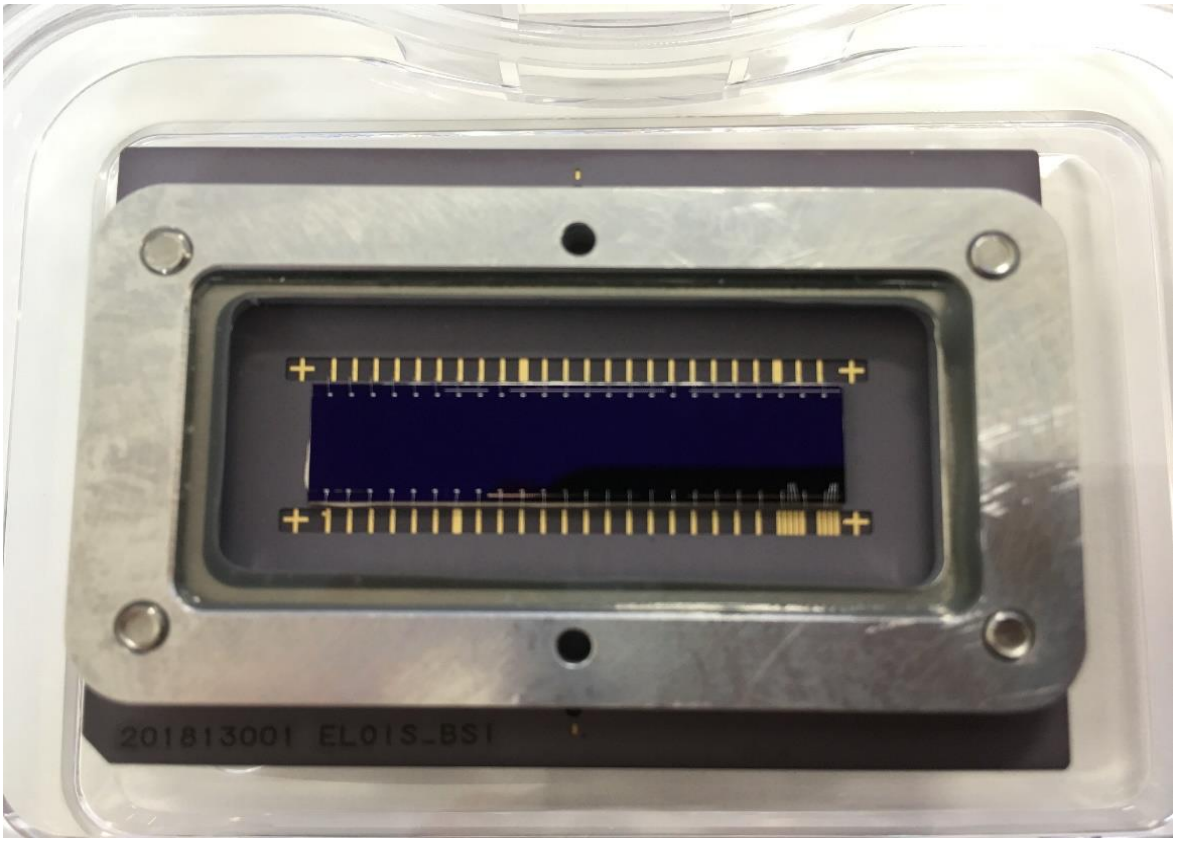
Application

The ELOIS sensor is designed for use as hyperspectral imager in the wavelength between 350 and 900nm. The 15.5um square pixel can be binned in the “spectral direction” to 60x15µm, thereby offering linear and non-linear binning modes, which have an experimental resilience against pixel proton damage and pixel SEU (patent granted). The sensor can be operated in a variety of shutter modes whereby RWI is the nominal operating mode.

Evaluation kit

on request


Quantum Efficiency [%]
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
wavelenght [nm]
200
400
600
800
1000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