

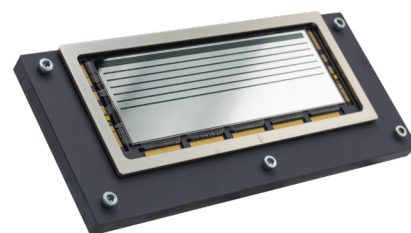
CMOS TDI CIS125-**-**- (BSI / FSI)

Imaging Sensors

16K PIXEL BIDIRECTIONAL, MULTISPECTRAL CHARGE DOMAIN TDI CMOS SENSOR WITH FILTERS.

Teledyne's CIS125 image sensors combines charge domain TDI CCD functionality on a CMOS chip, offering the best of both technologies and is designed to be radiation tolerant.

With on-chip clock drivers and ADCs, this sensor offers a true integrated solution. These sensors are available both as backside illuminated (BSI) as well as front-side illuminated (FSI). These TDI CMOS image sensors include six Multispectral bands (MS) and four Panchromatic bands (PAN), all in a single integrated CMOS die and package. With 8k columns for each multispectral band and 16k columns for each Panchromatic band along with lateral anti-blooming (LAB), and continuous vertical clocking, the sensors guarantee exceptional images with very high MTF. With $5\mu\text{m} \times 5\mu\text{m}$ (PAN) and $10\mu\text{m} \times 10\mu\text{m}$ (MS1-MS6) pixels these sensors provide extraordinary spatial resolution capability. The four Panchromatic bands have half pixel ($2.5\mu\text{m}$) offsets in both horizontal and vertical directions, allowing for super-resolution imaging to further enhance the resolution.



Performance Specifications

Number of pixels	PAN: 16k / MS: 8k
Channels	PAN: 4 / MS: 6
Pixel size	PAN: $5\mu\text{m} \times 5\mu\text{m}$ MS: $10\mu\text{m} \times 10\mu\text{m}$
Max. line rate (for specific band configuration)	PAN: 37kHz MS: 35kHz Default Operating Mode: 14.6kHz
CTE per transfer	≥ 0.9995
Average dark current @ 25°C	Average dark current @ 25°C 40nA/cm ²
Full Well Capacity	Full Well Capacity PAN: 25 ke- / MS: 75 ke-
Read-out speed at max. line rate	Typical: 40Gb/s (20 parallel 2Gb/s CML channels)
On-chip ADC resolution	12 bits
Power dissipation	$\leq 10 \text{ W}$

KEY FEATURES

- Each band consists of 1 primary array (A) and 1 secondary array (B)
- Very high resolution
- CCD on CMOS architecture
- 6 Multispectral Bands (MS1-MS6) and 4 Panchromatic bands (PAN1-PAN4)
- Selectable TDI Stages: PAN: 1, 4, 8, 12, 16, 24, 32, (40, 48, 52, 56, 60, 63, 64 - PANA only); MSA: 1, 2, 4, 8, 12, 16, 20, 24, 28, 30, 31, 32; MSB: 1, 2, 4, 8, 12, 14, 15, 16
- Front Side Illuminated (FSI) and Back Side Illuminated (BSI) options are available where BSI offers enhanced QE and SNR
- Multispectral filter integration options
- Anti-blooming
- Bi-directional in primary and secondary Multispectral Bands and in primary Panchromatic Bands
- Fully digital outputs – no focal plane ADCs required
- Radiation tolerant design

TYPICAL APPLICATIONS

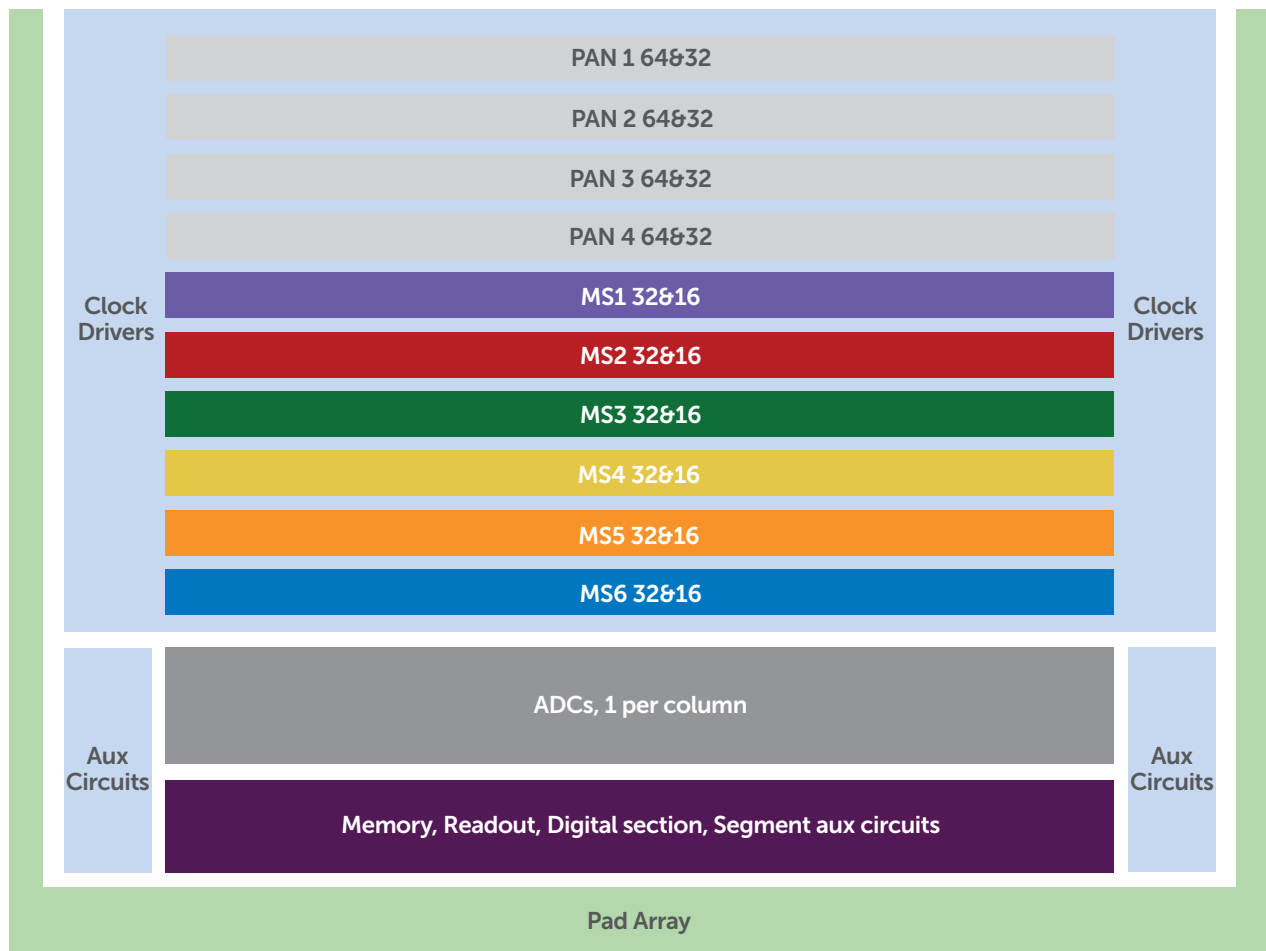
- Earth observation
- Remote sensing
- Planetary exploration

Options suited to Commercial Space applications available upon request.

Teledyne has extensive heritage in providing standard and customised image sensors for space applications. Please discuss any requirements for customised variants to meet your needs.

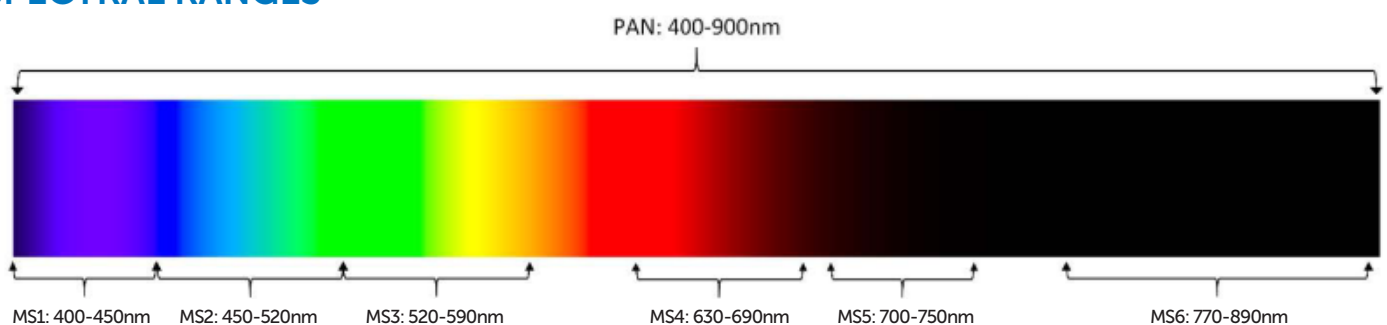
* Technical Information available upon request

ARCHITECTURE



The CIS125 sensor is part of a family of products in development. Speak to us if you are interested in the FEE and Camera development.

SPECTRAL RANGES



EXPORT UNCONTROLLED

Information subject to change – values typical unless stated.

For more information contact:

SpaceImaging@Teledyne.com

Europe: +44 (0)1245 493 493

Americas: +1 (845) 425 2000

2025/October/AT/DJ