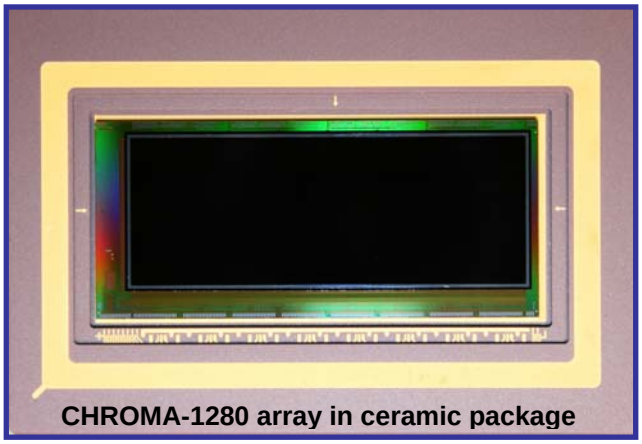
Teledyne Imaging Sensors
CHROMA™
Visible-Infrared Focal Plane Array

Teledyne's CHROMA™ configurable Hyperspectral Readout for Multiple Applications) is the most advanced focal plane array (FPA) developed for visible-infrared spectral imaging applications. Combined with Teledyne's high performance substrate-removed HgCdTe detector technology, the CHROMA™ performance is unmatched by any other sensor.

- Array formats: 480 spectral channels (rows) with spatial dimension in multiples of 160 columns (e.g. 320×480, 640×480, 1280×480, 1600×480 pixels)

- Pixel pitch: 30×30 µm

- FPA architecture is a CMOS readout flip-chip hybridized to a detector. The readout circuit can be mated to substrate-removed HgCdTe for simultaneous visible-infrared detection or Teledyne's HyViSI™ silicon PIN visible detector. Bandpass coverage: 330-1050 nm, 350-2500 nm, and 380-5500 nm.



CHROMA-1280 array in ceramic package

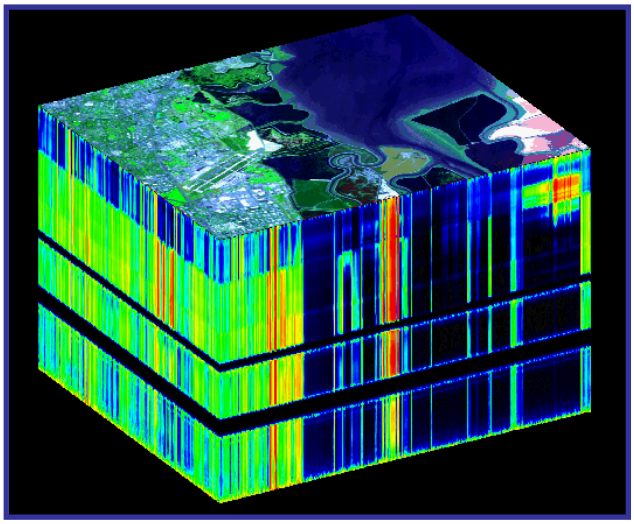
- Readout integrated circuit characteristics
  - Capacitive transimpedance amplifier (CTIA) in pixel
  - Correlated double sampling (CDS) in pixel for well sizes up to 1M electrons
  - Full well options = 0.7M, 1M or 5M electrons
  - Readout noise = 80, 110 or 600 electrons, corresponding to 0.7M, 1M and 5M electrons full well, respectively
  - Readout mode: Snapshot, integrate-while-read
  - Windowing available in row direction
  - Dynamic range: 9000:1
  - Frame readout time scales with number of rows read out; row readout time is16.8 µsec;
    - Full-frame rate (480 rows) is 125 Hz,
    - Half-frame rate (240 rows) is 250 Hz
  - Integration time programmable in row time steps
  - Programmable, digital input: biases and clocks generated on-chip
  - Panel-based readout: one analog output per 160 columns; output data rate (each output) is 10 Mpixels/sec

*For more information, please contact **Jianmei Pan** at **jpan@teledyne.com** or at +1(805) 373 4291,*

CHROMA™ configuration table for infrared and visible arrays

Array Format	Well capacity & Readout Noise			Power dissipation at 125 Hz [mW]	ROIC dimensions [mm]	No. Outputs
	CDS Noise Well = 0.7M e^-	CDS Noise Well = 1M e^-	Noise Well = 5M e^-			
CHROMA - 320	80 e^-	110 e^-	600 e^-	70	14.4 × 19.4	2
CHROMA - 640	80 e^-	110 e^-	600 e^-	90	24 × 19.4	4
CHROMA - 1280	80 e^-	110 e^-	600 e^-	150	43.2 × 19.4	8
CHROMA - 1600	80 e^-	110 e^-	600 e^-	180	52.8 × 19.4	10

- Other combinations of array format and well sizes are available in customized versions
- Array row lengths (number of columns) can be customized to be any multiple of 160
- Pixel well sizes can be easily customized in the range from 0.2M electrons to 5M electrons
- Focal Plane Electronics with 16 bit analog to digital conversion is available



AVIRIS hyperspectral data cube over Moffett Field, California

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