

Fairchild Imaging

CIS2020

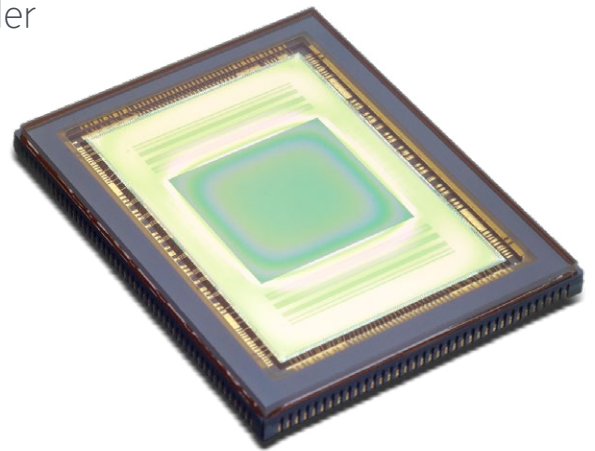
4.2MP Ultra low-noise image sensor with sCMOS 2.0 technology

The CIS2020 is a large format, ultra low-noise Complimentary Metal Oxide Semiconductor (CMOS) image sensor intended for applications requiring high quality imaging under extremely low-light conditions.

The device features an array of four transistor (4T) pixels on a 6.5 μ m pitch with an active imaging area of 2048(H) x 2048(V) pixels. The CIS 2020 delivers extreme low-light sensitivity with read noise of 1 electron Root Mean Square (RMS), quantum efficiency above 70 percent, and low dark current.

The sensor has two ADC channels per column with one optimized for low light levels and the other optimized for high light levels, enabling high dynamic range data collection in a single image. Housed in a 168-pin Ceramic Leadless Chip Carrier (CLCC) package, CIS2020 supports user-programmable row start/stop control for region of interest readout.

These features, combined with 4.2 megapixel resolution and 100 fps imaging rates, make the sensor an imaging device ideally suited for applications including security and surveillance, industrial, professional video, scientific, and medical uses.

**Key features and benefits**

- Rolling Shutter (RS) and Global Shutter (GS) create additional operational modes for more application flexibility
- Superior low light image quality allows for reduced illumination requirements
- >90 dB intra scene dynamic range shows more detail in high contrast scenes
- 100 fps at 4.2MP creates no motion blur

Applications

- Scientific
- Medical
- Industrial
- Professional video
- High-end security

Ideal for capturing scenes in extreme lighting conditions

Specifications

Sensor

Optical format	4/3"
Active array size	2048 (H) x 2048 (V)
Active area	13.3 mm x 13.3 mm
Diagonal of active area	18.83 mm
Chroma	Monochrome
Maximum frame rate	100 fps
ACD resolution	22 bits (2 x 11-bit)

Pixel

Pixel size	6.5 μm x 6.5 μm
Shutter type	Rolling shutter
Read noise ¹	1 e- RMS
Dynamic range	>90 dB
Peak QE	>70%
Full well capacity	>30,000 e-
Dark current ²	<35 e-/ pixel/ sec

Interface

I/O interface	Digital: 1.8V LVCMOS and 1.8V HSTL
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Operating

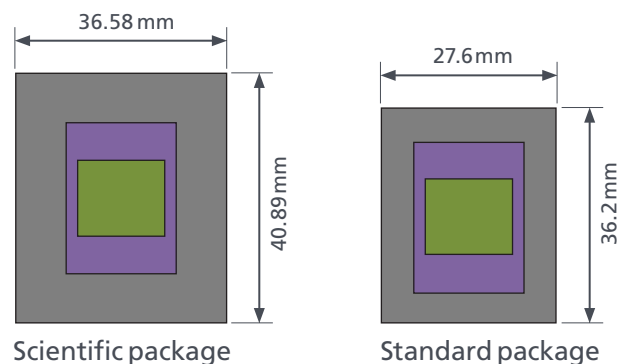
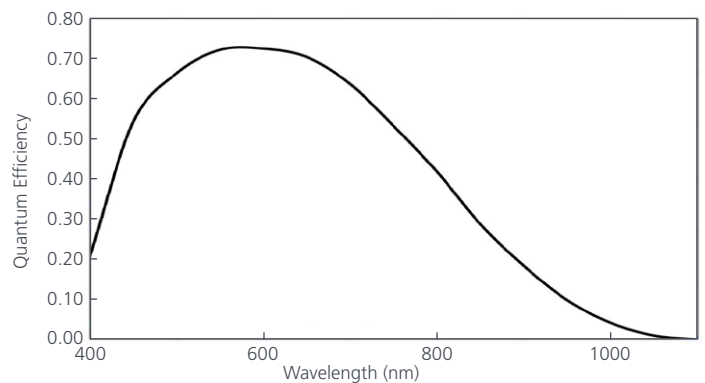
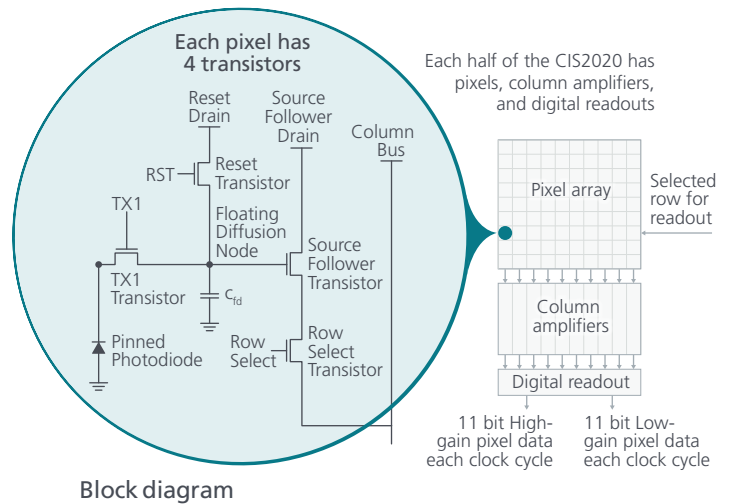
Power consumption	<1.5W at 100 fps
Supply voltages	-0.4V, 1.8V, 3.0V, 3.3V
Operating temp	-40°C to +55°C

Packaging

Package type	168-pin CLCC
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¹ Median value, high gain output (30x)

² At 20°C



For more information contact:

BAE Systems

1841 Zanker Rd., Ste. 50
San Jose, CA 95112 USA

T: 1-650-479-5749

E: cams.sales@baesystems.com

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