

## PRODUCT SUMMARY

### KODAK KAI-29050 IMAGE SENSOR

#### 6576 (H) X 4384 (V) PROGRESSIVE SCAN INTERLINE CCD IMAGE SENSOR

#### DESCRIPTION

The KODAK KAI-29050 Image Sensor is a 29-megapixel CCD in a 35 mm optical format (43 mm diagonal). Based on the KODAK TRUESENSE 5.5 micron Interline Transfer CCD Platform, the sensor features broad dynamic range, excellent imaging performance, and a flexible readout architecture that enables use of 1, 2, or 4 outputs for full resolution readout up to 4 frames per second. A vertical overflow drain structure suppresses image blooming and enables electronic shuttering for precise exposure control.

The sensor is available with the KODAK TRUESENSE Color Filter Pattern, a technology which provides a 2x improvement in light sensitivity compared to a standard color Bayer part.

The sensor shares common PGA pin-out and electrical configurations with other devices based on the KODAK TRUESENSE 5.5 micron Interline Transfer CCD Platform, allowing a single camera design to be leveraged to support multiple members of this sensor family.

#### FEATURES

- Bayer Color Pattern, KODAK TRUESENSE Color Filter Pattern, and Monochrome configurations
- Progressive scan readout
- Flexible readout architecture
- High frame rate
- High sensitivity
- Low noise architecture
- Excellent smear performance
- Package pin reserved for device identification

#### APPLICATIONS

- Industrial Imaging and Inspection
- Medical Imaging
- Security



Parameter	Typical Value
Architecture	Interline CCD; Progressive Scan
Total Number of Pixels	6644 (H) x 4452 (V)
Number of Effective Pixels	6600 (H) x 4408 (V)
Number of Active Pixels	6576 (H) x 4384 (V)
Pixel Size	5.5 $\mu\text{m}$ (H) x 5.5 $\mu\text{m}$ (V)
Active Image Size	36.17 mm (H) x 24.11 mm (V) 43.47 mm (diag) 35 mm optical format
Aspect Ratio	3:2
Number of Outputs	1, 2, or 4
Charge Capacity	20,000 electrons
Output Sensitivity	34 $\mu\text{V}/e^-$
Quantum Efficiency	
KAI-29050-AXA	46% (500 nm)
KAI-29050-CXA	31%, 43%, 42% (620, 540, and 470 nm)
Read Noise (f= 32MHz)	12 electrons rms
Dark Current	
Photodiode	7 electrons/s
VCCD	140 electrons/s
Dark Current Doubling Temp	
Photodiode	7 $^{\circ}\text{C}$
VCCD	9 $^{\circ}\text{C}$
Dynamic Range	64 dB
Charge Transfer Efficiency	0.999999
Blooming Suppression	> 300 X
Smear	Estimated -100 dB
Image Lag	< 10 electrons
Maximum Pixel Clock Speed	40 MHz
Maximum Frame Rates	
Quad Output	4 fps
Dual Output	2 fps
Single Output	1 fps
Package	72 pin PGA
Cover Glass	AR Coated, 2 Sides

All parameters are specified at T = 40 $^{\circ}$  C unless otherwise noted.

**ORDERING INFORMATION**

<b>Catalog Number</b>	<b>Product Name</b>	<b>Description</b>	<b>Marking Code</b>
4H2166 (1)	KAI-29050-AXA-JD-B1	Monochrome, Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 1	KAI-29050-AXA Serial Number
4H2167 (1)	KAI-29050-AXA-JD-B2	Monochrome, Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 2	
4H2168 (2)	KAI-29050-AXA-JD-AE	Monochrome, Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Engineering Grade	
4H2172 (1)	KAI-29050-CXA-JD-B1	Color (Bayer RGB), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 1	KAI-29050-CXA Serial Number
4H2173 (1)	KAI-29050-CXA-JD-B2	Color (Bayer RGB), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 2	
4H2174 (2)	KAI-29050-CXA-JD-AE	Color (Bayer RGB), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Engineering Grade	
4H2175 (1)	KAI-29050-PXA-JD-B1	Color (KODAK TRUESENSE CFA), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 1	KAI-29050-PXA Serial Number
4H2176 (1)	KAI-29050-PXA-JD-B2	Color (KODAK TRUESENSE CFA), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Grade 2	
4H2177 (2)	KAI-29050-PXA-JD-AE	Color (KODAK TRUESENSE CFA), Special Microlens, PGA Package, Sealed Clear Cover Glass with AR coating (both sides), Engineering Grade	

See ISS Application Note "Product Naming Convention" (MTD/PS-0892) for a full description of naming convention used for KODAK image sensors.

For all reference documentation, please visit our Web Site at [www.kodak.com/go/imagers](http://www.kodak.com/go/imagers).

Please address all inquiries and purchase orders to:

Image Sensor Solutions  
Eastman Kodak Company  
Rochester, New York 14650-2010

Phone: (585) 722-4385  
Fax: (585) 477-4947  
E-mail: [imagers@kodak.com](mailto:imagers@kodak.com)

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