

## SUMMARY SPECIFICATION

### KODAK KAI-1020 IMAGE SENSOR

1000 (H) X 1000 (V) PROGRESSIVE SCAN INTERLINE CCD IMAGE SENSOR

#### DESCRIPTION

The KODAK KAI-1020 Image Sensor is a one megapixel interline CCD with integrated clock drivers and on-chip correlated double sampling. The progressive scan architecture and global electronic shutter provide excellent image quality for full motion video and still image capture.

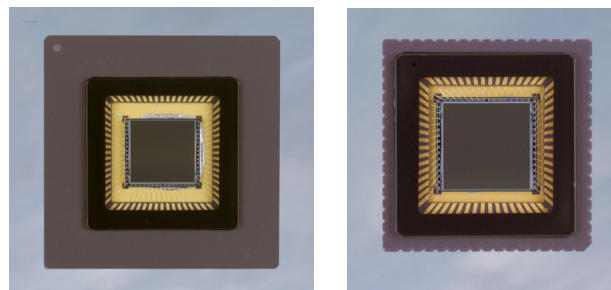
The integrated clock drivers allow for easy integration with CMOS logic timing generators. The sensor features a fast line dump for high-speed sub-window readout and single (30 fps) or dual (48 fps) output operation.

#### FEATURES

- 10 bits dynamic range at 40 MHz
- Large 7.4  $\mu\text{m}$  square pixels for high sensitivity
- Progressive scan (non-interlaced)
- Integrated vertical clock drivers
- Integrated correlated double sampling (CDS) up to 40 MHz
- Integrated electronic shutter driver
- Reversible HCCD capable of 40MHz operation All timing inputs 0 to 5 Volts
- Single or dual video output operation
- Progressive scan or interlaced
- Fast dump gate for high speed sub-window readout
- Antiblooming protection

#### APPLICATIONS

- Industrial Imaging
- Medical Imaging



Parameter	Typical Value
Architecture	Interline CCD, Progressive Scan
Total Number of Pixels	1028 (H) x 1008 (V)
Number of Effective Pixels	1004 (H) x 1004 (V)
Number of Active Pixels	1000 (H) x 1000 (V)
Pixel Size	7.4 $\mu\text{m}$ (H) x 7.4 $\mu\text{m}$ (V)
Active Image Size	7.4 mm (H) x 7.4 mm (V) 10.5 mm [diagonal]
Aspect Ratio	1:1
Number of Outputs	1 or 2
Saturation Signal	40,000 electrons
Output Sensitivity	12 $\mu\text{V}/\text{electron}$
Quantum Efficiency KAI-1020-ABA (500nm)	44%
Quantum Efficiency KAI-1020-CBA R(620nm), G(540nm), B(460nm)	31%, 36%, 41%
Dark Noise	50 electrons rms
Dark Current (Typical)	<0.5 nA/cm <sup>2</sup>
Dynamic Range	58 dB
Blooming Suppression	100 X
Image Lag	<10 electrons
Smear	<0.03%
Maximum Data Rate	40 MHz/Channel (2 channels)
Frame Rate	
Progressive Scan, One Output	30 fps
Progressive Scan, Dual Outputs	48 fps
Interlaced Scan, One Output	49 fps
Integrated Vertical Clock Drivers	
Integrated Correlated Double Sampling (CDS)	
Integrated Electronic Shutter Driver	
Package	68 pin PGA or 64 pin CLCC
Cover Glass	AR coated, 2 sides

All parameters above are specified at T = 40°C

## ORDERING INFORMATION

Catalog Number	Product Name	Description	Marking Code
2H4889	KAI- 1020-AAA-JP-BA	Monochrome, No Microlens, PGA Package, Taped Clear Cover Glass, no coatings, Standard Grade	KAI-1020 Serial Number
4H0934	KAI- 1020-ABB-FD-AE	Monochrome, Telecentric Microlens, CLCC Package, Clear Cover Glass with AR coating (both sides), Engineering Sample	KAI-1020-ABB Serial Number
4H0933	KAI- 1020-ABB-FD-BA	Monochrome, Telecentric Microlens, CLCC Package, Clear Cover Glass with AR coating (both sides), Standard Grade	
4H0932	KAI- 1020-ABB-JB-AE	Monochrome, Telecentric Microlens, PGA Package, Clear Cover Glass (no coatings), Engineering Sample	
4H0931	KAI- 1020-ABB-JB-BA	Monochrome, Telecentric Microlens, PGA Package, Clear Cover Glass (no coatings), Standard Grade	
4H0910	KAI- 1020-ABB-JD-AE	Monochrome, Telecentric Microlens, PGA Package, Clear Cover Glass with AR coating (both sides), Engineering Sample	
4H0935	KAI- 1020-ABB-JD-BA	Monochrome, Telecentric Microlens, PGA Package, Clear Cover Glass with AR coating (both sides), Standard Grade	
2H4996	KAI- 1020-CBA-FD-AE	Color (Bayer RGB), Telecentric Microlens, CLCC Package, Clear Cover Glass with AR coating (both sides), Engineering Sample	KAI-1020CM Serial Number
4H0131	KAI- 1020-CBA-FD-BA	Color (Bayer RGB), Telecentric Microlens, CLCC Package, Clear Cover Glass with AR coating (both sides), Standard Grade	
4H0194	KAI- 1020-CBA-JD-AE	Color (Bayer RGB), Telecentric Microlens, PGA Package, Clear Cover Glass with AR coating (both sides), Engineering Sample	
4H0193	KAI- 1020-CBA-JD-BA	Color (Bayer RGB), Telecentric Microlens, PGA Package, Clear Cover Glass with AR coating (both sides), Standard Grade	
1E9790	KEK-1E9790-KAI-1020-12-40	Evaluation Board (Complete Kit)	n/a

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

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