

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.

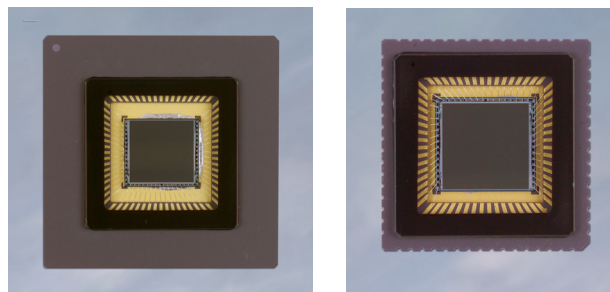
The integrated clock drivers allow for easy integration with CMOS logic timing generators. The sensor features a fast line dump for high-speed sub-window readout and single (30 fps) or dual (48 fps) output operation.

FEATURES

- 10 bits dynamic range at 40 MHz
- Large 7.4 μm 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 μm (H) x 7.4 μm (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 ² |
| 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 | |
| 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.

Address all inquiries and purchase orders to:

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