

PRODUCT SUMMARY

KODAK KAC-5000 IMAGE SENSOR

2592(H) X 1944(V) QSXGA CMOS RAW COLOR IMAGE SENSOR

DESCRIPTION

The KODAK KAC-5000 Image Sensor is a high performance 1/1.8" format 5.0 Megapixel raw output CMOS image sensor incorporating KODAK PIXELUX technology, including the use of pinned photodiodes and a four-transistor shared-pixel (4T4S) architecture. The sensor offers outstanding image quality while providing unique binning modes of operation for increased sensitivity.

FEATURES

- KODAK PIXELUX technology, including pinned photodiodes and 4T4S architecture, for superior imaging performance
- Selectable charge-domain binning for increased sensitivity under low-light operation.
- Thin copper metal manufacturing process for improved optical angle response and high quantum efficiency
- Outstanding color fidelity and low pixel cross talk.
- Subsampling and region of interest windowing modes
- Progressive programmable scan, electronic rolling shutter, digital video output with Flip and Mirror output options
- Flexible programming via I²C compatible serial interface
- Dedicated strobe flash sync

APPLICATIONS

- Digital Still Cameras (DSC) and Digital Video Camera (DVC).

Parameter		Typical Value
Architecture		4T4S pixel CMOS architecture with PIXELUX technology
Digital Video Output		10 bit parallel Bayer Raw
Dimensions	Number of Active Pixels	2592 (H) x 1944 (V) = ca. 5.0 Mpix
	Pixel Size	2.7 μ m (H) x 2.7 μ m (V)
	Active Pixels Optical Size	8.75 mm (diagonal) 1/1.8" optical format
	Effective image area	Active: 7.00 mm (H) x 5.25 mm (V)
Chief Ray Angle		16°
Master Clock		36 MHz (48MHz max)
Maximum Frame Rate	Full Frame	6 frames/s
	VGA	60 frames/s
Performance	Sensitivity	25 ke-/lux*s
	Dynamic Range	52 dB
	Quantum Efficiency	(480 nm, 540 nm, 590 nm) 40%, 46%, 46%
Scan mode		Progressive scan
Shutter modes		Continuous & Single Frame Rolling Shutter
Programmable Gain		Global or RGB: 4x Analog Gain Additional 2x digital gain
Power supply	I/O	3.3 V $\pm$ 5%
	Analog	1.8 V $\pm$ 5%, 3.3 V $\pm$ 5%
	Core	1.8 V $\pm$ 5%
	VDD_RG	3.3 V $\pm$ 5%
	VDD_TG	4.0 V $\pm$ 5%
	VSS_TG	-0.3 V $\pm$ 5%
Power Dissipation	Dynamic	150 mW
	Standby	500 μ W
Operating Temperature		-20°C to 70°C
Package Type		48 CLCC

Parameters above are specified at T = 25° C unless otherwise noted

BINNING AND SUBSAMPLING MODES

The KAC-5000 supports subsampling, charge binning, weighted averaging and windowing both individually as well as in any combination, providing great flexibility in selecting the resolution, frame rate and image quality most appropriate for a given application. While subsampled readout provides the highest frame rates, KODAK PIXELUX charge binning offers improved image quality at reduced resolutions.

	Resolution				Frame Rate (36 MHz)		Image Quality	
PIXELUX Operating Mode	Format	Horiz	Vert	Relative	Frames/s	Relative	Sensitivity	SNR Increase
Full Resolution (QSXGA)	QSXGA	2592	1944	Nominal	6	Nominal	Nominal	Nominal
Same-Color Binning (SXGA) Y: 2X Binning X: 2X Horizontal Average	SXGA	1296	972	1/4	11	Approx 2x	2x	Approx. 2x
Same-Color Binning (SXGA) Y: 2x Binning X: 2X Subsample	SXGA	1296	972	1/4	20	Approx 4x	2x	Approx. 2x
Same-Color Binning (VGA) Y: 2X Binning, 2X Subsample X: 2x Horiz. Avg., 2X Subsample	VGA	648	486	1/16	39	Approx 8x	2x	Approx. 2x
Same-Color Binning (VGA) Y: 2X Binning, 2X Subsample X: 4X Subsample	VGA	648	486	1/16	60	Approx 16x	2x	Approx. 2x
All-Color Binning (Mono VGA) Y: 4X Binning X: 4X Horizontal Average	VGA	648	486	1/16	23	Approx 4x	4x	Approx. 4x

ORDERING INFORMATION

Catalog Number	Product Name	Description
4H0830	KAC- 5000-CXB-FB-AA-16 DEGREE	Color (Bayer RGB), 16 Degree Microlens Easing, CLCC Package, Clear Cover Glass (no coatings), Standard Grade
4H0801	KEK-4H0801-KAC-5000	Evaluation Board (Complete Kit)
4H0802	KEH-4H0802-KAC-5000	Evaluation Board (Head Board)
4H0832	KEM-4H0832-KAC-EXCLUDING 96XX	Evaluation Board (Main Board)

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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