

Diagonal 43.3 mm (Type 2.7) CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX455AQK-K is a diagonal 43.3 mm (Type 2.7) CMOS active pixel type image sensor with a square pixel array and 61.17 M effective pixels. This sensor incorporates maximum 36 dB PGA circuit and 16-bit A/D converter. 16-bit digital output makes it possible to readout the signals of 61.17 M effective pixels at high-speed of 3.9 frame/s in still picture mode. In addition, this sensor can output 8K moving picture at 30 frame/s or 4K moving picture at 60 frame/s. The quality and reliability of this product are also the surveillance use application range. This quality and reliability range should be kept in mind when using this product for other than surveillance use applications. Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

Features

- ◆ 35 mm full size CMOS active pixel type dots
- ◆ Input clock frequency 72 MHz
- ◆ All-pixel readout mode (+ digital overlap drive)
Various readout modes (*)
- ◆ Rolling shutter function moving picture mode
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ +36 dB gain in CDS/PGA on chip (when A/D 16-bit, 14-bit, 12-bit)
- ◆ Built-in 11-bit/12-bit/14-bit/16-bit A/D converter
- ◆ 8 Lane SLVS-EC output
- ◆ R, G, B primary color mosaic filter on chip
- ◆ Back-illuminated type

* Please refer to the datasheet for binning/subsampling details of readout modes.

STARVIS

* STARVIS is a registered trademark or trademark of Sony Group Corporation or its affiliates. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for security camera applications. It features a sensitivity of 2000 mV or more per $1 \mu\text{m}^2$ (color product, when imaging with a 706 cd/m² light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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Device Structure

◆ CMOS image sensor	
◆ Image size	Diagonal 43.3 mm (Type 2.7)
◆ Total number of pixels	9602 (H) × 6498 (V) approx. 62.39 M pixels
◆ Number of effective pixels	9576 (H) × 6388 (V) approx. 61.17 M pixels
◆ Number of active pixels	9568 (H) × 6380 (V) approx. 61.04 M pixels
◆ Chip size	40.961 mm (H) × 31.108 mm (V)
◆ Unit cell size	3.76 μm (H) × 3.76 μm (V)
◆ Optical black	Horizontal (H) direction: Front 16 pixels, Rear 0 pixel Vertical (V) direction: Front 22 pixels, Rear 0 pixel
◆ Package	294 pin LGA

Image Sensor Characteristics

(T_j = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	5630 LSB	1/30 s integration
Saturation signal	Min.	16383 LSB	Left for 0.4 s

Basic Drive Mode

Drive mode	Number of active pixels	Max frame rate [frame/s]	Word length [bit]
Readout mode 0	9568 (H) × 6380 (V) approx. 61.04 M pixels	21.33	10
Readout mode 0A	7696 (H) × 4320 (V) approx. 33.25 M pixels	30.99	12
Readout mode 0B	8208 (H) × 4320 (V) approx. 35.46 M pixels	30.65	12
Readout mode 0C	6288 (H) × 3528 (V) approx. 22.18 M pixels	37.89	12
Readout mode 1	9568 (H) × 6380 (V) approx. 61.04 M pixels	9.42	12
Readout mode 3	9568 (H) × 6380 (V) approx. 61.04 M pixels	10.66	10
Readout mode 5	4784 (H) × 3190 (V) approx. 15.26 M pixels	19.24	12
Readout mode 6	4784 (H) × 3190 (V) approx. 15.26 M pixels	45.33	12
Readout mode 6A	4784 (H) × 3190 (V) approx. 15.26 M pixels	22.65	12
Readout mode 6B	3848 (H) × 2160 (V) approx. 8.31 M pixels	61.39	12
Readout mode 6C	3848 (H) × 2160 (V) approx. 8.31 M pixels	30.67	12
Readout mode 7	4784 (H) × 3190 (V) approx. 15.26 M pixels	45.30	12
Readout mode 7A	4784 (H) × 3190 (V) approx. 15.26 M pixels	22.62	12
Readout mode 7B	3848 (H) × 2160 (V) approx. 8.31 M pixels	61.45	12
Readout mode 7C	3848 (H) × 2160 (V) approx. 8.31 M pixels	30.67	12
Readout mode 8	3188 (H) × 2126 (V) approx. 6.78 M pixels	57.52	12
Readout mode 8A	3188 (H) × 2126 (V) approx. 6.78 M pixels	62.47	12
Readout mode 9	3188 (H) × 2124 (V) approx. 6.77 M pixels	57.52	12
Readout mode 9A	3188 (H) × 2124 (V) approx. 6.77 M pixels	62.47	12
Readout mode 12	3188 (H) × 2126 (V) approx. 6.78 M pixels	28.70	12
Readout mode 12A	3188 (H) × 2126 (V) approx. 6.78 M pixels	31.18	12
Readout mode 13	3188 (H) × 2124 (V) approx. 6.77 M pixels	28.68	12
Readout mode 13A	3188 (H) × 2124 (V) approx. 6.77 M pixels	31.15	12
Readout mode 14	3188 (H) × 1276 (V) approx. 4.07 M pixels	95.34	12
Readout mode 14A	3188 (H) × 1276 (V) approx. 4.07 M pixels	103.55	12
Readout mode 15	3188 (H) × 1274 (V) approx. 4.06 M pixels	95.34	12
Readout mode 15A	3188 (H) × 1274 (V) approx. 4.06 M pixels	103.55	12
Readout mode 18	3188 (H) × 1276 (V) approx. 4.07 M pixels	47.52	12
Readout mode 18A	3188 (H) × 1276 (V) approx. 4.07 M pixels	51.62	12
Readout mode 19	3188 (H) × 1274 (V) approx. 4.06 M pixels	47.52	12
Readout mode 19A	3188 (H) × 1274 (V) approx. 4.06 M pixels	51.62	12
Readout mode 20	3188 (H) × 910 (V) approx. 2.90 M pixels	156.01	12
Readout mode 21	3188 (H) × 908 (V) approx. 2.89 M pixels	156.01	12
Readout mode 22	3188 (H) × 708 (V) approx. 2.26 M pixels	199.37	12
Readout mode 23	3188 (H) × 706 (V) approx. 2.25 M pixels	199.37	12
Readout mode 24	3188 (H) × 424 (V) approx. 1.35 M pixels	325.20	12
Readout mode 25	3188 (H) × 422 (V) approx. 1.35 M pixels	325.20	12
Readout mode 26	3188 (H) × 236 (V) approx. 0.75 M pixels	558.55	12
Readout mode 27	3188 (H) × 234 (V) approx. 0.75 M pixels	558.55	12

