

[Product Information]

IMX383-AAQK

Ver.1.0

Diagonal 15.863 mm (Type 1) CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX383-AAQK is a diagonal 15.863 mm (Type 1) CMOS image sensor with a color square pixel array and approximately 20.48 M effective pixels. 12-bit digital output makes it possible to output the signals of approximately 9.03 M effective pixels (approx. 17:9 aspect) with high definition for moving pictures. It also operates with three power supply voltages: analog 2.9 V, digital 1.1 V, and 1.8 V for I/O interface and achieves low power consumption. Furthermore, it realizes 12-bit digital output for shooting high-speed moving pictures by horizontal and vertical addition and subsampling. Realizing high-sensitivity, low dark current, this sensor also has an electronic shutter function with variable storage time.

In addition, this product is designed for use in consumer use digital still camera and consumer use camcorder. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of the product. Therefore, don't use this for applications other than consumer use digital still camera and consumer use camcorder.

In addition, individual specification change cannot be supported because this is a standard product.

Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

Features

- ◆ Back-illuminated and stacked CMOS image sensor
- ◆ Input clock frequency 72 MHz
- ◆ SLVS-EC Interface
- ◆ Multi-Aspect (3:2, 16:9, 4k2k cropped)
- ◆ All-pixel scan mode
 - Various readout modes (*)
- ◆ High-sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Vertical and horizontal arbitrary cropping function
- ◆ Variable-speed shutter function (minimum unit: 1 horizontal period)
- ◆ Low power consumption
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ CDS/PGA on chip: Gain +27 dB (step pitch 0.1 dB)
- ◆ 10-bit/12-bit A/D conversion on chip
- ◆ R, G, B primary color mosaic filters on chip
- ◆ All-pixel simultaneous reset supported
- ◆ 258-pin high-precision ceramic package

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

Sony reserves the right to change products and specifications without prior notice.
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Device Structure

- ◆ Back-illuminated and stacked CMOS image sensor
- ◆ Image size Diagonal 15.863 mm (Type 1)
- ◆ Total number of pixels 5640 (H) × 3710 (V) approx. 20.92 M pixels
- ◆ Number of effective pixels
 - Type 1 approx. 20.48 M pixels use 5544 (H) × 3694 (V) approx. 20.48 M pixels
 - Type 1/1.06 approx. 17.25 M pixels use 5544 (H) × 3112 (V) approx. 17.25 M pixels
 - Type 1/1.4 approx. 9.03 M pixels use 4152 (H) × 2174 (V) approx. 9.03 M pixels
- ◆ Number of active pixels
 - Type 1 approx. 20.48 M pixels use 5496 (H) × 3672 (V) approx. 20.18 M pixels diagonal 15.863 mm
 - Type 1/1.06 approx. 17.25 M pixels use 5496 (H) × 3102 (V) approx. 17.05 M pixel diagonal 15.146 mm
 - Type 1/1.4 approx. 9.03 M pixels use 4128 (H) × 2168 (V) approx. 8.95 M pixels diagonal 11.19 mm
- ◆ Number of recommended recording pixels
 - Type 1 approx. 20.48 M pixels use 5472 (H) × 3648 (V) approx. 19.96 M pixels aspect ratio 3:2
 - Type 1/1.06 approx. 17.25 M pixels use 5472 (H) × 3078 (V) approx. 16.84 M pixels aspect ratio 16:9
 - Type 1/1.4 approx. 9.03 M pixels use 4096 (H) × 2160 (V) approx. 8.85 M pixels aspect ratio approx. 17:9
- ◆ Chip size 16.198 mm (H) × 11.246 mm (V)
- ◆ Unit cell size 2.40 μm (H) × 2.40 μm (V)
- ◆ Optical black Horizontal (H) direction : Front 96 pixels, rear 0 pixel
Vertical (V) direction : Front 16 pixels, rear 0 pixel
- ◆ Package 258 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	1663 digit	1/30 s integration
Saturation signal	Min.	3665 digit	

Basic Drive Mode

Type 1 Approx. 20.48 M pixels (3:2)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 0	5472 (H) × 3648 (V) approx. 19.96 M pixels	52.37	12
Readout mode 0N	5472 (H) × 3648 (V) approx. 19.96 M pixels	32.73	12
Readout mode 1	5472 (H) × 3648 (V) approx. 19.96 M pixels	62.10	10
Readout mode 1N	5472 (H) × 3648 (V) approx. 19.96 M pixels	62.10	10
Readout mode 1A	5472 (H) × 3648 (V) approx. 19.96 M pixels	101.17	10→12(6) ^{*1}
Readout mode 3	1824 (H) × 1216 (V) approx. 2.22 M pixels	127.77	12
Readout mode 4	1824 (H) × 456 (V) approx. 832 k pixels	253.79	12
Readout mode 5	1824 (H) × 456 (V) approx. 832 k pixels	63.75	12
Readout mode 6	1824 (H) × 190 (V) approx. 347 k pixels	575.26	12
Readout mode 7	1824 (H) × 912 (V) approx. 1.66 M pixels	63.88	12

Type 1/1.06 Approx. 17.25 M pixels (16:9)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 1	5472 (H) × 3078 (V) approx. 16.84 M pixels	62.87	10
Readout mode 1N	5472 (H) × 3078 (V) approx. 16.84 M pixels	62.87	10
Readout mode 2	2736 (H) × 1538 (V) approx. 4.21 M pixels	125.19	12
Readout mode 8A	2736 (H) × 1538 (V) approx. 4.21 M pixels	247.87	10→12(6) ^{*1}
Readout mode 9	2736 (H) × 1538 (V) approx. 4.21 M pixels	74.45	10

Type 1/1.4 Approx. 9.03 M pixels (Approx. 17:9)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 1	4096 (H) × 2160 (V) approx. 8.85 M pixels	71.15	10
Readout mode 1C	4096 (H) × 2160 (V) approx. 8.85 M pixels	136.58	10

Multiple Stream

Drive mode		Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 11	Main	1824 (H) × 456 (V) approx. 832 k pixels	253.26	12
	Sub	1824 (H) × 456 (V) approx. 832 k pixels	253.26	12
Readout mode 12	Main	2736 (H) × 1538 (V) approx. 4.21 M pixels	123.32	12
	Sub	2736 (H) × 1538 (V) approx. 4.21 M pixels	123.32	12
Readout mode 13A	Main	2736 (H) × 1538 (V) approx. 4.21 M pixels	62.99	10→12(6) ^{*1}
	Sub	5472 (H) × 3078 (V) approx. 16.84 M pixels	62.99	10→12(6) ^{*1}

^{*1} 10 bits/pixel image is output in RAW12 format after 10 to 6 compressions.