

## [Product Information]

# IMX411ALR

Ver.1.0

Diagonal 66.7 mm (Type 4.2) CMOS Image Sensor with Square Pixel for Monochrome Cameras

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### Description

The IMX411ALR is a diagonal 66.7 mm (Type 4.2) CMOS active pixel type image sensor with a square pixel array and 151 M effective pixels. This IC incorporates maximum 36 dB PGA circuit and 16-bit A/D converter. 16-bit digital output makes it possible to readout the signals of 151 M effective pixels at high-speed of 2.0 frame/s in still picture mode.

In addition, vertical subsampling binning and horizontal pixel binning realize high-speed 12-bit digital output for shooting moving picture. This sensor is designed for use in consumer use digital still camera. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of this product. Therefore, don't use this for applications other than consumer use digital still camera.

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.

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### Features

- ◆ Type 4.2 CMOS active pixel type dots
- ◆ Input clock frequency 72 MHz
- ◆ All-pixel readout mode
  - Various readout modes (\*)
- ◆ Rolling shutter function moving picture mode
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ +36 dB gain settable by monochrome in CDS/PGA on chip
- ◆ Built-in 11-bit/12-bit/14-bit/16-bit A/D converter
- ◆ 8 Lane SLVS-EC output
- ◆ Back-illuminated type

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

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**Device Structure**

- ◆ Back-Illuminated CMOS image sensor
- ◆ Image size Diagonal 66.7 mm (Type 4.2)
- ◆ Total number of pixels 14304 (H) × 10802 (V) approx. 155 M pixels
- ◆ Number of effective pixels 14208 (H) × 10656 (V) approx. 151 M pixels
- ◆ Number of active pixels 14192 (H) × 10640 (V) approx. 151 M pixels
- ◆ Chip size 60.30 mm (H) × 47.90 mm (V) (include scribe area)
- ◆ Unit cell size 3.76 μm (H) × 3.76 μm (V)
- ◆ Optical black Horizontal (H) direction: Left 44 pixels, right 44 pixels  
Vertical (V) direction: Top 38 pixels, bottom 38 pixels
- ◆ Package 598 pin LGA

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	5060 LSB	1/30 s integration
Saturation signal	Min.	14168 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	14192 (H) × 10640 (V) approx. 151 M pixels	6.3	12
Readout mode 1	14192 (H) × 10640 (V) approx. 151 M pixels	3.1	12
Readout mode 3	14192 (H) × 10640 (V) approx. 151 M pixels	3.2	12
Readout mode 4	7096 (H) × 5320 (V) approx. 38 M pixels	6.9	12
Readout mode 5	4728 (H) × 3545 (V) approx. 17 M pixels	24.2	12
Readout mode 7	4728 (H) × 3545 (V) approx. 17 M pixels	10.7	12
Readout mode 8	4728 (H) × 2126 (V) approx. 10 M pixels	40.2	12
Readout mode 10	4728 (H) × 2126 (V) approx. 10 M pixels	17.9	12
Readout mode 11	4728 (H) × 1518 (V) approx. 7 M pixels	56.2	12
Readout mode 12	4728 (H) × 1179 (V) approx. 6 M pixels	72.1	12
Readout mode 13	4728 (H) × 707 (V) approx. 3 M pixels	118.1	12
Readout mode 14	4728 (H) × 505 (V) approx. 2 M pixels	163.2	12
Readout mode 15	4728 (H) × 105 (V) approx. 0.5 M pixels	702.9	12
Readout mode 16	4728 (H) × 5 (V) approx. 0.02 M pixels	3631.9	12
Readout mode 17	14192 (H) × 2126 (V) approx. 30 M pixels	31.8	12
Readout mode 18	14192 (H) × 1518 (V) approx. 22 M pixels	44.4	12
Readout mode 19	14192 (H) × 1179 (V) approx. 17 M pixels	57.0	12
Readout mode 21	4728 (H) × 1518 (V) approx. 7 M pixels	25.0	12

## [Product Information]

# IMX411AQR

Ver.1.0

Diagonal 66.7 mm (Type 4.2) CMOS Image Sensor with Square Pixel for Color Cameras

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### Description

The IMX411AQR is a diagonal 66.7 mm (Type 4.2) CMOS active pixel type image sensor with a square pixel array and 151 M effective pixels. This IC incorporates maximum 36 dB PGA circuit and 16-bit A/D converter. 16-bit digital output makes it possible to readout the signals of 151 M effective pixels at high-speed of 2.0 frame/s in still picture mode.

In addition, vertical subsampling binning and horizontal pixel binning realize high-speed 12-bit digital output for shooting moving picture. This sensor is designed for use in consumer use digital still camera. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of this product. Therefore, don't use this for applications other than consumer use digital still camera.

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.

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### Features

- ◆ Type 4.2 CMOS active pixel type dots
- ◆ Input clock frequency 72 MHz
- ◆ All-pixel readout mode  
Various readout modes (\*)
- ◆ Rolling shutter function moving picture mode
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ +36 dB gain settable by Bayer color in CDS/PGA on chip
- ◆ Built-in 11-bit/12-bit/14-bit/16-bit A/D converter
- ◆ 8 Lane SLVS-EC output
- ◆ R, G, B primary color mosaic filters on chip
- ◆ Back-illuminated type

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

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## Device Structure

◆ Back-Illuminated CMOS image sensor	
◆ Image size	Diagonal 66.7 mm (Type 4.2)
◆ Total number of pixels	14304 (H) × 10802 (V) approx. 155 M pixels
◆ Number of effective pixels	14208 (H) × 10656 (V) approx. 151 M pixels
◆ Number of active pixels	14192 (H) × 10640 (V) approx. 151 M pixels
◆ Chip size	60.30 mm (H) × 47.90 mm (V) (include scribe area)
◆ Unit cell size	3.76 μm (H) × 3.76 μm (V)
◆ Optical black	Horizontal (H) direction: Left 44 pixels, right 44 pixels Vertical (V) direction: Top 38 pixels, bottom 38 pixels
◆ Package	598 pin LGA

## Image Sensor Characteristics

(T<sub>j</sub> = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	5630 LSB	1/30 s integration
Saturation signal	Min.	14168 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	14192 (H) × 10640 (V) approx. 151 M pixels	6.3	12
Readout mode 1	14192 (H) × 10640 (V) approx. 151 M pixels	3.1	12
Readout mode 3	14192 (H) × 10640 (V) approx. 151 M pixels	3.2	12
Readout mode 4	7096 (H) × 5320 (V) approx. 38 M pixels	6.9	12
Readout mode 5	4728 (H) × 3545 (V) approx. 17 M pixels	24.2	12
Readout mode 7	4728 (H) × 3545 (V) approx. 17 M pixels	10.7	12
Readout mode 8	4728 (H) × 2126 (V) approx. 10 M pixels	40.2	12
Readout mode 10	4728 (H) × 2126 (V) approx. 10 M pixels	17.9	12
Readout mode 11	4728 (H) × 1518 (V) approx. 7 M pixels	56.2	12
Readout mode 12	4728 (H) × 1179 (V) approx. 6 M pixels	72.1	12
Readout mode 13	4728 (H) × 707 (V) approx. 3 M pixels	118.1	12
Readout mode 14	4728 (H) × 505 (V) approx. 2 M pixels	163.2	12
Readout mode 15	4728 (H) × 105 (V) approx. 0.5 M pixels	702.9	12
Readout mode 16	4728 (H) × 5 (V) approx. 0.02 M pixels	3631.9	12
Readout mode 17	14192 (H) × 2126 (V) approx. 30 M pixels	31.8	12
Readout mode 18	14192 (H) × 1518 (V) approx. 22 M pixels	44.4	12
Readout mode 19	14192 (H) × 1179 (V) approx. 17 M pixels	57.0	12
Readout mode 21	4728 (H) × 1518 (V) approx. 7 M pixels	25.0	12