

## [Product Information]

Ver.2.0

# IMX462LQR

Diagonal 6.46 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

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### Description

The IMX462LQR is a diagonal 6.46 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.13 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.

(Applications: Surveillance cameras, FA cameras, Industrial cameras)

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### Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 74.25 MHz / 37.125 MHz
- ◆ Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Readout mode
  - All-pixel scan mode
  - 720p-HD readout mode
  - Window cropping mode
  - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in Full HD 1080p mode: 120 frame / s
- ◆ High dynamic range (HDR) function
  - Multiple exposure HDR
  - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 29.4 dB: Analog Gain 29.4 dB (step pitch 0.3 dB)
  - 29.7 dB to 71.4 dB: Analog Gain 29.4 dB + Digital Gain 0.3 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O switching
  - CMOS logic parallel SDR output
  - Low voltage LVDS (150 m Vp-p) serial ( 2 ch / 4 ch / 8 ch switching) DDR output
  - CSI-2 serial data output ( 2 Lane / 4 Lane, RAW10 / RAW12 output)
- ◆ Recommended exit pupil distance: -30 mm to  $-\infty$

**STARVIS**

\* STARVIS is a trademark of Sony Corporation. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance 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/m<sup>2</sup> 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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Sony logo is a registered trademark of Sony Corporation.

**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size Type 1/2.8
- ◆ Total number of pixels 1945 (H) × 1109 (V) approx. 2.16 M pixels
- ◆ Number of effective pixels 1945 (H) × 1097 (V) approx. 2.13 M pixels
- ◆ Number of active pixels 1937 (H) × 1097 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel  
Vertical (V) direction: Front 10 pixels, rear 0 pixel
- ◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 3 pixels  
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package 110 pin LGA

**Image Sensor Characteristics**

(T<sub>j</sub> = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	10741 Digit	1/30s accumulation 12 bit converted value
Saturation signal	Min.	3855 Digit	12 bit converted value

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full HD 1080p	1920 (H) × 1080 (V) approx. 2.07 M pixels	120	LVDS CSI-2	10/12
HD 720p	1280 (H) × 720 (V) approx. 0.92 M pixels	120	LVDS CSI-2	10/12

## [Product Information]

Ver.1.0

# IMX462LQR1

Diagonal 6.46 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

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### Description

The IMX462LQR1 is a diagonal 6.46 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.13 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.

(Applications: Surveillance cameras, FA cameras, Industrial cameras)

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### Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 74.25 MHz / 37.125 MHz
- ◆ Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Readout mode
  - All-pixel scan mode
  - 720p-HD readout mode
  - Window cropping mode
  - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in Full HD 1080p mode: 120 frame / s
- ◆ High dynamic range (HDR) function
  - Multiple exposure HDR
  - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 29.4 dB: Analog Gain 29.4 dB (step pitch 0.3 dB)
  - 29.7 dB to 71.4 dB: Analog Gain 29.4 dB + Digital Gain 0.3 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O switching
  - CMOS logic parallel SDR output
  - Low voltage LVDS (150 m Vp-p) serial ( 2 ch / 4 ch / 8 ch switching) DDR output
  - CSI-2 serial data output ( 2 Lane / 4 Lane, RAW10 / RAW12 output)
- ◆ Recommended exit pupil distance: -30 mm to  $-\infty$

### STARVIS

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**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size Type 1/2.8
- ◆ Total number of pixels 1945 (H) × 1109 (V) approx. 2.16 M pixels
- ◆ Number of effective pixels 1945 (H) × 1097 (V) approx. 2.13 M pixels
- ◆ Number of active pixels 1937 (H) × 1097 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel  
Vertical (V) direction: Front 10 pixels, rear 0 pixel
- ◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 3 pixels  
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package 110 pin LGA

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	11388 Digit	1/30s accumulation 12 bit converted value
Saturation signal	Min.	3855 Digit	12 bit converted value

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full HD 1080p	1920 (H) × 1080 (V) approx. 2.07 M pixels	120	LVDS CSI-2	10/12
HD 720p	1280 (H) × 720 (V) approx. 0.92 M pixels	120	LVDS CSI-2	10/12

Ver.0.1

Diagonal 6.46 mm(Type 1/2.8) B/W CMOS Solid-state Image Sensor with Square Pixel

### Description

The IMX462LLR-C is a diagonal 6.46 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.13 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved. This chip features an electronic shutter with variable charge-integration time.  
(Application: Security cameras)

### Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 74.25 MHz / 37.125 MHz
- ◆ Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Readout mode
  - All-pixel scan mode
  - 720p-HD readout mode
  - Window cropping mode
  - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in Full HD 1080p mode: 120 frame / s
- ◆ High dynamic range (HDR) function
  - Multiple exposure HDR
  - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 29.4 dB: Analog Gain 29.4 dB (step pitch 0.3 dB)
  - 29.7 dB to 71.4 dB: Analog Gain 29.4 dB + Digital Gain 0.3 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O switching
  - Low voltage LVDS (150 m Vp-p) serial ( 2 ch / 4 ch / 8 ch switching) DDR output
  - CSI-2 serial data output ( 2 Lane / 4 Lane, RAW10 / RAW12 output)

## STARVIS

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**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size Type 1/2.8
- ◆ Total number of pixels 1945 (H) × 1109 (V) approx. 2.16 M pixels
- ◆ Number of effective pixels 1945 (H) × 1097 (V) approx. 2.13 M pixels
- ◆ Number of active pixels 1937 (H) × 1097 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel  
Vertical (V) direction: Front 10 pixels, rear 0 pixel
- ◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 3 pixels  
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package 110 pin LGA

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	45650 Digit/lx/s	12 bit converted value
Saturation signal	Min.	3855 Digit	12 bit converted value

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full HD 1080p	1920 (H) × 1080 (V) approx. 2.07 M pixels	120/60	LVDS CSI-2	10/12
HD 720p	1280 (H) × 720 (V) approx. 0.92 M pixels	120/60	LVDS CSI-2	10/12