

## [Product Information]

# IMX304LLR

Ver.1.1

Diagonal 17.6 mm (Type 1.1) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

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### Description

The IMX304LLR is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.37 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with analog 3.3 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and low PLS characteristics are achieved.  
(Applications: FA cameras, ITS cameras)

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### Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Global shutter function
- ◆ Input frequency  
37.125 MHz / 74.25 MHz / 54 MHz
- ◆ Number of recommended recording pixels: 4096 (H) × 3000 (V) approx. 12.29 M pixels
  - Readout mode
  - All-pixel scan mode
  - Vertical / Horizontal 1 / 2 Subsampling mode
  - ROI mode
  - Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in
  - All-pixel scan mode: 12 bit: 23.4 frame/s
- ◆ 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 24 dB: Analog Gain (0.1 dB step)
  - 24.1 dB to 48 dB: Analog Gain: 24 dB + Digital Gain: 0.1 dB to 24 dB (0.1 dB step)
- ◆ I/O interface
  - Low voltage LVDS (150 mVp-p) serial (4 ch / 8 ch switching) DDR output
- ◆ Recommended lens F number: 2.8 or more (Close side)
- ◆ Recommended exit pupil distance: -100 mm to  $-\infty$

### Pregius

\* Pregius is a trademark of Sony Corporation. The Pregius is global shutter pixel technology for active pixel-type CMOS image sensors that use Sony's low-noise CCD structure, and realizes high picture quality.

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

Sony logo is a registered trademark of Sony Corporation.

**Device Structure**

◆ CMOS image sensor			
◆ Image size	Diagonal 17.6 mm (Type 1.1)	Approx. 12.37 M pixels	All-pixel
◆ Total number of pixels	4112 (H) × 3018 (V)	Approx. 12.41 M pixels	
◆ Number of effective pixels	4112 (H) × 3008 (V)	Approx. 12.37 M pixels	
◆ Number of active pixels	4112 (H) × 3008 (V)	Approx. 12.37 M pixels	
◆ Number of recommended recording pixels	4096 (H) × 3000 (V)	Approx. 12.29 M pixels	All-pixel
◆ Unit cell size	3.45 μm (H) × 3.45 μm (V)		
◆ Optical black	Horizontal (H) direction: Front 0 pixel, rear 0 pixel Vertical (V) direction: Front 10 pixels, rear 0 pixel		
◆ Package	226 pin LGA		

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	915 mV	1/30 s accumulation
Saturation signal	Min.	1001 mV	

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	4096 (H) × 3000 (V) approx. 12.29 M pixels	23.4	Serial LVDS 8 ch	12
All pixel (Vertical / Horizontal 1/2 subsampling)	2048 (H) × 1500 (V) approx. 3.07 M pixels	46.3	Serial LVDS 8 ch	12

## [Product Information]

# IMX304LQR

Ver.1.1

Diagonal 17.6 mm (Type 1.1) CMOS solid-state Image Sensor with Square Pixel for Color Cameras

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### Description

The IMX304LQR is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.37 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with analog 3.3 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and low PLS characteristics are achieved.  
(Applications: FA cameras, ITS cameras)

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### Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Global shutter function
- ◆ Input frequency  
37.125 MHz / 74.25 MHz / 54 MHz
- ◆ Number of recommended recording pixels: 4096 (H) × 3000 (V) approx. 12.29 M pixels
  - Readout mode
  - All-pixel scan mode
  - Vertical / Horizontal 1 / 2 Subsampling mode
  - ROI mode
  - Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in
  - All-pixel scan mode: 12 bit: 23.4 frame/s
- ◆ 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 24 dB: Analog Gain (0.1 dB step)
  - 24.1 dB to 48 dB: Analog Gain: 24 dB + Digital Gain: 0.1 dB to 24 dB (0.1 dB step)
- ◆ I/O interface
  - Low voltage LVDS (150 mVp-p) serial (4 ch / 8 ch switching) DDR output
- ◆ Recommended lens F number: 2.8 or more (Close side)
- ◆ Recommended exit pupil distance: -100 mm to  $-\infty$

### Pregius

\* Pregius is a trademark of Sony Corporation. The Pregius is global shutter pixel technology for active pixel-type CMOS image sensors that use Sony's low-noise CCD structure, and realizes high picture quality.

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**Device Structure**

◆ CMOS image sensor			
◆ Image size	Diagonal 17.6 mm (Type 1.1)	Approx. 12.37 M pixels	All-pixel
◆ Total number of pixels	4112 (H) × 3018 (V)	Approx. 12.41 M pixels	
◆ Number of effective pixels	4112 (H) × 3008 (V)	Approx. 12.37 M pixels	
◆ Number of active pixels	4112 (H) × 3008 (V)	Approx. 12.37 M pixels	
◆ Number of recommended recording pixels	4096 (H) × 3000 (V)	Approx. 12.29 M pixels	All-pixel
◆ Unit cell size	3.45 μm (H) × 3.45 μm (V)		
◆ Optical black	Horizontal (H) direction: Front 0 pixel, rear 0 pixel Vertical (V) direction: Front 10 pixels, rear 0 pixel		
◆ Package	226 pin LGA		

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	1146 mV	1/30 s accumulation
Saturation signal	Min.	1001 mV	

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	4096 (H) × 3000 (V) approx. 12.29 M pixels	23.4	Serial LVDS 8 ch	12
All pixel (Vertical / Horizontal 1/2 subsampling)	2048 (H) × 1500 (V) approx. 3.07 M pixels	46.3	Serial LVDS 8 ch	12