

## [Product Information]

# IMX420LLJ

Ver.1.3

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

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### Description

The IMX420LLJ is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 7.10 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: 3208 (H) × 2200 (V) approx. 7.06 M pixels
  - Readout mode
  - All-pixel scan mode
  - Vertical / Horizontal 1 / 2 Subsampling mode
  - 2 × 2 Vertical FD binning mode
  - ROI mode
  - Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in
  - All-pixel scan mode: 8 bit 207.1 frame/s, 10 bit: 172.0 frame/s, 12 bit: 134.5 frame/s
- ◆ 8-bit / 10-bit / 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
  - SLVS (4 ch / 8 ch switching) output (594 / 297 Mbps per ch)
  - SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane switching) output (2.376 / 1.188 Gbps per Lane)
- ◆ 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.

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**Device Structure**

◆ CMOS image sensor			
◆ Image size	Diagonal 17.6 mm (Type 1.1)	Approx. 7.10 M pixels	All-pixel
◆ Total number of pixels	3216 (H) × 2232 (V)	Approx. 7.18 M pixels	
◆ Number of effective pixels	3216 (H) × 2208 (V)	Approx. 7.10 M pixels	
◆ Number of active pixels	3216 (H) × 2208 (V)	Approx. 7.10 M pixels	
◆ Number of recommended recording pixels	3208 (H) × 2200 (V)	Approx. 7.06 M pixels	All-pixel
◆ Unit cell size	4.5 μm (H) × 4.5 μm (V)		
◆ Optical black	Horizontal (H) direction: Front 0 pixel, rear 0 pixel Vertical (V) direction: Front 24 pixels, rear 0 pixel		
◆ Package	226 pin LGA		

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	1677 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	3208 (H) × 2200 (V) approx. 7.06 M pixels	74.9	SLVS 8 ch	8
		207.1	SLVS – EC 8 Lane	
		60.7	SLVS 8 ch	10
		172.0	SLVS – EC 8 Lane	
		50.9	SLVS 8 ch	12
		134.5	SLVS – EC 8 Lane	
Vertical / Horizontal 1/2 subsampling	1604 (H) × 1100 (V) approx. 1.76 M pixels	263.5	SLVS 8 ch	8
		416.8	SLVS – EC 8 Lane	
		217.8	SLVS 8 ch	10
		386.4	SLVS – EC 8 Lane	
		185.5	SLVS 8 ch	12
		260.4	SLVS – EC 8 Lane	
2 × 2 Vertical FD binning mode	1604 (H) × 1100 (V) approx. 1.76 M pixels	266.2	SLVS 8 ch	8
		418.2	SLVS – EC 8 Lane	
		220.0	SLVS 8 ch	10
		387.7	SLVS – EC 8 Lane	
		187.4	SLVS 8 ch	12
		261.3	SLVS – EC 8 Lane	

## [Product Information]

# IMX420LQJ

Ver.1.3

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

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### Description

The IMX420LQJ is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 7.10 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: 3208 (H) × 2200 (V) approx. 7.06 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: 8 bit 207.1 frame/s, 10 bit: 172.0 frame/s, 12 bit: 134.5 frame/s
- ◆ 8-bit / 10-bit / 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
  - SLVS (4 ch / 8 ch switching) output (594 / 297 Mbps per ch)
  - SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane switching) output (2.376 / 1.188 Gbps per Lane)
- ◆ Recommended lens F number: 2.8 or more (Close side)
- ◆ Recommended exit pupil distance: -100 mm to  $-\infty$

### Pregius

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**Device Structure**

◆ CMOS image sensor			
◆ Image size	Diagonal 17.6 mm (Type 1.1)	Approx. 7.10 M pixels	All-pixel
◆ Total number of pixels	3216 (H) × 2232 (V)	Approx. 7.18 M pixels	
◆ Number of effective pixels	3216 (H) × 2208 (V)	Approx. 7.10 M pixels	
◆ Number of active pixels	3216 (H) × 2208 (V)	Approx. 7.10 M pixels	
◆ Number of recommended recording pixels	3208 (H) × 2200 (V)	Approx. 7.06 M pixels	All-pixel
◆ Unit cell size	4.5 μm (H) × 4.5 μm (V)		
◆ Optical black	Horizontal (H) direction: Front 0 pixel, rear 0 pixel Vertical (V) direction: Front 24 pixels, rear 0 pixel		
◆ Package	226 pin LGA		

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	2058 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	3208 (H) × 2200 (V) approx. 7.06 M pixels	74.9	SLVS 8 ch	8
		207.1	SLVS – EC 8 Lane	
		60.7	SLVS 8 ch	10
		172.0	SLVS – EC 8 Lane	
		50.9	SLVS 8 ch	12
		134.5	SLVS – EC 8 Lane	
Vertical / Horizontal 1/2 subsampling	1604 (H) × 1100 (V) approx. 1.76 M pixels	263.5	SLVS 8 ch	8
		416.8	SLVS – EC 8 Lane	
		217.8	SLVS 8 ch	10
		386.4	SLVS – EC 8 Lane	
		185.5	SLVS 8 ch	12
		260.4	SLVS – EC 8 Lane	