

[Product Information]

IMX421LLJ

Ver.1.1

Diagonal 11.0 mm (Type 2 / 3) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX421LLJ is a diagonal 11.0 mm (Type 2 / 3) CMOS active pixel type solid-state image sensor with a square pixel array and 2.86 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)

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: 1936 (H) × 1464 (V) approx. 2.83 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 409.2 frame/s, 10 bit: 371.8 frame/s, 12 bit: 231.2 frame/s
- ◆ Variable-speed shutter function (resolution 1 H units)
- ◆ 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 1 ch)
 - SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane switching) output (2.376 / 1.188 Gbps per 1 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.

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Device Structure

◆ CMOS image sensor			
◆ Image size	Diagonal 11.0 mm (Type 2 / 3)	Approx. 2.86 M pixels	All-pixel
◆ Total number of pixels	1944 (H) × 1496 (V)	Approx. 2.90 M pixels	
◆ Number of effective pixels	1944 (H) × 1472 (V)	Approx. 2.86 M pixels	
◆ Number of active pixels	1944 (H) × 1472 (V)	Approx. 2.86 M pixels	
◆ Number of recommended recording pixels	1936 (H) × 1464 (V)	Approx. 2.83 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 (Preliminary)

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	1613 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	1936 (H) × 1464 (V) approx. 2.83 M pixels	174.6	SLVS 8 ch	8
		409.2	SLVS – EC 8 Lane	
		143.0	SLVS 8 ch	10
		371.8	SLVS – EC 8 Lane	
		121.1	SLVS 8 ch	12
		231.2	SLVS – EC 8 Lane	
Vertical / Horizontal 1/2 subsampling	968 (H) × 732 (V) approx. 0.71 M pixels	590.8	SLVS 8 ch	8
		780.5	SLVS – EC 8 Lane	
		494.0	SLVS 8 ch	10
		710.8	SLVS – EC 8 Lane	
		421.5	SLVS 8 ch	12
		446.2	SLVS – EC 8 Lane	
2 × 2 Vertical FD binning	968 (H) × 732 (V) approx. 0.71 M pixels	599.6	SLVS 8 ch	8
		784.4	SLVS – EC 8 Lane	
		501.5	SLVS 8 ch	10
		714.3	SLVS – EC 8 Lane	
		427.8	SLVS 8 ch	12
		448.4	SLVS – EC 8 Lane	