

Diagonal 5.81 mm (Type 1/3.1) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX900-AMR is a diagonal 5.81mm (Type 1/3.1) CMOS active pixel type solid-state image sensor with a square pixel array and 3.20 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with 2.9 V, 1.8 V, 0.8 V power supply. High sensitivity and low dark current characteristics are achieved.

(Applications: FA cameras, Code reading cameras, Embedded vision systems)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Global shutter function
- ◆ Input frequency 24 MHz (only for CSI-2) / 37.125 MHz / 74.25 MHz / 54 MHz
- ◆ Number of recommended recording pixels: 2048 (H) × 1536 (V) approx. 3.14 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Vertical / Horizontal 1/2 Subsampling mode
 - 2 x 2 average mode
 - Vertical 1/10 Subsampling mode
 - ROI mode
 - Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in
 - All-pixel scan mode: 8 bit 120.9 frame/s, 10 bit 113.2 frame/s, 12 bit 70.6 frame/s (Tentative)
 - (*) At high frame rates, control so as not to exceed $T_j = +100\text{ }^\circ\text{C}$
- ◆ Variable-speed shutter function (resolution 1 H units)
- ◆ Pulse Output Function
 - The monitor output for Exposure period (GPO0, GPO1, GPO2)
- ◆ 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 (2 ch / 4 ch) output
 - CSI-2 (1 Lane / 2 Lane / 4 Lane) output

Pregius S

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Device Structure

◆ CMOS image sensor		
◆ Image size	Diagonal 5.81 mm (Type 1/3.1)	Approx. 3.20 M pixels
◆ Total number of pixels	2064 (H) × 1592 (V)	Approx. 3.28 M pixels
◆ Number of effective pixels	2064 (H) × 1552 (V)	Approx. 3.20 M pixels
◆ Number of active pixels	2064 (H) × 1552 (V)	Approx. 3.20 M pixels
◆ Number of recommended recording pixels	2048 (H) × 1536 (V)	Approx. 3.14 M pixels
◆ Unit cell size	2.25 μm (H) × 2.25 μm (V)	
◆ Optical black	Horizontal (H) direction: Front 0 pixels, rear 0 pixel Vertical (V) direction: Front 40 pixels, rear 0 pixel	
◆ Package	114 pin LGA	12.0 mm (H) × 9.3 mm (V)

Image Sensor Characteristics

(T_j = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	TBD Digit/lx/s	
Saturation signal	Min.	TBD Digit	

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	2048 (H) × 1536 (V) Approx. 3.14 M pixels	110.5	SLVS 4 ch	8
		120.9	CSI-2 4 Lane	
		91.4	SLVS 4 ch	10
		113.2	CSI-2 4 Lane	
		70.6	SLVS 4 ch	12
		70.6	CSI-2 4 Lane	
Vertical / Horizontal 1/2 subsampling 2 x 2 average mode	1024 (H) × 768 (V) approx. 0.78 M pixels	315.7	SLVS 4 ch	8
		357.1	CSI-2 4 Lane	
		273.8	SLVS 4 ch	10
		339.9	CSI-2 4 Lane	
		232.7	SLVS 4 ch	12
		232.7	CSI-2 4 Lane	

Note: All of frame rate are tentative.

