SONY

Tentative Ver.0.1

IMX901-AMR

Diagonal 22.67 mm (Type 1.4) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX901-AMR is a diagonal 22.67 mm (Type 1.4) CMOS active pixel type solid-state image sensor with a square pixel array and 16.41 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with 3.3 V, 2.9 V, 1.1 V, and 1.8 V quadruple power supply. High sensitivity and low dark current 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 6 to 27 MHz (only for CSI-2) / 37.125 MHz / 74.25 MHz
- ◆Number of recommended recording pixels: 8008 (H) × 2040 (V) approx. 16.33 M pixel
- ◆Readout mode
  - All-pixel scan mode
  - Vertical / Horizontal 1/2 Subsampling mode
  - 2 × 2 FD binning mode
  - ROI mode
  - Vertical / Horizontal - Normal / Inverted readout mode
- ◆Readout rate Maximum frame rate in All-pixel scan mode: 10-bit 134.7 frame/s, 12-bit 91.5 frame/s (Tentative)
  (*) At high frame rates, control so as not to exceed Tj = +100 °C
- ◆Variable-speed shutter function (resolution 1 H units)
- ◆Pulse Output Function
  - The monitor output for Exposure period (TOUT0)
- ◆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 / 8 ch) output
  - SLVS-EC (1 Lane / 2 Lane / 4 Lane) output
  - CSI-2 (1 Lane / 2 Lane / 4 Lane) output
- ◆CRA characteristics
  - The target CRA is 9.7 degree at 100% image height

Pregius S

* Pregius S and its logo are registered trademarks or trademarks of Sony Group Corporation or its affiliates. Pregius S is a global shutter sensor technology for active pixel-type CMOS image sensors. By stacking the signal processing on the back illuminated type CMOS Image Sensor it realizes small chip size and high sensitivity, whilst using the high picture quality global shutter pixel technology of Pregius.

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Device Structure

◆CMOS image sensor		
◆Image size	Diagonal 22.67 mm (Type 1.4)	Approx. 16.41 M pixels
◆Total number of pixels	8016 (H) × 2112 (V)	Approx. 16.92 M pixels
◆Number of effective pixels	8016 (H) × 2048 (V)	Approx. 16.41 M pixel
◆Number of active pixels	8016 (H) × 2048 (V)	Approx. 16.41 M pixels
◆Number of recommended recording pixels	8008 (H) × 2040 (V)	Approx. 16.33 M pixels
◆Unit cell size	2.74 µm (H) × 2.74 µm (V)	
◆Optical black	Horizontal (H) direction: Front 0 pixels, rear 0 pixel	
	Vertical (V) direction: Front 64 pixels, rear 0 pixel	
◆Package	260 pin LGA	38.0 mm (H) × 22.0 mm (V)

Image Sensor Characteristics

(Tj = 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	8008 (H) × 2040 (V) Approx. 16.33 M pixels	52.8	SLVS 8 ch	10
		134.7	SLVS-EC 4 Lane	
		52.0	CSI-2 4 Lane	
		44.4	SLVS 8 ch	12
		91.5	SLVS-EC 4 Lane	
		43.8	CSI-2 4 Lane	
Vertical / Horizontal 1/2 subsampling	4004 (H) × 1020 (V) approx. 4.08 M pixels	195.8	SLVS 8 ch	10
		507.5	SLVS-EC 4 Lane	
		190.9	CSI-2 4 Lane	
		167.0	SLVS 8 ch	12
		350.1	SLVS-EC 4 Lane	
		163.0	CSI-2 4 Lane	
2 × 2 FD binning mode	4004 (H) × 1020 (V) approx. 4.08 M pixels	195.8	SLVS 8 ch	10
		507.5	SLVS-EC 4 Lane	
		190.9	CSI-2 4 Lane	
		167.0	SLVS 8 ch	12
		350.1	SLVS-EC 4 Lane	
		163.0	CSI-2 4 Lane	

Note: All of frame rate are tentative.

Image Sensors for Industrial Applications:
https://www.sony.net/cis-industry