

Diagonal 17.50 mm (Type 1.1) CMOS solid-state Image Sensor with Square Pixel for Color Camera

Description

The IMX902-AQR is a diagonal 17.50 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.38 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: 6040 (H) × 2040 (V) approx. 12.32 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: 10-bit 134.7 frame/s, 12-bit 91.5 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 (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 7.6 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.

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

"Sony", "SONY" logo are registered trademarks or trademarks of Sony Group Corporation or its affiliates.

Device Structure

◆ CMOS image sensor		
◆ Image size	Diagonal 17.50 mm (Type 1.1)	Approx. 12.38 M pixels
◆ Total number of pixels	6048 (H) × 2112 (V)	Approx. 12.77 M pixel
◆ Number of effective pixels	6048 (H) × 2048 (V)	Approx. 12.38 M pixel
◆ Number of active pixels	6048 (H) × 2048 (V)	Approx. 12.38 M pixel
◆ Number of recommended recording pixels	6040 (H) × 2040 (V)	Approx. 12.32 M pixel
◆ 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	6040 (H) × 2040 (V) Approx. 12.32 M pixel	69.0	SLVS 8 ch	10
		134.7	SLVS-EC 4 Lane	
		67.7	CSI-2 4 Lane	
		58.0	SLVS 8 ch	12
		91.5	SLVS-EC 4 Lane	
		57.1	CSI-2 4 Lane	
Vertical / Horizontal 1/2 subsampling	3020 (H) × 1020 (V) approx. 3.08 M pixels	253.3	SLVS 8 ch	10
		263.3	SLVS-EC 4 Lane	
		244.1	CSI-2 4 Lane	
		179.8	SLVS 8 ch	12
		179.8	SLVS-EC 4 Lane	
		179.8	CSI-2 4 Lane	

Note: All of frame rate are tentative.

