

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

### Description

The IMX900-AQR 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
  - 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

\* 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 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**

(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	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	1024 (H) × 768 (V) approx. 0.78 M pixels	215.7	SLVS 4 ch	8
		215.7	CSI-2 4 Lane	
		203.3	SLVS 4 ch	10
		203.3	CSI-2 4 Lane	
		131.4	SLVS 4 ch	12
		131.4	CSI-2 4 Lane	

Note: All of frame rate are tentative.

