

Ver.1.0

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 sensor 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 clock 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
  - (\*) At high frame rates, control so as not to exceed  $T_j = +100\text{ }^\circ\text{C}$
- ◆ Variable-shutter speed (1 XHS unit step)
- ◆ Pulse Output Function
  - The monitor output for Integration period (TOUT0)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGC function
  - 0 dB to 24 dB: Variable analog Gain (0.1 dB step)
  - 24.1 dB to 48 dB: Analog Gain: 24 dB + variable 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

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**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 pixels
◆ Number of effective pixels	6048 (H) × 2048 (V)	Approx. 12.38 M pixels
◆ Number of active pixels	6048 (H) × 2048 (V)	Approx. 12.38 M pixels
◆ Number of recommended recording pixels	6040 (H) × 2040 (V)	Approx. 12.32 M pixels
◆ Unit cell size	2.74 μm (H) × 2.74 μm (V)	
◆ Optical black	Horizontal (H) direction: Front 0 pixel, 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.	8620 LSB/lx/s	12 bits converted value Zone 0
Saturation signal	Min.	4094 LSB	

**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	

