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 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 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.

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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 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)

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>Typ.</td>
<td>TBD Digit/lx/s</td>
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<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>TBD Digit</td>
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</table>

Basic Drive Mode

<table>
<thead>
<tr>
<th>Drive mode</th>
<th>Recommended number of recording pixels</th>
<th>Maximum frame rate [frame/s]</th>
<th>Output interface</th>
<th>ADC [bit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>All pixel</td>
<td>6040 (H) × 2040 (V) Approx. 12.32 M pixel</td>
<td>69.0 SLVS 8 ch</td>
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<td>10</td>
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<tr>
<td></td>
<td></td>
<td>134.7 SLVS-EC 4 Lane</td>
<td></td>
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<td></td>
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<td>67.7 CSI-2 4 Lane</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>58.0 SLVS 8 ch</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>91.5 SLVS-EC 4 Lane</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>57.1 CSI-2 4 Lane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical / Horizontal 1/2 subsampling</td>
<td>3020 (H) × 1020 (V) approx. 3.08 M pixels</td>
<td>253.3 SLVS 8 ch</td>
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<td>10</td>
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<tr>
<td></td>
<td></td>
<td>263.3 SLVS-EC 4 Lane</td>
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<tr>
<td></td>
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<td>244.1 CSI-2 4 Lane</td>
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<td>179.8 SLVS 8 ch</td>
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<td>12</td>
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<td>179.8 SLVS-EC 4 Lane</td>
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<td></td>
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<td>179.8 CSI-2 4 Lane</td>
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Note: All of frame rate are tentative.

Image Sensors for Industrial Applications: [https://www.sony.net/cis-industry](https://www.sony.net/cis-industry)