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 Tj = +100 °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)

<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>
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</thead>
<tbody>
<tr>
<td>All pixel</td>
<td>2048 (H) × 1536 (V)</td>
<td>110.5</td>
<td>SLVS 4 ch</td>
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<td></td>
<td></td>
<td>120.9</td>
<td>CSI-2 4 Lane</td>
<td>10</td>
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<td></td>
<td></td>
<td>91.4</td>
<td>SLVS 4 ch</td>
<td>12</td>
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<td></td>
<td></td>
<td>113.2</td>
<td>CSI-2 4 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70.6</td>
<td>SLVS 4 ch</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70.6</td>
<td>CSI-2 4 Lane</td>
<td></td>
</tr>
<tr>
<td>Vertical / Horizontal 1/2 subsampling</td>
<td>1024 (H) × 768 (V)</td>
<td>215.7</td>
<td>SLVS 4 ch</td>
<td>8</td>
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<tr>
<td></td>
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<td>215.7</td>
<td>CSI-2 4 Lane</td>
<td>10</td>
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<tr>
<td></td>
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<td>203.3</td>
<td>SLVS 4 ch</td>
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<td></td>
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<td>203.3</td>
<td>CSI-2 4 Lane</td>
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<tr>
<td></td>
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<td>131.4</td>
<td>SLVS 4 ch</td>
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<td></td>
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<td>131.4</td>
<td>CSI-2 4 Lane</td>
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Note: All of frame rate are tentative.