The IMX585-AAQJ1 is a diagonal 12.84 mm (Type 1/1.2) CMOS active pixel type solid-state image sensor with a square pixel array and 8.40 M effective pixels. This chip operates with analog 3.3 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.

(Application: Security cameras)

Features

◆ CMOS active pixel type dots
◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
◆ Input frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
◆ Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29M pixel
◆ Readout mode
   - All-pixel scan mode
   - Horizontal / Vertical 2/2-line binning mode
   - Window cropping mode
   - Horizontal / Vertical direction - Normal / Inverted readout mode
◆ Readout rate
   - Maximum frame rate in All-pixel scan mode: 12 bit: 60 frame/s, 10 bit: 90 frame/s
◆ High dynamic range (HDR) function
   - Digital overlap HDR
   - Clear HDR
◆ Synchronizing sensors function
◆ Variable-speed shutter function (resolution 2H units)
◆ 10-bit / 12-bit A/D converter
◆ CDS / PGA function
   - 0 dB to 30 dB: Analog Gain 30 dB (step pitch 0.3 dB)
   - 30.3 dB to 72 dB: Analog Gain 30 dB + Digital Gain 0.3 dB to 42 dB (step pitch 0.3 dB)
◆ Supports I/O
   - CSI-2 serial data output (2 Lane / 4 Lane / 8Lane / 4Lane × 2ch)
   - RAW10 / RAW12 / RAW16 (Clear HDR) output

* STARVIS 2 is a registered trademark or trademark of Sony Group Corporation or its affiliates. The STARVIS 2 is back-illuminated pixel technology used in CMOS image sensors for security camera applications. It features a sensitivity of 2000 mV or more per 1 µm² (color product, when imaging with a 706 cd/m² light source, F5.6 in 1 s accumulation equivalent). It also has a wide dynamic range (AD 12 bit) of more than 8 dB compared to STARVIS for the same pixel size in a single exposure, and achieves high picture quality in the visible-light and near infrared light regions.

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Device Structure

◆ CMOS image sensor
◆ Image size Diagonal 12.84 mm (Type 1/1.2) approx. 8.40 M pixels, All pixels
◆ Total number of pixels 3856 (H) × 2220 (V) approx. 8.56 M pixels
◆ Number of effective pixels 3856 (H) × 2180 (V) approx. 8.40 M pixels
◆ Number of active pixels 3856 (H) × 2176 (V) approx. 8.39 M pixels
◆ Number of recommended recording pixels 3840 (H) × 2160 (V) approx. 8.29 M pixels
◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
◆ Optical black Horizontal (H) direction: Front 0 pixels, rear 0 pixels
Vertical (V) direction: Front 20 pixels, rear 0 pixels
◆ Dummy Horizontal (H) direction: Front 0 pixels, rear 0 pixels
Vertical (V) direction: Front 0 pixels, rear 0 pixels
◆ Package 122 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (F5.6)</td>
<td>Typ.</td>
<td>19556 Digit/lx/s</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>3895 Digit</td>
</tr>
</tbody>
</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>3840 (H) × 2160 (V) approx. 8.29 M pixels</td>
<td>90</td>
<td>CSI-2</td>
<td>10</td>
</tr>
<tr>
<td>Horizontal/ Vertical 2/2-line binning</td>
<td>1920 (H) × 1080 (V) approx. 2.07 M pixels</td>
<td>90</td>
<td>CSI-2</td>
<td>10</td>
</tr>
</tbody>
</table>
Comparison Image under Complex Lighting Environment

IMX585 has a wider dynamic range than conventional type. Also, when shooting a fast-moving target the image taken with Clear HDR does not have chromatic aberration compared to DOL HDR.

Conventional: One shot  IMX585: One shot

Conventional: DOL HDR  IMX585: Clear HDR

Image Sensors for Security Cameras: https://www.sony.net/cis-security/