Description

The IMX307LQD/LQR are diagonal 6.46 mm (Type 1/2.8) CMOS active pixel type solid-state image sensors with a square pixel array and 2.13 M effective pixels. These chips operate with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and have 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. These chips feature an electronic shutter with variable charge-integration time. 
(Application: Surveillance cameras, FA cameras, Industrial cameras)

Features

- CMOS active pixel type dots
- Built-in timing adjustment circuit, H/V driver and serial communication circuit
- Input frequency: 74.25 MHz / 37.125 MHz
- Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07 M pixels
- Readout mode
  - All-pixel scan mode
  - 720p-HD readout mode
  - Window cropping mode
  - Vertical / Horizontal direction-normal / inverted readout mode
- Readout rate
  - Maximum frame rate in Full HD 1080p mode: 60 frame / s
- High dynamic range (HDR) function
  - Multiple exposure HDR
  - Digital overlap HDR
- Variable-speed shutter function (resolution 1H units)
- 10-bit / 12-bit A/D converter
- CDS / PGA function
  - 0 dB to 27 dB: Analog Gain 27 dB (step pitch 0.3 dB)
  - 27.3 dB to 69 dB: Analog Gain 27 dB + Digital Gain 0.3 to 42 dB (step pitch 0.3 dB)
- Supports I/O switching
  - Low voltage LVDS (150 m Vp-p) serial ( 2 ch / 4 ch switching) DDR output
  - CSI-2 serial data output ( 2 Lane / 4 Lane, RAW10 / RAW12 output)
- Recommended exit pupil distance: –30 mm to –∞

* STARVIS is a registered trademark or trademark of Sony Group Corporation or its affiliates. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for security camera applications. It features a sensitivity of 2000 mV or more per 1μm² (color product, when imaging with a 706 cd/m² light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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Device Structure

◆ CMOS image sensor
◆ Image size Type 1/2.8
◆ Total number of pixels 1945 (H) × 1109 (V) approx. 2.16 M pixels
◆ Number of effective pixels 1945 (H) × 1097 (V) approx. 2.13 M pixels
◆ Number of active pixels 1937 (H) × 1097 (V) approx. 2.12 M pixels
◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
◆ Unit cell size 2.9 µm (H) × 2.9 µm (V)
◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 10 pixels, rear 0 pixel
◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 3 pixels
Vertical (V) direction: Front 0 pixel, rear 0 pixel
◆ Package 112 pin BGA (IMX307LQD), 110 pin LGA (IMX307LQR)

Image Sensor Characteristics

(\(T_j = 60 \, ^\circ\text{C}\))

<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>7747 Digit 1/30 s accumulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 bit converted value</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>3855 Digit 12 bit converted value</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>Full HD 1080p</td>
<td>1920 (H) × 1080 (V) approx. 2.07 M pixels</td>
<td>60</td>
<td>LVDS</td>
<td>10/12</td>
</tr>
<tr>
<td>HD 720p</td>
<td>1280 (H) × 720 (V) approx. 0.92 M pixels</td>
<td>60</td>
<td>LVDS</td>
<td>10/12</td>
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</tbody>
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Image Sensors for Security Cameras:
https://www.sony.net/cis-security/