[Product Information]

IMX307LQD/LQR

Diagonal 6.46 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

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.

(Applications: 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 trademark of Sony Corporation. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance 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), 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

(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. 7747 Digit</td>
<td>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. 3855 Digit</td>
<td>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 CSI-2</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 CSI-2</td>
<td>10/12</td>
</tr>
</tbody>
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