IMX296LLR

Diagonal 6.3 mm (Type 1 / 2.9) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX296LLR is a diagonal 6.3 mm (Type 1 / 2.9) CMOS active pixel type solid-state image sensor with a square pixel array and 1.58 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with analog 3.3 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and low PLS characteristics are achieved.

(Applications: Sensing, Embedded Vision)

Features

◆ CMOS active pixel type dots
◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
◆ Global shutter function
◆ Input frequency
  37.125 MHz / 74.25 MHz / 54 MHz
◆ Number of recommended recording pixels: 1440 (H) × 1080 (V) approx. 1.55 M pixels
  Readout mode
  All-pixel scan mode
  2 × 2 Vertical FD binning mode
  ROI mode
  Vertical / Horizontal - Normal / Inverted readout mode
◆ Readout rate
  Maximum frame rate in
  All-pixel scan mode: 10 bit: 60.3 frame/s
◆ 10-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
  CSI-2 serial data output (1 Lane) RAW10 output
◆ Recommended lens F number: 2.8 or more (Close side)
◆ Recommended exit pupil distance: −100 mm to −∞

* Pregius is a trademark of Sony Corporation. The Pregius is global shutter pixel technology for active pixel-type CMOS image sensors that use Sony’s low-noise CCD structure, and realizes high picture quality.

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Device Structure

◆ CMOS image sensor
◆ Image size
  Diagonal 6.3 mm (Type 1 / 2.9) Approx. 1.58 M pixels All-pixel
◆ Total number of pixels
  1456 (H) × 1098 (V) Approx. 1.60 M pixels
◆ Number of effective pixels
  1456 (H) × 1088 (V) Approx. 1.58 M pixels
◆ Number of active pixels
  1456 (H) × 1088 (V) Approx. 1.58 M pixels
◆ Number of recommended recording pixels
  1440 (H) × 1080 (V) Approx. 1.56 M pixels All-pixel
◆ Unit cell size
  3.45 µm (H) × 3.45 µm (V)
◆ Optical black
  Horizontal (H) direction: Front 0 pixel, rear 0 pixel
  Vertical (V) direction: Front 10 pixels, rear 0 pixel
◆ Package
  138 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 (F8) Typ.</td>
<td>915 mV</td>
<td>1/30 s accumulation</td>
</tr>
<tr>
<td>Saturation signal Min.</td>
<td>1001 mV</td>
<td></td>
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</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>1440 (H) × 1080 (V) approx. 1.56 M pixels</td>
<td>60.3</td>
<td>CSI-2</td>
<td>10</td>
</tr>
<tr>
<td>2 × 2 Vertical FD binning mode</td>
<td>720 (H) × 540 (V) approx. 0.39 M pixels</td>
<td>120.8</td>
<td>CSI-2</td>
<td>10</td>
</tr>
</tbody>
</table>
[Product Information] IMX296LQR

Ver.1.0

Diagonal 6.3 mm (Type 1 / 2.9) CMOS solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX296LQR is a diagonal 6.3 mm (Type 1 / 2.9) CMOS active pixel type solid-state image sensor with a square pixel array and 1.58 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with analog 3.3 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and low PLS characteristics are achieved.

(Applications: Embedded Vision)

Features

- CMOS active pixel type dots
- Built-in timing adjustment circuit, H/V driver and serial communication circuit
- Global shutter function
- Input frequency
  - 37.125 MHz / 74.25 MHz / 54 MHz
- Number of recommended recording pixels: 1440 (H) × 1080 (V) approx. 1.55 M pixels
  - Readout mode
  - All-pixel scan mode
  - ROI mode
  - Vertical / Horizontal - Normal / Inverted readout mode
- Readout rate
  - Maximum frame rate in
  - All-pixel scan mode: 10 bit: 60.3 frame/s
- 10-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
  - CSI-2 serial data output (1 Lane) RAW10 output
- Recommended lens F number: 2.8 or more (Close side)
- Recommended exit pupil distance: –100 mm to –∞

Pregius

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Device Structure

◆ CMOS image sensor
◆ Image size          Diagonal 6.3 mm (Type 1 / 2.9)   Approx. 1.58 M pixels   All-pixel
◆ Total number of pixels 1456 (H) × 1098 (V)     Approx. 1.60 M pixels
◆ Number of effective pixels 1456 (H) × 1088 (V)     Approx. 1.58 M pixels
◆ Number of active pixels 1456 (H) × 1088 (V)     Approx. 1.58 M pixels
◆ Number of recommended recording pixels 1440 (H) × 1080 (V)     Approx. 1.56 M pixels   All-pixel
◆ Unit cell size        3.45 µm (H) × 3.45 µm (V)
◆ Optical black         Horizontal (H) direction: Front 0 pixel, rear 0 pixel
                         Vertical (V) direction: Front 10 pixels, rear 0 pixel
◆ Package              138 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

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<tr>
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<tr>
<td>Sensitivity (F5.6)</td>
<td>Typ.</td>
<td>1146 mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/30 s accumulation</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
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