[Product Information]  
IMX304LLR  
Version 1.1  

Diagonal 17.6 mm (Type 1.1) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX304LLR is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.37 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: FA cameras, ITS cameras)

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: 4096 (H) × 3000 (V) approx. 12.29 M pixels  
  Readout mode  
  All-pixel scan mode  
  Vertical / Horizontal 1 / 2 Subsampling mode  
  ROI mode  
  Vertical / Horizontal - Normal / Inverted readout mode  
◆ Readout rate  
  Maximum frame rate in  
  All-pixel scan mode: 12 bit: 23.4 frame/s  
◆ 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  
  Low voltage LVDS (150 mVp-p) serial (4 ch / 8 ch switching) DDR output  
◆ Recommended lens F number: 2.8 or more (Close side)  
◆ Recommended exit pupil distance: −100 mm to −∞

Pregius

* 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 17.6 mm (Type 1.1) Approx. 12.37 M pixels All-pixel
◆ Total number of pixels 4112 (H) × 3018 (V) Approx. 12.41 M pixels
◆ Number of effective pixels 4112 (H) × 3008 (V) Approx. 12.37 M pixels
◆ Number of active pixels 4112 (H) × 3008 (V) Approx. 12.37 M pixels
◆ Number of recommended recording pixels 4096 (H) × 3000 (V) Approx. 12.29 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 226 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)</td>
<td>Typ.</td>
<td>915 mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1/30 s accumulation</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>1001 mV</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>4096 (H) × 3000 (V) approx. 12.29 M pixels</td>
<td>23.4</td>
<td>Serial LVDS 8 ch</td>
<td>12</td>
</tr>
<tr>
<td>All pixel (Vertical / Horizontal 1/2 subsampling)</td>
<td>2048 (H) × 1500 (V) approx. 3.07 M pixels</td>
<td>46.3</td>
<td>Serial LVDS 8 ch</td>
<td>12</td>
</tr>
</tbody>
</table>
[Product Information]  

**IMX304LQR**  

Diagonal 17.6 mm (Type 1.1) CMOS solid-state Image Sensor with Square Pixel for Color Cameras

### Description

The IMX304LQR is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.37 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: FA cameras, ITS cameras)

### 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: 4096 (H) × 3000 (V) approx. 12.29 M pixels
- Readout mode  
  All-pixel scan mode  
  Vertical / Horizontal 1 / 2 Subsampling mode  
  ROI mode  
  Vertical / Horizontal - Normal / Inverted readout mode
- Readout rate  
  Maximum frame rate in  
  All-pixel scan mode: 12 bit: 23.4 frame/s
- 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  
  Low voltage LVDS (150 mVp-p) serial (4 ch / 8 ch switching) DDR output
- Recommended lens F number: 2.8 or more (Close side)
- Recommended exit pupil distance: −100 mm to −∞

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◆ Number of effective pixels 4112 (H) × 3008 (V)  Approx. 12.37 M pixels
◆ Number of active pixels 4112 (H) × 3008 (V)  Approx. 12.37 M pixels
◆ Number of recommended recording pixels 4096 (H) × 3000 (V)  Approx. 12.29 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 226 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

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<td>Sensitivity (F5.6)</td>
<td>Typ. 1146 mV</td>
<td>1/30 s accumulation</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min. 1001 mV</td>
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