IMX421LLJ

Diagonal 11.0 mm (Type 2 / 3) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX421LLJ is a diagonal 11.0 mm (Type 2 / 3) CMOS active pixel type solid-state image sensor with a square pixel array and 2.86 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: 1936 (H) × 1464 (V) approx. 2.83 M pixels
  Readout mode
    All-pixel scan mode
    Vertical / Horizontal 1 / 2 Subsampling 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: 8 bit: 409.2 frame/s, 10 bit: 371.8 frame/s, 12 bit: 231.2 frame/s
◆ 8-bit / 10-bit / 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
  SLVS (4 ch / 8 ch switching) output (594 / 297 Mbps per ch)
  SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane switching) output (2.376 / 1.188 Gbps per Lane)
◆ 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.

Sony reserves the right to change products and specifications without prior notice.

Sony logo is a registered trademark of Sony Corporation.
Device Structure

◆ CMOS image sensor
◆ Image size      Diagonal 11.0 mm (Type 2 / 3)  Approx. 2.86 M pixels  All-pixel
◆ Total number of pixels  1944 (H) × 1496 (V)  Approx. 2.90 M pixels
◆ Number of effective pixels  1944 (H) × 1472 (V)  Approx. 2.86 M pixels
◆ Number of active pixels    1944 (H) × 1472 (V)  Approx. 2.86 M pixels
◆ Number of recommended recording pixels  1936 (H) × 1464 (V)  Approx. 2.83 M pixels  All-pixel
◆ Unit cell size  4.5 µm (H) × 4.5 µm (V)
◆ Optical black  Horizontal (H) direction: Front 0 pixel, rear 0 pixel
                  Vertical (V) direction: Front 24 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. 1677 mV</td>
<td>1/30 s accumulation</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min. 1001 mV</td>
<td></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>1936 (H) × 1464 (V) approx. 2.83 M pixels</td>
<td>174.6</td>
<td>SLVS 8 ch</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>409.2</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>143.0</td>
<td>SLVS 8 ch</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>371.8</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>121.1</td>
<td>SLVS 8 ch</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>231.2</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td>Vertical / Horizontal</td>
<td>968 (H) × 732 (V) approx. 0.71 M pixels</td>
<td>596.7</td>
<td>SLVS 8 ch</td>
<td>8</td>
</tr>
<tr>
<td>1/2 subsampling</td>
<td></td>
<td>780.5</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>498.9</td>
<td>SLVS 8 ch</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>710.8</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>425.7</td>
<td>SLVS 8 ch</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>446.2</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td>2 × 2 Vertical FD binning</td>
<td>968 (H) × 732 (V) approx. 0.71 M pixels</td>
<td>599.6</td>
<td>SLVS 8 ch</td>
<td>8</td>
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<td></td>
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<td>784.4</td>
<td>SLVS – EC 8 Lane</td>
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<td>501.5</td>
<td>SLVS 8 ch</td>
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<td></td>
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<td>714.3</td>
<td>SLVS – EC 8 Lane</td>
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<td></td>
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<td>SLVS 8 ch</td>
<td>12</td>
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<td></td>
<td></td>
<td>448.4</td>
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[Product Information]

IMX421LQJ

Diagonal 11.0 mm (Type 2 / 3) CMOS solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX421LQJ is a diagonal 11.0 mm (Type 2 / 3) CMOS active pixel type solid-state image sensor with a square pixel array and 2.86 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

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◆ CDS / PGA function
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- Package: 226 pin LGA

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(Tj = 60 °C)

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<td>8 10 12</td>
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