[Product Information]

IMX420LQJ

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

Description

The IMX420LQJ is a diagonal 17.6 mm (Type 1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 7.10 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: 3208 (H) × 2200 (V) approx. 7.06 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: 8 bit 207.1 frame/s, 10 bit: 172.0 frame/s, 12 bit: 134.5 frame/s
◆ Variable-speed shutter function (resolution 1 H units)
◆ 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 1 ch)
  SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane switching) output (2.376 / 1.188 Gbps per 1 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.

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Device Structure

- CMOS image sensor
- Image size: Diagonal 17.6 mm (Type 1.1) Approx. 7.10 M pixels All-pixel
- Total number of pixels: 3216 (H) × 2232 (V) Approx. 7.18 M pixels
- Number of effective pixels: 3216 (H) × 2208 (V) Approx. 7.10 M pixels
- Number of active pixels: 3216 (H) × 2208 (V) Approx. 7.10 M pixels
- Number of recommended recording pixels: 3208 (H) × 2200 (V) Approx. 7.06 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 (Preliminary)

(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.</td>
<td>1971 mV</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>1001 mV</td>
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</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>3208 (H) × 2200 (V) approx. 7.06M pixels</td>
<td>74.9</td>
<td>SLVS 8 ch</td>
<td>8</td>
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<tr>
<td></td>
<td></td>
<td>207.1</td>
<td>SLVS – EC 8 Lane</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>60.7</td>
<td>SLVS 8 ch</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>172.0</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50.9</td>
<td>SLVS 8 ch</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>134.5</td>
<td>SLVS – EC 8 Lane</td>
<td></td>
</tr>
<tr>
<td>Vertical / Horizontal 1/2 subsampling</td>
<td>1604 (H) × 1100 (V) approx. 1.76M pixels</td>
<td>263.5</td>
<td>SLVS 8 ch</td>
<td>8</td>
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<tr>
<td></td>
<td></td>
<td>416.8</td>
<td>SLVS – EC 8 Lane</td>
<td>10</td>
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<td></td>
<td>217.8</td>
<td>SLVS 8 ch</td>
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<td></td>
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<td>386.4</td>
<td>SLVS – EC 8 Lane</td>
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<td>185.5</td>
<td>SLVS 8 ch</td>
<td>12</td>
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<td>260.4</td>
<td>SLVS – EC 8 Lane</td>
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