

Ver.1.1

Diagonal 14.0 mm (Type 1/1.1) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX535-AAMJ is a diagonal 14.0 mm (Type 1/1.1) CMOS active pixel type solid-state image sensor with a square pixel array and 12.41 M effective pixels. This chip features a global shutter with variable charge-integration time. This chip operates with analog 3.3 V, 2.9 V, digital 1.1 V, and interface 1.8 V quadruple power supply. High sensitivity and low dark current 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. 12.28 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Vertical / Horizontal 1/2 Subsampling mode
 - 2 × 2 FD binning mode
 - ROI mode
 - Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in
 - All-pixel scan mode: 8 bit 184.6 frame/s, 10 bit 183.9 frame/s, 12 bit 120.9 frame/s
- ◆ Pulse Output Function
 - The monitor output for Exposure period
 - Programmable pulse output
- ◆ 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 / 891 / 445.5 Mbps per ch)
 - SLVS - EC (1 Lane / 2 Lane / 4 Lane / 8 Lane) output (4.752 / 2.376 / 1.188 Gbps per Lane)
- ◆ Recommended lens F number: 2.8 or more (Close side)

Pregius S

* Pregius S is a registered trademark or trademark of Sony Group Corporation or its affiliates. Pregius S is a global shutter sensor technology for active pixel-type CMOS image sensors. By stacking the signal processing on the back illuminated type CMOS Image Sensor it realizes small chip size and high sensitivity, whilst using the high picture quality global shutter pixel technology of Pregius.

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Device Structure

| | | | |
|--|--|---------------------------|-----------|
| ◆ CMOS image sensor | | | |
| ◆ Image size | Diagonal 14.0 mm (Type 1/1.1) | Approx. 12.41 M pixels | All-pixel |
| ◆ Total number of pixels | 4128 (H) × 3072 (V) | Approx. 12.68 M pixels | |
| ◆ Number of effective pixels | 4128 (H) × 3008 (V) | Approx. 12.41 M pixels | |
| ◆ Number of active pixels | 4128 (H) × 3008 (V) | Approx. 12.41 M pixels | |
| ◆ Number of recommended recording pixels | 4096 (H) × 3000 (V) | Approx. 12.28 M pixels | All-pixel |
| ◆ Unit cell size | 2.74 μm (H) × 2.74 μm (V) | | |
| ◆ Optical black | Horizontal (H) direction: Front 0 pixel, rear 0 pixel Vertical (V) direction: Front 64 pixels, rear 0 pixel | | |
| ◆ Package | 230 pin LGA | 20.0 mm (H) × 16.8 mm (V) | |

Image Sensor Characteristics

(Tj = 60 °C)

| Item | | Value | Remarks |
|-------------------|------|------------------|---------|
| Sensitivity | Typ. | 14510 Digit/lx/s | |
| Saturation signal | Min. | 4094 Digit | |

Basic Drive Mode

| Drive mode | Recommended number of recording pixels | Maximum frame rate [frame/s] | Output interface | ADC [bit] |
|--|---|------------------------------|------------------|-----------|
| All pixel | 4096 (H) × 3000 (V) approx. 12.28 M pixels | 60 | SLVS 8 ch | 8 |
| | | 184 | SLVS – EC 8 Lane | |
| | | 49 | SLVS 8 ch | 10 |
| | | 183 | SLVS – EC 8 Lane | |
| | | 41 | SLVS 8 ch | 12 |
| | | 120 | SLVS – EC 8 Lane | |
| Vertical / Horizontal 1/2 subsampling | 2048 (H) × 1500 (V) approx. 3.07 M pixels | 205 | SLVS 8 ch | 8 |
| | | 616 | SLVS – EC 8 Lane | |
| | | 170 | SLVS 8 ch | 10 |
| | | 592 | SLVS – EC 8 Lane | |
| | | 145 | SLVS 8 ch | 12 |
| | | 430 | SLVS – EC 8 Lane | |
| 2 × 2 FD binning mode | 2048 (H) × 1500 (V) approx. 3.07 M pixels | 205 | SLVS 8 ch | 8 |
| | | 616 | SLVS – EC 8 Lane | |
| | | 170 | SLVS 8 ch | 10 |
| | | 592 | SLVS – EC 8 Lane | |
| | | 145 | SLVS 8 ch | 12 |
| | | 430 | SLVS – EC 8 Lane | |

