

Diagonal 28.1 mm (Type 1.8) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX929-AMB is a diagonal 28.1 mm (Type 1.8) CMOS active pixel type solid-state image sensor with a square pixel array and 50.79 M effective pixels. This chip features a global shutter with a variable charge-integration time. This sensor operates with 3.3 V, 2.9 V, 1.1 V, and 1.8 V quadruple power supply. High sensitivity and low dark current characteristics are achieved.

(Applications: FA cameras, 3D vision cameras)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Global shutter function
- ◆ Input clock frequency 37.125 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 8192 (H) × 6144 (V) approx. 50.33 M pixels
- ◆ Readout mode
 - All-pixel scan mode, 1/2 subsampling mode
 - H2V2 FD binning mode / H1V2 FD binning mode / H2V1 FD binning mode
 - ROI mode, Vertical / Horizontal - Normal / Inverted readout mode
- ◆ Readout rate (*) At high frame rates, control so as not to exceed $T_j = +85\text{ }^{\circ}\text{C}$
 - Maximum frame rate in All-pixel scan mode: *controller mode
 - 8-bit 225.3 frame/s, 10-bit 201.5 frame/s, 12-bit 136.4 frame/s
- ◆ Variable-shutter speed
- ◆ Pulse Output Function
 - The monitor output for Integration period (TOUT0) and for internal AD period (TOUT1)
- ◆ 8-bit / 10-bit / 12-bit Output
- ◆ CDS / PGC function
 - 0 dB to 24 dB: Variable analog Gain (0.3 dB step)* 12-bit
 - 24.3 dB to 48 dB: Fixed analog Gain: 24 dB + variable digital Gain: 0.3 dB to 24 dB (0.3 dB step)*12-bit
 - 0 dB to 18 dB: Variable analog Gain (0.3 dB step)* 8-bit / 10-bit
 - 18.3 dB to 42 dB: Fixed analog Gain: 18 dB + variable digital Gain: 0.3 dB to 24 dB (0.3 dB step)*8-bit / 10-bit
- ◆ I/O interface
 - SLVS-EC (2 Lane , 4 Lane , 6 Lane , 8 Lane , 4 Lane × 2 , 6 Lane × 2 , 8 Lane × 2) output
 - SLVS-EC Baud Rate: 4.752 Gbps / lane 9.504 Gbps / lane 12.474 Gbps / lane (Grade 3, 4 and 5)
- ◆ CRA characteristics: The target CRA is 6 degree at 100% image height.
- ◆ Ceramic package with connector. The connector is floating type.
- ◆ Seal glass: both sides are processed by AR coating

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Device Structure

◆ CMOS image sensor		
◆ Image size	Diagonal 28.1 mm (Type 1.8)	Approx. 50.79 M pixels
◆ Total number of pixels	8224 (H) × 6272 (V)	Approx. 51.58 M pixels
◆ Number of effective pixels	8224 (H) × 6176 (V)	Approx. 50.79 M pixels
◆ Number of active pixels	8200 (H) × 6152 (V)	Approx. 50.44 M pixels
◆ Number of recommended recording pixels	8192 (H) × 6144 (V)	Approx. 50.33 M pixels
◆ 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	Ceramic package with connector 160 pin × 2	45 mm (H) × 52 mm (V)

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	TBD	-
Saturation signal	Min.	TBD	-

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	Output [bit]
All-pixel (Controller mode)	8192 (H) × 6144 (V) approx. 50.33 M	225.3	SLVS-EC 8 Lane × 2	8
		201.5		10
		136.4		12
H2V2 FD binning 1/2 subsampling	4096 (H) × 3072 (V) approx. 12.58 M	811.5	SLVS-EC 8 Lane × 2	8
		722.6		10
		502.3		12

Note: All of frame rate are tentative.

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