

Diagonal 39.7 mm (Type 2.5) CMOS solid-state Image Sensor with Square Pixel for Monochrome Cameras

### Description

The IMX947-AMB is a diagonal 39.7 mm (Type 2.5) CMOS active pixel type solid-state image sensor with a square pixel array and 26.37 M effective pixels. This chip features a global shutter with variable charge-integration time. This sensor operates with a 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: 5120 (H) × 5120 (V) approx. 26.21 M pixels
- ◆ Readout mode
  - All-pixel scan 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 423.4 frame/s, 10-bit 383.2 frame/s, 12-bit 277.7 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

**Pregius S**

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**Device Structure**

◆ CMOS image sensor		
◆ Image size	Diagonal 39.7 mm (Type 2.5)	Approx. 26.37 M pixels
◆ Total number of pixels	5136 (H) × 5184 (V)	Approx. 26.62 M pixels
◆ Number of effective pixels	5136 (H) × 5136 (V)	Approx. 26.37 M pixels
◆ Number of active pixels	5124 (H) × 5124 (V)	Approx. 26.25 M pixels
◆ Number of recommended recording pixels	5120 (H) × 5120 (V)	Approx. 26.21 M pixels
◆ Unit cell size	5.48 μm (H) × 5.48 μm (V)	
◆ Optical black	Horizontal (H) direction: Front 0 pixel, Rear 0 pixel Vertical (V) direction: Front 32 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)	5120 (H) × 5120 (V) approx. 26.21 M pixels	414.3	SLVS-EC 6 × 2 Lane	8
		350.4		10
		277.7		12

Note: All frame rates are tentative.

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