

Diagonal 10.04 mm (Type 1/1.6) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

## Description

The IMX676-AAMR1 is a diagonal 10.04 mm (Type 1/1.6) CMOS active pixel type solid-state image sensor with a square pixel array and 12.63 M effective pixels. This chip operates with analog 3.3 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved. This chip features an electronic shutter with variable charge-integration time.  
(Application: Security cameras)

## Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 3536 (H) × 3536 (V) approx. 12.50M pixel
- ◆ Readout mode
  - All-pixel scan mode
  - Window cropping mode
  - Horizontal / Vertical direction - Normal / Inverted readout mode
- ◆ Readout rate
  - Maximum frame rate in All-pixel scan mode: 12 bit: 30 frame/s, 10 bit: 60 frame/s
- ◆ Dual Speed Streaming (DSS) function
- ◆ High dynamic range (HDR) function
  - Digital overlap HDR
  - Clear HDR
- ◆ Synchronizing sensors function
- ◆ Variable-speed shutter function (resolution 2H unit)
- ◆ CDS / PGA function
  - 0 dB to 30 dB: Analog Gain 30 dB (step pitch 0.3 dB)
  - 30.3 dB to 72 dB: Analog Gain 30 dB + Digital Gain 0.3 dB to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O
  - CSI-2 serial data output (2-Lane / 4-Lane / 8-Lane / 4-Lane × 2ch)
  - RAW10 / RAW12 output
- ◆ AR coating on cover glass (Both sides)

**STARVIS 2**

\* STARVIS 2 and its logo are registered trademarks or trademarks of Sony Group Corporation or its affiliates. The STARVIS 2 is back-illuminated pixel technology used in CMOS image sensors for security camera applications. It features a sensitivity of 2000 mV or more per 1  $\mu\text{m}^2$  (color product, when imaging with a 706 cd/m<sup>2</sup> light source, F5.6 in 1 s accumulation equivalent). It also has a wide dynamic range (AD 12 bit) of more than 8 dB compared to STARVIS for the same pixel size in a single exposure, and achieves high picture quality in the visible-light and near infrared light regions.

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## Device Structure

◆ CMOS image sensor	
◆ Image size	Diagonal 10.04 mm (Type 1/1.6) approx. 12.63 M pixels, All pixels
◆ Total number of pixels	3552 (H) × 3576 (V) approx. 12.70 M pixels
◆ Number of effective pixels	3552 (H) × 3556 (V) approx. 12.63 M pixels
◆ Number of active pixels	3552 (H) × 3552 (V) approx. 12.61 M pixels
◆ Number of recommended recording pixels	3536 (H) × 3536 (V) approx. 12.50 M pixels
◆ Unit cell size	2.0 μm (H) × 2.0 μm (V)
◆ Optical black	Horizontal (H) direction: Front 0 pixels, rear 0 pixels Vertical (V) direction: Front 20 pixels, rear 0 pixels
◆ Package	132 pin LGA

## Image Sensor Characteristics

(T<sub>j</sub> = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	26094 Digit/lx/s	12 bit converted value
Saturation signal	Min.	3895 Dight	12 bit converted value

## Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All-pixel	3536 (H) × 3536 (V) approx. 12.50 M pixels	60	CSI-2	10

