

Diagonal 6.45 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX832-AQR/AQR1 is a diagonal 6.45 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.12 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 through the adoption of R, G and B primary color mosaic filters. 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: 1920 (H) × 1080 (V) approx. 2.07M pixel
- ◆ Readout mode
 - All-pixel scan mode
 - Horizontal / Vertical 2/2-line binning mode
 - Window cropping mode
 - Horizontal / Vertical direction - Normal / Inverted readout mode
- ◆ Readout rate Maximum frame rate in All-pixel scan mode: 12 bit: 60 frame/s, 10 bit: 90 frame/s
- ◆ High dynamic range (HDR) function
 - Digital overlap HDR
 - Clear HDR
- ◆ Synchronizing sensors function
- ◆ Variable-speed shutter function (resolution 1H unit)
- ◆ 10-bit / 12-bit A/D converter
- ◆ 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) RAW10 / RAW12 output
- ◆ Anti-reflective coating glass on both sides (IMX832-AQR1)
 - Non anti-reflective coating glass (IMX832-AQR)

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 μm^2 (color product, when imaging with a 706 cd/m² 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 6.45 mm (Type 1/2.8) approx. 2.13 M pixels, All pixels
- ◆ Total number of pixels 1936 (H) × 1120 (V) approx. 2.16 M pixels
- ◆ Number of effective pixels 1936 (H) × 1100 (V) approx. 2.12 M pixels
- ◆ Number of active pixels 1936 (H) × 1096 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixels, rear 0 pixels
Vertical (V) direction: Front 20 pixels, rear 0 pixels
- ◆ Dummy Horizontal (H) direction: Front 0 pixels, rear 0 pixels
Vertical (V) direction: Front 0 pixels, rear 0 pixels
- ◆ Package 114 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	18383 LSB/lx/s (IMX832-AQR) (Tentative) 19556 LSB/lx/s (IMX832-AQR1)	12 bit converted value
Saturation signal	Min.	3895 LSB	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	1920 (H) × 1080 (V) approx. 2.07 M pixels	90	CSI-2	10
Horizontal/ Vertical 2/2-line binning	960 (H) × 540 (V) approx. 0.52 M pixels	90	CSI-2	10

