

Diagonal 9.46 mm (Type 1/1.7) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX785-AQR1 is a diagonal 9.46 mm (Type 1/1.7) CMOS active pixel type solid-state image sensor with a square pixel array and 5.12 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: 2592 (H) × 1944 (V) Approx. 5.03M pixels
- ◆ 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: 60 frame/s, 10 bit: 90 frame/s
- ◆ High dynamic range (HDR) function
 - Digital overlap HDR, Clear HDR, Hybrid HDR
- ◆ Synchronizing sensors function
- ◆ Variable-speed shutter function (resolution 2H units)
- ◆ Conversion gain switching (HCG Mode / LCG Mode)
- ◆ 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)
- ◆ Output interface
 - CSI-2 serial data output (2 Lane / 4 Lane), RAW10 / RAW12 / RAW16 (Clear HDR, Hybrid HDR) output
- ◆ Communication interface
 - I²C / I3C
- ◆ 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 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.

Device Structure

◆ CMOS image sensor	
◆ Image size	Diagonal 9.46 mm (Type 1/1.7) Approx. 5.12 M pixels, All pixels
◆ Total number of pixels	2608 (H) × 1984 (V) Approx. 5.17 M pixels
◆ Number of effective pixels	2608 (H) × 1964 (V) Approx. 5.12 M pixels
◆ Number of active pixels	2608 (H) × 1960 (V) Approx. 5.11 M pixels
◆ Number of recommended recording pixels	2592 (H) × 1944 (V) Approx. 5.03 M pixels
◆ Unit cell size	2.9 μm (H) × 2.9 μm (V)
◆ Optical black	Horizontal (H) direction: Front 0 pixel, Rear 0 pixel Vertical (V) direction: Front 20 pixels, Rear 0 pixel
◆ Package	132 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	19556 LSB/lx/s	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 [frames/s]	Output interface	ADC [bit]
All-pixel	2592 (H) × 1944 (V) Approx. 5.03 M pixels	90	CSI-2	10
		60		12

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