

Ver.1.0

Diagonal 6.42 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX778-AQR1 is a diagonal 6.4 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.45 M effective pixels. This chip operates with analog 2.9 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 clock frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29 M 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
- ◆ Synchronizing sensor's function
- ◆ Variable-speed shutter function (resolution 1H unit)
- ◆ Gain adjustment 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 output
- ◆ Communication interface
 - I²C / I3C
- ◆ AR coating on cover glass (Both sides)

STARVIS

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Device Structure

- ◆ CMOS image sensor
- ◆ Image size Diagonal 6.4 mm (Type 1/2.8) approx. 8.39 M pixels, All pixels
- ◆ Total number of pixels 3856 (H) × 2228 (V) approx. 8.59 M pixels
- ◆ Number of effective pixels 3856 (H) × 2192 (V) approx. 8.45 M pixels
- ◆ Number of active pixels 3856 (H) × 2176 (V) approx. 8.39 M pixels
- ◆ Number of recommended recording pixels 3840 (H) × 2160 (V) approx. 8.29 M pixels
- ◆ Unit cell size 1.45 μm (H) × 1.45 μm (V)
- ◆ Optical black
Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 36 pixels, rear 0 pixel
- ◆ Dummy
Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 1 pixel, rear 1 pixel
- ◆ Package 114 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Typ.	5797 Digit/lx/s	12-bit converted value
Saturation signal	Min.	3895 Digit	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	3840 (H) × 2160 (V) approx. 8.29 M pixels	90	CSI-2	10

