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 8.46 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)

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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

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>Typ.</td>
<td>TBD Digit/lx/s</td>
</tr>
<tr>
<td>Saturation signal</td>
<td>Min.</td>
<td>TBD Digit</td>
</tr>
</tbody>
</table>

Basic Drive Mode

<table>
<thead>
<tr>
<th>Drive mode</th>
<th>Recommended number of recording pixels</th>
<th>Maximum frame rate [frame/s]</th>
<th>Output interface</th>
<th>ADC [bit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>All pixel</td>
<td>3840 (H) × 2160 (V) approx. 8.29 M pixels</td>
<td>90</td>
<td>CSI-2</td>
<td>10</td>
</tr>
</tbody>
</table>

Image Sensors for Security Cameras: [https://www.sony.net/cis-security/](https://www.sony.net/cis-security/)