SONY

Ver.1.0

IMX06A-AJ1R-J

Diagonal 16.384 mm (Type 1/0.98) 50.3Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX06A-AJ1R-J is a diagonal 16.384 mm (Type 1/0.98) 50.3 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Sony's back-illuminated and stacked CMOS image sensor to achieve high speed image capturing by column parallel A/D converter circuits and high sensitivity and low noise image (comparing with conventional CMOS image sensor) through the backside illuminated imaging pixel structure. R, G, and B pigment primary color mosaic filter is employed. It operates with four power supply voltages: analog 2.9 V/1.8 V, digital 0.83 V and 1.8 V or 1.2 V for input/output interface and achieves low power consumption.

Features

- ◆Back-illuminated and stacked CMOS image sensor
- ◆Quad Bayer Coding color filter arrangement
- ◆Dual PD (Photo Diode)
- ◆High Frame Rate
  C-PHY version:
  Full resolution (Bayer)@30 frames/s
  D-PHY version:
  Full resolution (Bayer)@15 frames/s
- ◆High signal to noise ratio (SNR)
- ◆Built-in 2D Dynamic Defect Pixel Correction (DPC)
- ◆Built-in temperature sensor
- ◆Output video format of RAW10, RAW12, RAW14
- ◆QBC Re-mosaic function
- ◆Two PLLs for independent clock generation for pixel control and data output interface
- ◆CSI-2 serial data output
  MIPI D-PHY 2 lane / 4 lane, Max. 4.5 Gbps/lane, D-PHY specification version 2.1 compliant
  MIPI C-PHY 2/3 trio, Max. 6.0 Gsps/trio, C-PHY specification version 2.0 compliant
- ◆2-wire serial communication (Supports I^2C "Fast mode" , "Fast-mode Plus", and I3C)
- ◆Dual Conversion Gain HDR (DCG-HDR) function: 4x2 Adjacent Pixel Binning DCG-HDR
- ◆Quad Bayer Coding HDR (QBC HDR) function: Diagonal Binning QBC HDR
- ◆4.0 kbit of OTP ROM for users

Device Structure

- ◆CMOS image sensor
- ◆Image size — Diagonal 16.384 mm (Type 1/0.98)
- ◆Number of active pixels — 8192 (H) × 6144 (V) — Approx. 50.33 M pixels
- ◆Unit cell size — 1.60 µm (H) × 1.60 µm (V)
- ◆Package — 234 pin LGA — 23.0 mm (H) × 20.0 mm (V)

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity	Min.	182 LSB/lx/s	1/120 s integration conversion value
Saturation signal	Min.	1023 LSB	Include OB level

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full resolution (Bayer)	8192 (H) × 6144 (V) Approx. 50.33 M pixels	30 15	MIPI C-PHY MIPI D-PHY	10, 12
4x2 Adjacent Pixel Binning	4096 (H) × 3072 (V) Approx. 12.58 M pixels	120 60	MIPI C-PHY MIPI D-PHY	10
		60 60	MIPI C-PHY MIPI D-PHY	12
4x2 Adjacent Pixel Binning DCG-HDR	4096 (H) × 3072 (V) Approx. 12.58 M pixels	60 30	MIPI C-PHY MIPI D-PHY	10
Diagonal Binning QBC HDR	4096 (H) × 3072 (V) Approx. 12.58 M pixels	60 30	MIPI C-PHY MIPI D-PHY	10
4x2 Adjacent Pixel Binning Low Noise 2 mode	4096 (H) × 3072 (V) Approx. 12.58 M pixels	60 60	MIPI C-PHY MIPI D-PHY	10