SONY

Ver.1.2

IMX412-AACK

Diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX412-AACK is a diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. R, G, and B pigment primary color mosaic filter is employed. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.75 V, digital 1.05 V and 1.8 V for input/output interface and achieves low power consumption.
(Applications: Surveillance cameras)

Features

- Back-illuminated and stacked CMOS image sensor
- Digital Overlap High Dynamic Range (DOL-HDR) mode with raw data output
- High signal to noise ratio (SNR)
- Full resolution @60 frame/s (Normal), 4K2K @60 frame/s (Normal), 1080p @240 frame/s
  Full resolution @40 frame/s (12 bit Normal), Full resolution @30 frame/s (DOL-HDR, 2 frame)
- Output video format of RAW12/10
- Low Power Streaming Mode with MIPI ULPS operation
- Pixel binning readout and V sub-sampling function
- Independent flipping and mirroring
- Input clock frequency 6, 12, 18, 24 or 27 MHz
- CSI-2 serial data output (MIPI 2lane/4lane, Max. 2.1 Gbps/lane, D-PHY spec. ver. 1.2 compliant)
- 2-wire serial communication
- Two PLLs for independent clock generation for pixel control and data output interface
- Defect Pixel Correction (DPC)
- Fast mode transition (on the fly)
- Dual sensor synchronization operation (Multi camera compatible)
- 7 k bit of OTP ROM for users
- 10-bit/12-bit A/D conversion on chip
- Horizontal Low Power analog Cropping
- 92-pin high-precision ceramic package

STARVIS

* STARVIS is a registered trademark or trademark of Sony Group Corporation or its affiliates. The STARVIS 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/m^2 light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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Device Structure

- ◆CMOS image sensor
- ◆Image size — Diagonal 7.857 mm (Type 1/2.3)
- ◆Total number of pixels — 4072 (H) × 3176 (V) approx. 12.93 M pixels
- ◆Number of effective pixels — 4072 (H) × 3064 (V) approx. 12.47 M pixels
- ◆Number of active pixels — 4056 (H) × 3040 (V) approx. 12.33 M pixels
- ◆Chip size — 7.564 mm (H) × 5.476 mm (V)
- ◆Unit cell size — 1.55 µm (H) × 1.55 µm (V)
- ◆Package — 92 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F2.8)	Min.	250 LSB	1/120 s accumulation
Saturation signal	Min.	1023 LSB	

Basic Drive Mode

Drive mode	Number of active pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full resolution (4:3) (Normal)	4056 (H) × 3040 (V) approx. 12.33 M pixels	60	CSI-2	10
		40	CSI-2	12
4K2K (16:9) (Normal)	4056 (H) × 2288 (V) approx. 9.28 M pixels	79	CSI-2	10
1080p (16:9) Binning (Normal)	2028 (H) × 1112 (V) approx. 2.26 M pixels	240	CSI-2	10
Full resolution (4:3) (DOL-HDR, 2 frame)	4056 (H) × 3040 (V) approx. 12.33 M pixels	30	CSI-2	10

Image Sensors for Security Cameras:
https://www.sony.net/cis-security/