

[Product Information]

IMX412-AACK

Ver.1.2

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 trademark of Sony Corporation. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance camera applications. It features a sensitivity of 2000 mV or more per $1 \mu\text{m}^2$ (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

(T_j = 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