



IMT-1A65M002-N

1/3.1" 13MP COB F2.0 DFOV 78.4 Degree M6.5 Lens



Lens Model	IMT-1A65M002-N
Sensor Format	1/3.1"
Resolution	13 MP
Sensor Type	COB
Structure	5P
Max Image Circle	Ø5.8
F/NO.	2.0 +/- 5%
EFL (mm)	3.57
TTL (mm)	4.22
FOV	Field of View
Diagonal DFOV	78.4°
Horizontal HFOV	66.2°
Vertical VFOV	51.6°
TV Distortion	<1.5%
CRA	<34.6°
Lens Filter	None
Barrel	M6.5*P0.25
KLT Camera Modules	KLT-C3K-IMX214 V3.0
Use IMT Made Lenses	KLT-L5K-IMX135 V1.0

IMT-1A65M002-N

1/3.1" 13MP COB F2.0 DFOV 78.4 Degree M6.5 Lens



IMT Lens on
the real
Camera



KLT is our
Camera
Modules
Design and
Manufacture
Partner



www.KaiLapTech.com

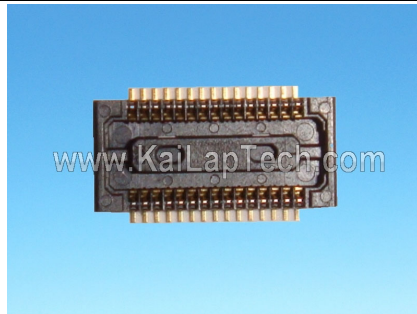
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KLT-C3K-IMX214 V3.0**SONY IMX214 MIPI Interface Auto Focus 13MP Camera Module**

Camera Module No.	KLT-C3K-IMX214 V3.0
Image Sensor	IMX214
EFL	3.57 mm
F.NO	2
Pixel	4224 x 3136
View Angle	78.4°
Lens Type	1/3.06 inch
Lens Dimensions	8.6 x 8.5 x 5.37 mm
Module Size	30.00 x 8.60 mm
Module Type	Auto Focus
Interface	MIPI
IMT Lens Model	IMT-1A65M002-N

Mating Connector Part No. DF30FC-30DS-0.4V



Mating Connector On Main Board. Sold Separately.

[Product Brief]

Ver.1.0

IMX214

Diagonal 5.867mm (Type 1/3.06) 13M Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX214 is a diagonal 5.867mm (Type 1/3.06) 13M pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor RS™ technology 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. By introducing spacially varying exposure technology, high dynamic range still pictures and movies are achievable. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.7 V, digital 1.0V and 1.8 V for input/output interface and achieves low power consumption. IMX214 is designed for use in cellular phones or tablet devices*.

Functions and Features

- ◆ Back illuminated and stacked CMOS image sensor Exmor RS
- ◆ Single Frame High Dynamic Range (HDR) with equivalent full pixels.
- ◆ High signal to noise ratio (SNR).
- ◆ Full resolution @30fps (Normal / HDR), 4K2K @30fps (Normal / HDR) 1080p @60fps (Normal / HDR)
- ◆ Output video format of RAW10/8, COMP8/6
- ◆ Pixel binning readout and H/V sub sampling function
- ◆ Advanced Noise Reduction (Chroma noise reduction and luminance noise reduction)
- ◆ Independent flipping and mirroring.
- ◆ CSI 2 serial data output (MIPI 2lane/4lane, Max. 1.2Gbps/lane, DPHY spec. ver. 1.1 compliant)
- ◆ 2wire serial communication
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- ◆ Advanced Noise Reduction.
- ◆ Dynamic Defect Pixel Correction.
- ◆ Zero shutter lag.
- ◆ Power on reset function
- ◆ Dual sensor synchronization operation.
- ◆ 8K bit of OTP ROM for users.
- ◆ Built in temperature sensor

NOTE)

1. When using this product for another application, Sony does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than cellular phone and Tablet PCs. Consult your Sony sales representative if you have any questions.

Device Structure

◆ CMOS image sensor	
◆ Image size	: Diagonal 5.867mm (Type 1/3.06)
◆ Total number of pixels	: 4224 (H) × 3200(V) approx. 13.51M pixels
◆ Number of effective pixels	: 4224 (H) × 3136 (V) approx. 13.25 M pixels
◆ Number of active pixels	: 4208 (H) × 3120 (V) approx. 13.13 M pixels
◆ Chip size	: 6.100mm (H) × 4.524mm (V)
◆ Unit cell size	: 1.12 μm (H) × 1.12 μm (V)
◆ Substrate material	: Silicon

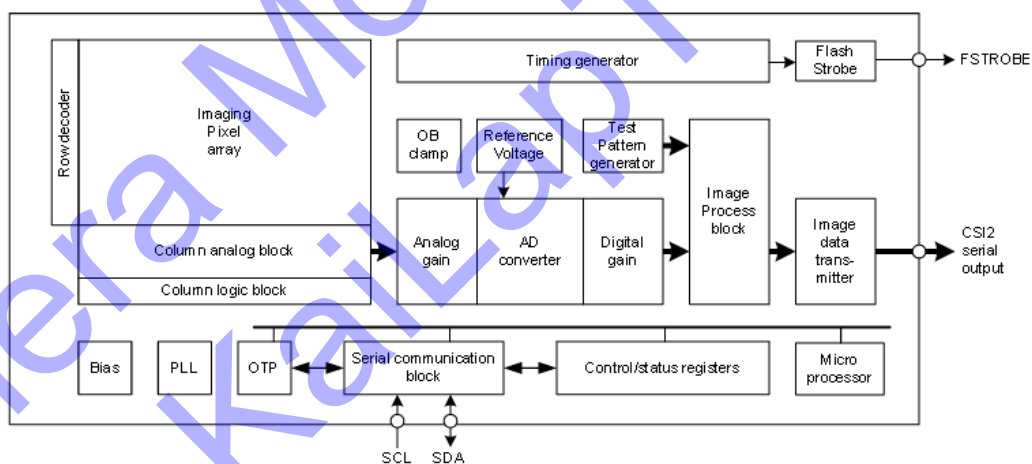
Functional Description

System Outline

IMX214 is a CMOS active pixel type image sensor which adopts the Exmor RS™ technology to achieve high sensitivity, low noise and high speed image capturing. It is embedded with backside illuminated imaging pixel, low noise analog amplifier, column parallel A/D converters which enables high speed capturing, digital amplifier, image binning circuit, timing control circuit for imaging size and frame rate, CSI2 image data high speed serial interface, PLL oscillator, and serial communication interface to control these functions.

Several additional image processing functions and peripheral circuits are also included for easy system optimization by the users. A one time programmable memory is embedded in the chip for storing the user data. It has 8 K-bit for users, 10 K-bit as a whole.

Block Diagram



Exmor RS

* Exmor RS is a trademark of Sony Corporation. The Exmor RS is a Sony's CMOS image sensor with high-resolution, high-performance and compact size by replacing a supporting substrate in Exmor R™ which changed fundamental structure of Exmor™ pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

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Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits.

KLT-L5K-IMX135 V1.0**SONY IMX135 MIPI Interface Auto Focus 13MP Camera Module**

Camera Module No.	KLT-L5K-IMX135 V1.0
Image Sensor	IMX135
EFL	3.57 mm
F.NO	2.0
Pixel	3136 x 4224
View Angle	78.4°
Lens Type	1/3.06 inch
Lens Dimensions	8.50 x 8.50 x 5.37 mm
Module Size	17.77 x 10.00 mm
Module Type	Auto Focus
Interface	MIPI
IMT Lens Model	IMT-1A65M002-N

Mating Connector Part No. 24-5804-030-000-829



Mating Connector On Main Board. Sold Separately.

[Product Brief]

IMX135

Ver.1.0

Diagonal 5.867 mm (Type 1/3.06) 13M Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX135 is a diagonal 5.867 mm (Type 1/3.06) 13M pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor RS™ technology 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. High sensitivity, low dark current and smear-free features are achieved. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.7 V, digital 1.05 V and 1.8 V for input/output interface and achieves low power consumption (comparing with CCD sensors).

In addition, this product is designed for use in cellular phone and Tablet PCs. When using this for another application, Sony does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than cellular phone and Tablet PCs. Consult your Sony sales representative if you have any questions.

Functions and Features

- ◆ Back-illuminated and stacked type CMOS image sensor Exmor RS
- ◆ 2-wire serial communication circuit on chip
- ◆ CSI-2 serial data output (2Lane/4Lane selectable) on chip
- ◆ Timing generator, horizontal (H) and vertical (V) driver circuits on chip
- ◆ CDS/PGA on chip
- ◆ 10-bit A/D converter on chip
- ◆ Automatic optical black (OB) clamp circuit on chip
- ◆ High sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Variable-speed shutter function (Minimum unit: One horizontal sync signal period)
- ◆ R, G, B primary color pigment mosaic filters on chip
- ◆ Supports external mechanical shutter
- ◆ Flash control pulse generation function
- ◆ Max. 24 frame/s in all-pixel scan mode
- ◆ Pixel rate: 360 MHz (all pixels, 4Lane, 24 frame/s)
- ◆ Supports 720/60 p, 1080/30 p, 1080/60 p drive *NOTE
- ◆ Up/down and/or right/left inversed readout function
- ◆ Pixel binning readout function
- ◆ Image cutout function
- ◆ OTP ROM (One Time Programmable Read Only Memory) 8 K-bit for user, 10 K-bit as a whole
- ◆ Power-on reset function
- ◆ Image compensation processing functions (defect correction, noise reduction)
- ◆ High Dynamic Range (HDR) and tone reproduction in movie mode

NOTE) Please ask about the details of a required register.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size : Diagonal 5.867 mm (Type 1/3.06)
- ◆ Total number of pixels : 4224 (H) × 3176 (V) approx. 13.42 M pixels
- ◆ Number of effective pixels : 4224 (H) × 3136 (V) approx. 13.25 M pixels
- ◆ Number of active pixels : 4208 (H) × 3120 (V) approx. 13.13 M pixels
- ◆ Chip size : 5.940 mm (H) × 4.280 mm (V)
- ◆ Unit cell size : 1.12 μm (H) × 1.12 μm (V)
- ◆ Substrate material : Silicon

Functional Description

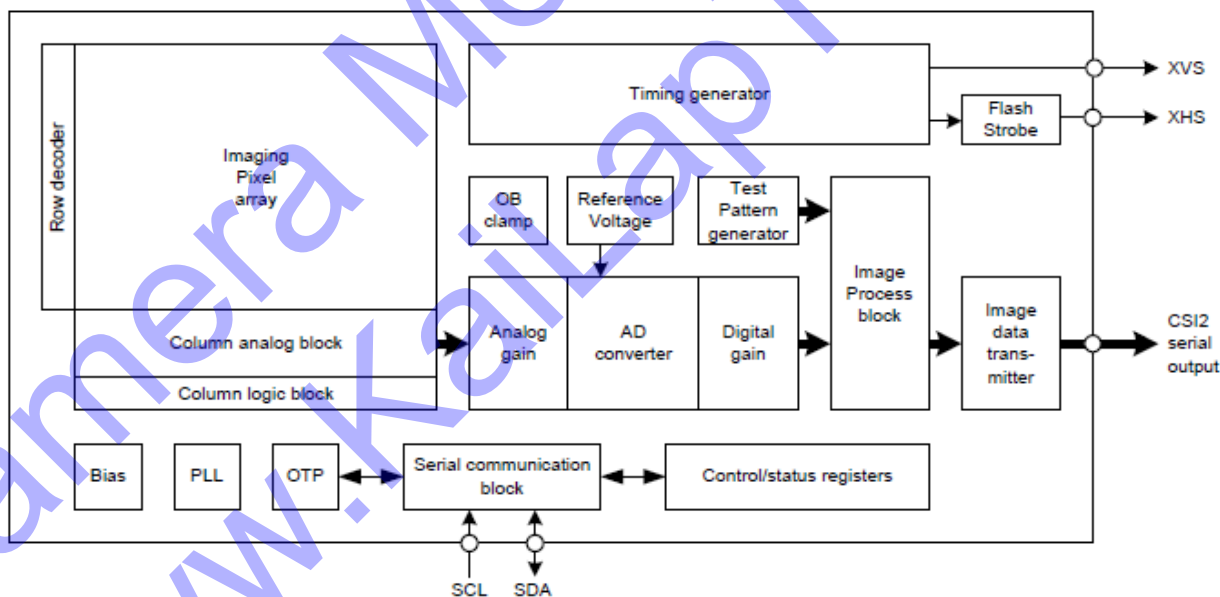
System Outline

IMX135 is a CMOS active pixel type image sensor which adopts the Exmor RS™ technology to achieve high sensitivity, low noise, and high speed image capturing. It is embedded with backside illuminated imaging pixel, low noise analog amplifier, column parallel A/D converters which enables high speed capturing, digital amplifier, image binning circuit, timing control circuit for imaging size and frame rate, CSI2 image data high speed serial interface, PLL oscillator, and serial communication interface to control these functions.

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Overview of functional block diagram



Exmor RS

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