



CMOS CAMERA MODULES

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KLT-J5MF-IMX335 V1.0

SONY IMX335 MIPI Interface Fixed Focus 5MP Camera Module



Camera Module No.	KLT-J5MF-IMX335 V1.0
Image Sensor	IMX335
EFL	3.07 mm
F.NO	1.8
Pixel	2952 x 1944
View Angle	152°
Lens Type	1/2.8 inch
Lens Dimensions	13.00 x 13.00 x 18.07 mm
Module Size	40.00 x 21.90 mm
Module Type	Fixed Focus
Interface	MIPI

Mating Connector Part No. DF30FC-30DS-0.4V
Mating Connector On Main Board. Sold Separately.

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[Product Information]

Ver.1.0

IMX335LLN

Diagonal 6.52 mm (Type 1 / 2.8) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX335LLN is a diagonal 6.52 mm (Type 1 / 2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 5.14 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved. This chip features an electronic shutter with variable charge-integration time.
(Applications: Surveillance cameras, FA cameras, Industrial cameras)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 6 to 27 MHz / 37.125 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Window cropping mode
 - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in All-pixel scan mode 2592(H) × 1944(V) A/D 10-bit : 60 frame/s
- ◆ High dynamic range (HDR) function
 - Multiple exposure HDR
 - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA 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 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O
 - CSI-2 serial data output (2 Lane / 4 Lane, RAW10 / RAW12 output)
- ◆ Recommended exit pupil distance: -100 mm to $-\infty$

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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Sony logo is a registered trademark of Sony Corporation.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size
Type 1/2.8
- ◆ Total number of pixels
2704 (H) × 2104 (V) approx. 5.69 M pixels
- ◆ Number of effective pixels
2616 (H) × 1964 (V) approx. 5.14 M pixels
- ◆ Number of active pixels
2616 (H) × 1960 (V) approx. 5.13 M pixels
- ◆ Number of recommended recording pixels
2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Unit cell size
2.0 μm (H) × 2.0 μm (V)
- ◆ Optical black
Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 13 pixels, rear 0 pixel
- ◆ Dummy
Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package
88 pin BGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	1961 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	2592 (H) × 1944 (V) approx. 5.04 M pixels	60	CSI-2	10

[Product Information]

IMX335LQN

Ver.1.1

Diagonal 6.52 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX335LQN is a diagonal 6.52 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 5.14 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 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.

(Applications: Surveillance cameras, FA cameras, Industrial cameras)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 6 to 27 MHz / 37.125 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Horizontal/Vertical 2/2-line binning mode
 - Window cropping mode
 - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in All-pixel scan mode 2592 (H) × 1944 (V) A/D 10-bit : 60 frame/s
- ◆ High dynamic range (HDR) function
 - Multiple exposure HDR
 - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA 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 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O
 - CSI-2 serial data output (2 Lane / 4 Lane, RAW10 / RAW12 output)
- ◆ Recommended exit pupil distance: -30 mm to $-\infty$

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	Type 1/2.8
◆ Image size	2704 (H) × 2104 (V) approx. 5.69 M pixels
◆ Total number of pixels	2616 (H) × 1964 (V) approx. 5.14 M pixels
◆ Number of effective pixels	2616 (H) × 1960 (V) approx. 5.11 M pixels
◆ Number of active pixels	2592 (H) × 1944 (V) approx. 5.04 M pixels
◆ Number of recommended recording pixels	2.0 μm (H) × 2.0 μm (V)
◆ Unit cell size	Horizontal (H) direction: Front 0 pixel, rear 0 pixel
◆ Optical black	Vertical (V) direction: Front 13 pixels, rear 0 pixel
◆ Dummy	Horizontal (H) direction: Front 0 pixel, rear 0 pixel
	Vertical (V) direction: Front 0 pixel, rear 0 pixel
◆ Package	88 pin CSP BGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	2200 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	2592 (H) × 1944 (V) approx. 5.04 M pixels	60	CSI-2	10
Horizontal/ Vertical 2/2-line binning	1296 (H) × 972 (V) approx. 1.26 M pixels	60	CSI-2	10