

## KLT-USB1A-AF-IMX335 V2.0

SONY IMX335 USB インターフェース オートフォーカ 5MP M12 カメラモジュール



カメラモジュール番号	KLT-USB1A-AF-IMX335 V2.0	
イメージセンサー	IMX335	Output Format: MJPG, YVY2
EFL	4.15 mm	20 FPS 2592 x 1944 (Full Frame)
F.NO	2	55 FPS 1920 x 1080 (Full HD)
ピクセル	2592 x 1944	55 FPS 1280 x 720 (HD 720P)
視野角	112°(D) 92.6°(H) 46.6°(V)	Supporting OS
レンズタイプ	1/2.8 インチ	Windows 7, 8.1, 10, Vista
レンズ寸法	15.00 x 14.00 x 13.42 mm	Windows XP SP2 under UVC
モジュールサイズ	53.00 x 38.00 mm	Linux Kernel V2.6.2.1 or later
モジュールのタイプ	オートフォーカス	MAC OS 10.4 or later
インターフェース	USB 3.0	Compliant with UVC Version 1.0

嵌合USBケーブル部品番号: KLT-USB3.0A-Cable



USBケーブル延長コード。別売りされている。

## [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

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### 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)

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### 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  $706 \text{ cd/m}^2$  light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

Sony reserves the right to change products and specifications without prior notice.

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  $706 \text{ cd/m}^2$  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