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[Product Information]

Ver.1.0

IMX147LQT

Diagonal 7.82 mm (Type 1/2.3) CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX147LQT is a diagonal 7.82 mm (Type 1/2.3) CMOS image sensor with a color square pixel array and approximately 20.68 M effective pixels. 12-bit digital output makes it possible to output the signals of approximately 20.68 M effective pixels with high definition for shooting still picture. In addition, this sensor enables output effective approximately 9.03 M effective pixels (aspect ratio approx.17:9) signal performed horizontal and vertical cropping at 59.94 frame/s in 10-bit digital output format and at 47.95 frame/s in 12-bit digital output format for high-definition moving picture. Furthermore, it realizes 12-bit digital output for shooting high-speed and high-definition moving pictures by horizontal and vertical addition and subsampling. Realizing high-sensitivity, low dark current, this sensor also has an electronic shutter function with variable storage time.

In addition, this product is designed for use in consumer use digital still camera and consumer use camcorder. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than consumer use digital still camera and consumer use camcorder.

In addition, individual specification change cannot be supported because this is a standard product. Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

Features

- ◆ CMOS active pixel type pixels
- ◆ Input clock frequency 72 MHz
- ◆ All-pixel scan mode
 - Various readout modes (*)
- ◆ High-sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Variable-speed shutter function (minimum unit: 1 horizontal sync signal period (1XHS))
- ◆ Low power consumption
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ CDS/PGA on chip: Gain +24 dB (step pitch 0.1 dB)
- ◆ 10-bit/12-bit A/D conversion on chip
- ◆ R, G, B primary color mosaic filters on chip
- ◆ All-pixel simultaneous reset supported (use with mechanical shutter)
- ◆ 98-pin high-precision ceramic package

* Please refer to the datasheet for binning/subsampling details of readout modes.

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

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Device Structure

- ◆ CMOS image sensor
- ◆ Image size Diagonal 7.82 mm (Type 1/2.3)
- ◆ Total number of pixels 5352 (H) × 3950 (V) approx. 21.14 M pixels
- ◆ Number of effective pixels
 - Type 1/2.3 approx. 20.68 M pixels use 5256 (H) × 3934 (V) approx. 20.68 M pixels
 - Type 1/3.2 approx. 9.03 M pixels use 4152 (H) × 2174 (V) approx. 9.03 M pixels
- ◆ Number of active pixels
 - Type 1/2.3 approx. 20.68 M pixels use 5208 (H) × 3924 (V) approx. 20.44 M pixels diagonal 7.82 mm
 - Type 1/3.2 approx. 9.03 M pixels use 4120 (H) × 2168 (V) approx. 8.93 M pixels diagonal 5.59 mm
- ◆ Number of recommended recording pixels
 - Type 1/2.3 approx. 20.68 M pixels use 5184 (H) × 3888 (V) approx. 20.16 M pixels aspect ratio 4:3
 - Type 1/3.2 approx. 9.03 M pixels use 4096 (H) × 2160 (V) approx. 8.85 M pixels aspect ratio approx. 17:9
- ◆ Chip size 8.740 mm (H) × 7.671 mm (V)
- ◆ Unit cell size 1.20 μm (H) × 1.20 μm (V)
- ◆ Optical black
 - Horizontal (H) direction : Front 48 pixels, rear 0 pixel
 - Vertical (V) direction : Front 16 pixels, rear 0 pixel
- ◆ Package 98 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	986 digit	1/30 s integration
Saturation signal	Min.	2959 digit	

Basic Drive Mode

Type 1/2.3 Approx. 20.68 M Pixels (4:3)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 0	5184 (H) × 3888 (V) approx. 20.16 M pixels	21.98	12
Readout mode 1	5184 (H) × 3888 (V) approx. 20.16 M pixels	24.98	10
Readout mode 2	2592 (H) × 1458 (V) approx. 3.78 M pixels	59.94	12
Readout mode 3	1728 (H) × 1296 (V) approx. 2.24 M pixels	29.97	12
Readout mode 4	1728 (H) × 1296 (V) approx. 2.24 M pixels	59.94	12
Readout mode 5	1728 (H) × 378 (V) approx. 0.65 M pixels	239.76	12
Readout mode 6	1728 (H) × 432 (V) approx. 0.75 M pixels	29.97	12
Readout mode 7	2592 (H) × 1458 (V) approx. 3.78 M pixels	59.94	10
Readout mode 8	1728 (H) × 202 (V) approx. 0.35 M pixels	449.55	12

Type 1/3.2 Approx. 9.03 M Pixels (Approx. 17:9)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 0	4096 (H) × 2160 (V) approx. 8.85 M pixels	47.95	12
Readout mode 1	4096 (H) × 2160 (V) approx. 8.85 M pixels	59.94	10
Readout mode 2	2048 (H) × 1080 (V) approx. 2.21 M pixels	59.94	12
Readout mode 3	1364 (H) × 720 (V) approx. 0.98 M pixels	59.94	12
Readout mode 4	1364 (H) × 720 (V) approx. 0.98 M pixels	119.88	12
Readout mode 5	1364 (H) × 240 (V) approx. 0.33 M pixels	239.76	12
Readout mode 7	2048 (H) × 1080 (V) approx. 2.21 M pixels	59.94	10
Readout mode 9	1364 (H) × 126 (V) approx. 0.17 M pixels	659.34	12