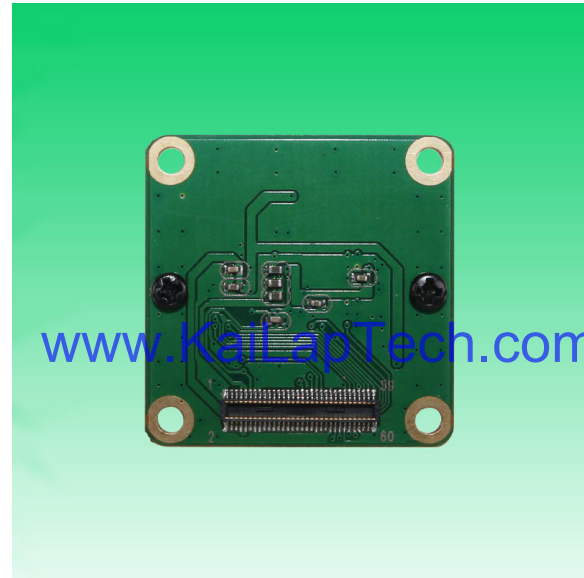


## KLT-FMS-IMX334 V1.0

### 8.42MP Sony IMX334 MIPI Interface M12 Fixed Focus Camera Module



Front View



Back View

#### Specifications

Camera Module No.	KLT-FMS-IMX334 V1.0
Resolution	8.42MP
Image Sensor	IMX334
Sensor Type	1/1.8"
Pixel Size	2.0 um x 2.0 um
EFL	4.00 mm
F.NO	1.80
Pixel	3840 x 2160
View Angle	130.0°(DFOV) 100.0°(HFOV) 59.0°(VFOV)
Lens Dimensions	20.00 x 20.00 x 33.80 mm
Module Size	26.50 x 26.50 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Model	KLT-LENS-MJ7049A
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	DF40C-60DS-0.4V(51)



## KLT-FMS-IMX334 V1.0

### 8.42MP Sony IMX334 MIPI Interface M12 Fixed Focus Camera Module



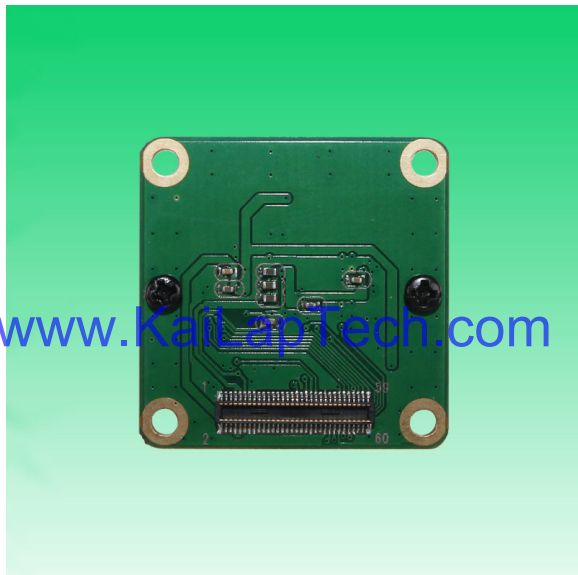
Top View



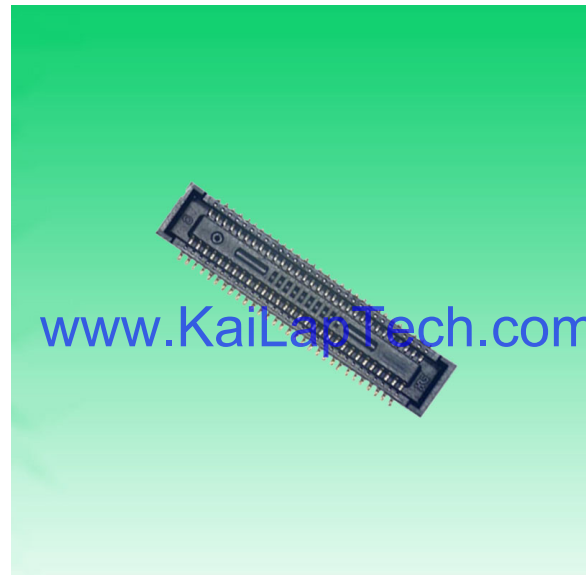
Side View

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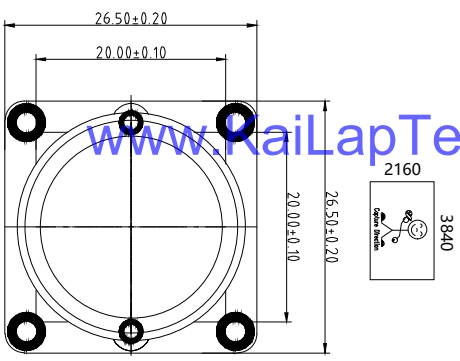
Bottom View



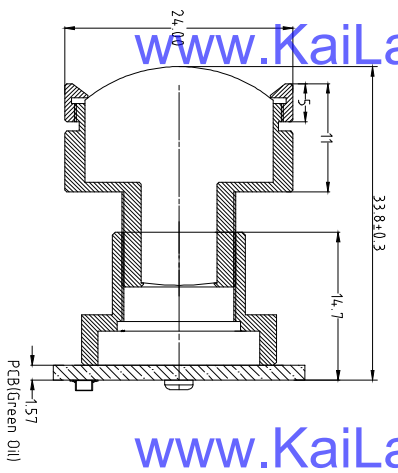
Mating Connector

Version	Information	Date
V1.0	First Version	6-23-2020

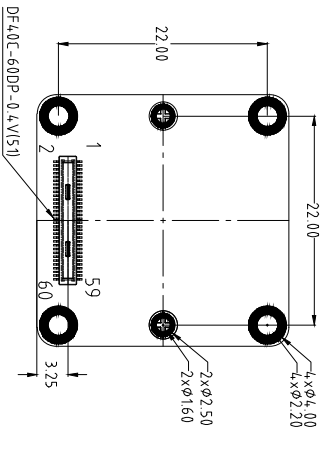
RoHS			
PIN	SIGNAL	PIN	SIGNAL
1	NC	31	XTRIG
2	NC	32	TOUT
3	NC	33	NC
4	NC	34	NC
5	AVDD 2.9V	35	SLAMODE1
6	DVDD 1.2V	36	SLAMODE2
7	AVDD 2.9V	37	GND
8	DVDD 1.2V	38	GND
9	DOVDD 1.8V	39	INCK
10	NC	40	NC
11	GND	41	NC
12	GND	42	NC
13	GND	43	GND
14	GND	44	GND
15	XCLR	45	NC
16	NC	46	D_DATA_3_P
17	NC	47	NC
18	NC	48	D_DATA_3_N
19	XMASTER	49	GND
20	TEST1	50	GND
21	SCL	51	D_DATA_0_N
22	NC	52	D_DATA_1_N
23	NC	53	D_DATA_0_P
24	NC	54	D_DATA_1_P
25	XVS	55	GND
26	NC	56	GND
27	SDA	57	D_DATA_2_P
28	NC	58	D_CLK_0_P
29	XHS	59	D_DATA_2_N
30	TENABLE	60	D_CLK_0_N



TOP VIEW



SIDE VIEW



BOTTOM VIEW

2 Lens specification:

FOV: 130°(D),100°(H),59°(V)  
 F/#: 1.8  
 TV Distortion: <-35%  
 Focal length: 4mm  
 Composition: 6G+IR FILTER  
 IR Cut Coating: 650nm±10nm@50%

Parameters:

1 Sensor specification:

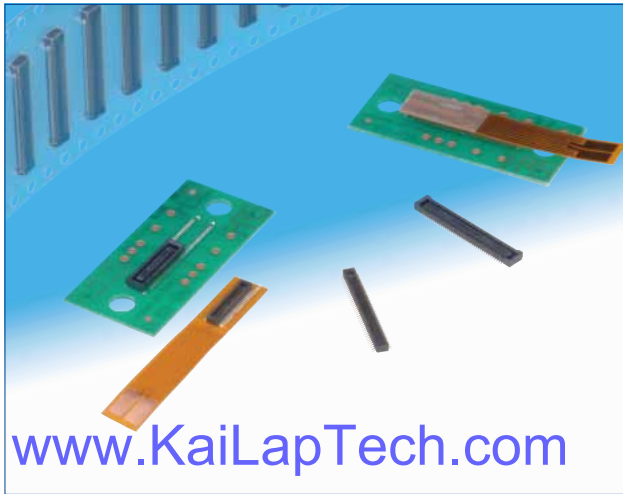
Image Sensor: IMX334LQR-C  
 Pixel: 2.0umx2.0um  
 Lens Type: 1/1.8  
 Important Voltage Description:  
 AVDD 2.9V; DOVDD 1.8V; DVDD 1.2V

Kai Lap Technologies Group Ltd

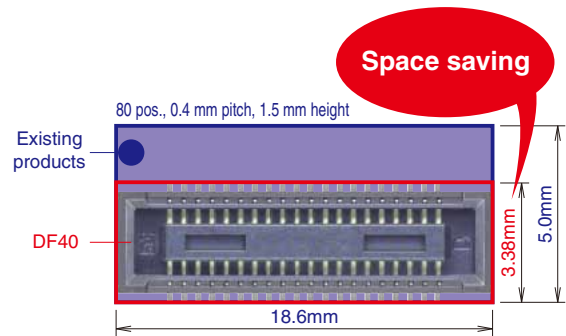
Designed By	Kevin	Model Name:	KLT-FMS-IMX334 V1.0
Checked By	Aouly_Yan	Projection Type:	Third Angle
		Unit:	mm
		Scale:	1:1
		Sheet:	1 of 1
		Version:	1/0

# 0.4mm Pitch, 1.5 to 4.0mm Height, Board-to-Board and Board-to-FPC Connectors

## DF40 Series



### Space saving



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## Features

### 1. High density mounting

Space saving design that has a minimum connector width, yet still retains a sufficient vacuum area for easy pick-and-place mounting  
Minimum width : 3.38mm

### 2. Multiple stack height options

In addition to its space saving design, several stack heights are available and add versatility to any application. Stack heights : 1.5mm, 2.0mm, 2.5mm, 3.0mm, 3.5mm, and 4.0mm.

### 3. High contact reliability

Despite its small stature and low profile, the contacts deliver strong contact forces and an effective mating length of 0.45mm on the 1.5mm stacking height. This connector utilizes a locking system that prevents accidental unmating issues and emits a clear tactile click to ensure that mating has been completed.

### 4. Excellent self-aligning range

The use of guide ribs allows 0.33mm of self-alignment on this connector.

### 5. Reinforced structure with shock absorbing ribs

Both sides of the connector have been reinforced with the addition of shock absorbing ribs.

### 6. Solder wicking prevention

Nickel-plated barriers were added to protect the contact areas from potential solder wicking.

### 7. Contamination resistant design

When mated, the connector's design covers the contacts which help to keep dust and other debris away from the contacts. The SMT leads are kept very close to the connector housing which also helps to prevent shorts caused by debris on the exposed contacts.

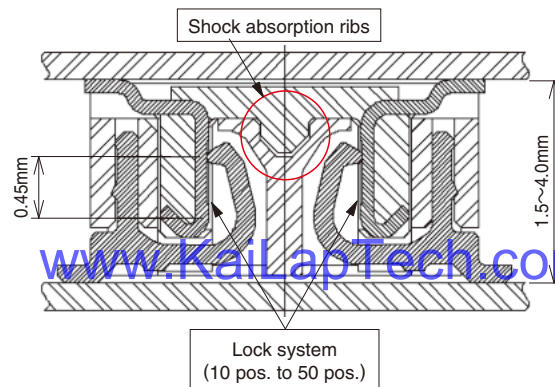
### 8. RoHS compliant

Environment friendly and does not use RoHS specified prohibited materials. All materials and substances used to produce these parts comply with the RoHS standards.

### 9. High speed signal with noise prevention

The shielded type can support high speed signal transmissions with noise prevention.

### High contact reliability - effective mating length 0.45mm



### Stacking height variations

#### Standard type

Stacking height	1.5 mm	2.0 mm	2.5 mm	3.0 mm	3.5 mm	4.0 mm
10	○	-	○	-	-	-
12	○	○	-	-	-	-
20	○	-	-	-	○	-
24	○	-	-	-	-	-
30	○	○	○	○	○	-
34	○	-	-	-	-	-
40	○	○	○	○	○	-
44	-	○	-	○	-	-
50	○	○	○	○	○	-
60	○	○	○	○	○	○
70	○	○	-	○	-	-
80	○	○	-	○	○	○
90	○	-	-	○	-	○
100	○	-	-	○	-	-

#### Shielded type

Stacking height	1.5 mm	3.0 mm
No. of Contacts	30	○
	48	○
	70	-

## Product Specifications

Ratings	Rated Current 0.3A	Operating Temperature Range -35 to +85°C (Note 1)	Storage Temperature Range -10 to +60°C (Note 2)
	Rated Voltage AC, DC 30V	Operating Humidity Range 20 to 80%	Storage Humidity Range 40 to 70% (Note 2)

Items	Specifications	Conditions
1. Insulation Resistance	50MΩ min	Measured with DC 100V
2. Withstanding Voltage	No flashover or breakdown	Apply AC 100V for 1 minute
3. Contact Resistance	90mΩ max	Measured with AC 20mV, 1 kHz and 1mA
4. Vibration Resistance	No electrical discontinuity of 1μs or greater	Frequency 10-55 Hz, half amplitude 0.75mm, 3 directions for 2 hours
5. Humidity Resistance	Contact resistance : 90mΩ max Insulation resistance : 25mΩ min	Left at temperature 40 ± 2°C, humidity 90 to 95%, 96 hours
6. Temperature Cycles	Contact resistance : 90mΩ max Insulation resistance : 50mΩ min	(-55°C : 30 minutes → 5~35°C : 10 minutes → 85°C : 30 minutes → 5~35°C : 10 minutes) 5 cycles
7. Durability	Contact resistance : 90mΩ max	30 mating cycles
8. Soldering Heat Resistance	Should be no melting of resin parts that affects its performance	Reflow : according to the Recommended Temperature Profile Hand solder : Soldering iron temperature 350°C, no more than 3 seconds.

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The term "storage" here refers to products stored for a long period prior to board mounting and use. The operating temperature and humidity range covers the non-energized condition of connectors after board mounting and the temporary storage conditions during transportation, etc.

## Materials (Standard, non shielded type) / Finish

Product	Component	Materials	Finish	UL Regulation
Receptacle	Insulator	LCP	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	————
Header	Insulator	LCP	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	————

## Materials (Shielded type) / Finish

Product	Component	Materials	Finish	UL Regulation
Receptacle	Insulator	LCP	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	————
	Shield plate			————
Header	Insulator	LCP	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	————
	Reinforcing metal fitting			————

## Product Number Structure (Standard, non-shielded type)

Refer to the chart below when determining the product specifications from the product number.  
Please select from the product numbers listed in this catalog when placing orders.

### ● Receptacle

**DF40** **#** - **(\*\*)** - **\*** **DS** - **0.4** **V** **(\*\*)**

①      ②      ③      ④      ⑤      ⑥      ⑦      ⑧

① Series Name: DF40	③ Stacking height <table border="1"> <thead> <tr> <th>Display</th> <th>Stacking height</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>1.5mm</td> </tr> <tr> <td>2.0</td> <td>2.0mm</td> </tr> <tr> <td>2.5</td> <td>2.5mm</td> </tr> <tr> <td>3.0</td> <td>3.0mm</td> </tr> <tr> <td>3.5</td> <td>3.5mm</td> </tr> <tr> <td>4.0</td> <td>4.0mm</td> </tr> </tbody> </table>	Display	Stacking height	None	1.5mm	2.0	2.0mm	2.5	2.5mm	3.0	3.0mm	3.5	3.5mm	4.0	4.0mm	④ No. of Contacts
Display		Stacking height														
None	1.5mm															
2.0	2.0mm															
2.5	2.5mm															
3.0	3.0mm															
3.5	3.5mm															
4.0	4.0mm															
② Style B : With reinforcing metal fitting HB : With reinforcing metal fitting (The H denotes a stacking height 2.5mm or above) C : Without reinforcing metal fitting HC : Without reinforcing metal fitting (The H denotes a stacking height 2.5mm or above)		⑤ Connector Type DS : Double row receptacle														
		⑥ Contact Pitch : 0.4mm														
		⑦ Mating direction Shape V : Vertical SMT														
		⑧ Packaging Type (51) Embossed tape packaging														

### ● Header

**DF40** **#** - **\*** **DP** - **0.4** **V** **(\*\*)**

①      ②      ③      ④      ⑤      ⑥      ⑦

① Series Name : DF40	③ No. of Contacts	⑤ Contact Pitch : 0.4mm
② Style C : Without reinforcing metal fitting	④ Connector Type DP : Double row pin header	⑥ Mating direction V : Vertical SMT
		⑦ Packaging Type (51) Embossed tape packaging

## Shielded type

### ● Receptacle

**DF40** **GB** - **(\*\*)** - **\*** **DS** - **0.4** **V** **(\*\*)**

①      ②      ③      ④      ⑤      ⑥      ⑦      ⑧

① Series Name : DF40	③ Stacking height <table border="1"> <thead> <tr> <th>Display</th> <th>Stacking height</th> </tr> </thead> <tbody> <tr> <td>1.5</td> <td>1.5mm</td> </tr> <tr> <td>3.0</td> <td>3.0mm</td> </tr> </tbody> </table>	Display	Stacking height	1.5	1.5mm	3.0	3.0mm	⑤ Connector Type DS : Double row receptacle
Display		Stacking height						
1.5	1.5mm							
3.0	3.0mm							
② Style GB : With shield		⑥ Contact Pitch : 0.4mm						
	④ No. of Contacts	⑦ Mating direction V : Vertical SMT						
		⑧ Packaging Type (51) Embossed tape packaging						

### ● Header

**DF40** **GB** - **\*** **DP** - **0.4** **V** **(\*\*)**

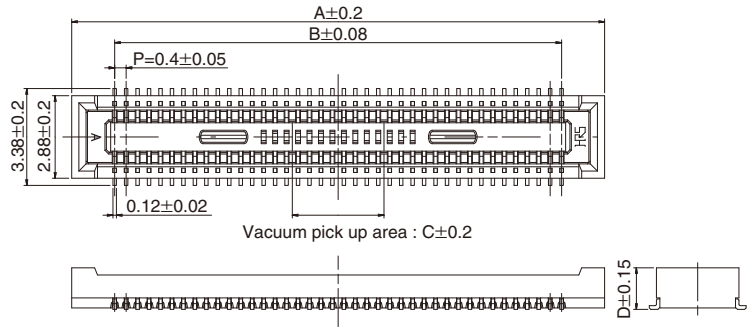
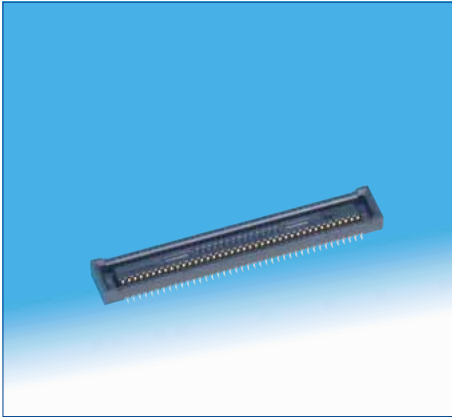
①      ②      ③      ④      ⑤      ⑥      ⑦

① Series Name : DF40	③ No. of Contacts	⑤ Contact Pitch : 0.4mm
② Style GB : With reinforcing metal fitting (For use with shielded product)	④ Connector Type DP : Double row pin header	⑥ Mating direction V : Vertical SMT
		⑦ Packaging Type (51) Embossed tape packaging

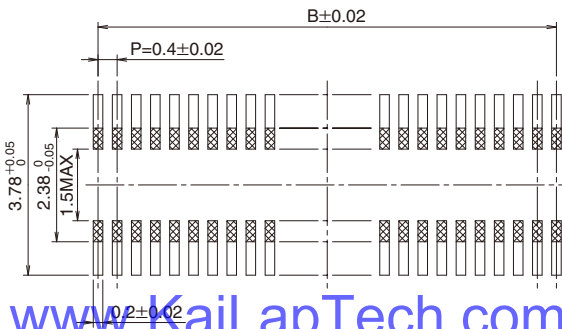
Dec.1.2021 Copyright 2021 HIROSE ELECTRIC CO., LTD. All Rights Reserved.



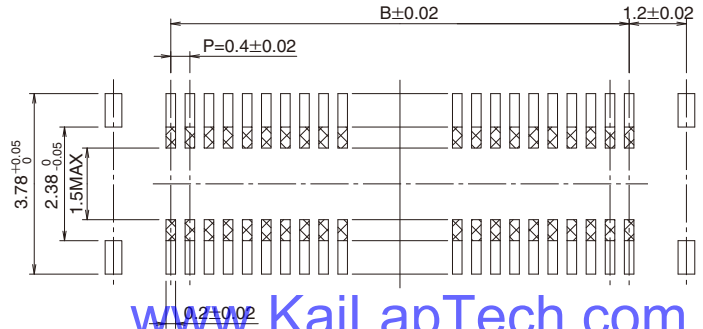
## Receptacle (Stacking height 1.5mm)



### Recommended PCB layout



DF40C(Without reinforcing metal fitting)



DF40B(With reinforcing metal fitting)

## Stacking height 1.5mm

【Specification No.】  
(51) : Embossed package 5,000 pcs/reel

Unit : mm

Part No.	HRS No.	No. of Contacts	A	B	C	D	
DF40B-10DS-0.4V(51)	684-4038-8 51	10	4.6	1.6	1.0	1.45	
DF40B-12DS-0.4V(51)	684-4152-3 51	12	5.0	2.0			
DF40B-30DS-0.4V(51)	684-4090-8 51	30	8.6	5.6			
DF40B-50DS-0.4V(51)	684-4018-0 51	50	12.6	9.6	3.2		
DF40B-60DS-0.4V(51)	684-4049-4 51	60	14.6	11.6			
DF40B-80DS-0.4V(51)	684-4052-9 51	80	18.6	15.6			
DF40C-20DS-0.4V(51)	684-4005-9 51	20	6.6	3.6	1.0		1.45
DF40C-24DS-0.4V(51)	684-4006-1 51	24	7.4	4.4	1.2		
DF40C-30DS-0.4V(51)	684-4007-4 51	30	8.6	5.6	1.5		
DF40C-34DS-0.4V(51)	684-4023-0 51	34	9.4	6.4	2.3		
DF40C-40DS-0.4V(51)	684-4008-7 51	40	10.6	7.6	3.2		
DF40C-50DS-0.4V(51)	684-4009-0 51	50	12.6	9.6			
DF40C-60DS-0.4V(51)	684-4004-6 51	60	14.6	11.6			
DF40C-70DS-0.4V(51)	684-4016-5 51	70	16.6	13.6			
DF40C-80DS-0.4V(51)	684-4002-0 51	80	18.6	15.6			
DF40C-90DS-0.4V(51)	684-4124-8 51	90	20.6	17.6			
DF40C-100DS-0.4V(51)	684-4033-4 51	100	22.6	19.6			

Note 1 : Please place orders by full reel.

Note 2 : The surface of the 60 to 100 pos. parts have a small, concave section that will not affect the vacuum pick up operation.

Note 3 : Resist coating area.

Note 4 : This connector is NOT polarized.

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## [Product Information]

# IMX334LLR

Ver.1.1

Diagonal 8.86 mm (Type 1/1.8) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

### Description

The IMX334LLR is a diagonal 8.86 mm (Type 1/1.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.42 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: 3840 (H) × 2160 (V) approx. 8.29 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 3840(H) × 2160(V) A/D 12-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 ( 4 Lane / 8 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<sup>2</sup> 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 1/1.8
- ◆ Total number of pixels 3952 (H) × 2320 (V) approx. 9.17 M pixels
- ◆ Number of effective pixels 3864 (H) × 2180 (V) approx. 8.42 M pixels
- ◆ Number of active pixels 3864 (H) × 2176 (V) approx. 8.41 M pixels
- ◆ Number of recommended recording pixels 3840 (H) × 2160 (V) approx. 8.29 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 128 pin LGA

**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	3840 (H) × 2160 (V) approx. 8.29 M pixels	60	CSI-2	10/12

## [Product Information]

# IMX334LQR

Ver.1.2

Diagonal 8.86 mm (Type 1/1.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

### Description

The IMX334LQR is a diagonal 8.86 mm (Type 1/1.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.42 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: 3840 (H) × 2160 (V) approx. 8.29 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 3840(H) × 2160(V) A/D 12-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 ( 4 Lane / 8 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<sup>2</sup> 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 1/1.8
- ◆ Total number of pixels 3952 (H) × 2320 (V) approx. 9.17 M pixels
- ◆ Number of effective pixels 3864 (H) × 2180 (V) approx. 8.42 M pixels
- ◆ Number of active pixels 3864 (H) × 2176 (V) approx. 8.41 M pixels
- ◆ Number of recommended recording pixels 3840 (H) × 2160 (V) approx. 8.29 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  
Horizontal (H) direction: Front 0 pixel, rear 0 pixel  
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Dummy
- ◆ Package 128 pin LGA

**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	3840 (H) × 2160 (V) approx. 8.29 M pixels	60	CSI-2	10/12
Horizontal/Vertical 2/2-line binning	1920 (H) × 1080 (V) approx. 2.07 M pixels	120	CSI-2	10



## Camera Module Pinout Definition Reference Chart

OmniVision	Sony	Samsung	On-Semi	Aptina	Himax	GalaxyCore	PixArt	SmartSens	Sensors
Pin Signal		Description							
DGND GND		ground for digital circuit							
AGND		ground for analog circuit							
PCLK DCK		DVP PCLK output							
XCLR PWDN XSHUTDOWN STANDBY		power down active high with internal pull-down resistor							
MCLK XVCLK XCLK INCK		system input clock							
RESET RST		reset active low with internal pull-up resistor							
NC NULL		no connect							
SDA SIO_D SIOD		SCCB data							
SCL SIO_C SIOC		SCCB input clock							
VSYNC XVS FSYNC		DVP VSYNC output							
HREF XHS		DVP HREF output							
DOVDD		power for I/O circuit							
AFVDD		power for VCM circuit							
AVDD		power for analog circuit							
DVDD		power for digital circuit							
STROBE FSTROBE		strobe output							
FSIN		synchronize the VSYNC signal from the other sensor							
SID		SCCB last bit ID input							
ILPWM		mechanical shutter output indicator							
FREQ		frame exposure / mechanical shutter							
GPIO		general purpose inputs							
SLASEL		I2C slave address select							
AFEN		CEN chip enable active high on VCM driver IC							
<b>MIPI Interface</b>									
MDN0 DN0 MD0N DATA_N DMO1N		MIPI 1st data lane negative output							
MDP0 DP0 MD0P DATA_P DMO1P		MIPI 1st data lane positive output							
MDN1 DN1 MD1N DATA2_N DMO2N		MIPI 2nd data lane negative output							
MDP1 DP1 MD1P DATA2_P DMO2P		MIPI 2nd data lane positive output							
MDN2 DN2 MD2N DATA3_N DMO3N		MIPI 3rd data lane negative output							
MDP2 DP2 MD2P DATA3_P DMO3P		MIPI 3rd data lane positive output							
MDN3 DN3 MD3N DATA4_N DMO4N		MIPI 4th data lane negative output							
MDP3 DP3 MD3P DATA4_P DMO4P		MIPI 4th data lane positive output							
MCN CLKN CLK_N DCKN		MIPI clock negative output							
MCP CLKP MCP CLK_P DCKN		MIPI clock positive output							
<b>DVP Parallel Interface</b>									
D0 DO0 Y0		DVP data output port 0							
D1 DO1 Y1		DVP data output port 1							
D2 DO2 Y2		DVP data output port 2							
D3 DO3 Y3		DVP data output port 3							
D4 DO4 Y4		DVP data output port 4							
D5 DO5 Y5		DVP data output port 5							
D6 DO6 Y6		DVP data output port 6							
D7 DO7 Y7		DVP data output port 7							
D8 DO8 Y8		DVP data output port 8							
D9 DO9 Y9		DVP data output port 9							
D10 DO10 Y10		DVP data output port 10							
D11 DO11 Y11		DVP data output port 11							





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## Cameras Applications



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## Camera Reliability Test

Reliability Inspection Item		Testing Method	Acceptance Criteria	
Category	Item			
Environmental	Storage Temperature	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 96 Hours	Temperature Chamber	No Abnormal Situation
	Operation Temperature	High 60°C 24 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 24 Hours	Temperature Chamber	No Abnormal Situation
	Humidity	60°C 80% 24 Hours	Temperature Chamber	No Abnormal Situation
	Thermal Shock	High 60°C 0.5 Hours Low -20°C 0.5 Hours Cycling in 24 Hours	Temperature Chamber	No Abnormal Situation
Physical	Drop Test (Free Falling)	Without Package 60cm	10 Times on Wood Floor	Electrically Functional
		With Package 60cm	10 Times on Wood Floor	Electrically Functional
	Vibration Test	50Hz X-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Y-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Z-Axis 2mm 30min	Vibration Table	Electrically Functional
Cable Tensile Strength Test	Loading Weight 4 kg 60 Seconds Cycling in 24 Hours	Tensile Testing Machine	Electrically Functional	
Electrical	ESD Test	Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional
		Air Discharge 4 KV	ESD Testing Machine	Electrically Functional
	Aging Test	On/Off 30 Seconds Cycling in 24 Hours	Power Switch	Electrically Functional
	USB Connector	On/Off 250 Times	Plug and Unplug	Electrically Functional







Inspection Item		Inspection Method	Standard of Inspection	
Category	Item			
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)
	Holder	Scratches	The Naked Eye	The Inside Crack Exposure is Not Allowed
		Gap	The Naked Eye	Meet the Height Standard
		Screw	The Naked Eye	Make Sure Screws Are Presented (If Any)
		Damage	The Naked Eye	The Inside Crack Exposure is Not Allowed
	Lens	Scratch	The Naked Eye	No Effect On Resolution Standard
		Contamination	The Naked Eye	No Effect On Resolution Standard
		Oil Film	The Naked Eye	No Effect On Resolution Standard
		Cover Tape	The Naked Eye	No Issue On Appearance.
	Function	Image	No Communication	Test Board
Bright Pixel			Black Board	Not Allowed In the Image Center
Dark Pixel			White board	Not Allowed In the Image Center
Blurry			The Naked Eye	Not Allowed
No Image			The Naked Eye	Not Allowed
Vertical Line			The Naked Eye	Not Allowed
Horizontal Line			The Naked Eye	Not Allowed
Light Leakage			The Naked Eye	Not Allowed
Blinking Image			The Naked Eye	Not Allowed
Bruise			Inspection Jig	Not Allowed
Resolution			Chart	Follows Outgoing Inspection Chart Standard
Color			The Naked Eye	No Issue
Noise			The Naked Eye	Not Allowed
Corner Dark			The Naked Eye	Less Than 100px By 100px
Color Resolution			The Naked Eye	No Issue
Dimension	Height	The Naked Eye	Follows Approval Data Sheet	
	Width	The Naked Eye	Follows Approval Data Sheet	
	Length	The Naked Eye	Follows Approval Data Sheet	
	Overall	The Naked Eye	Follows Approval Data Sheet	



## KLT Package Solutions

KLT Camera Module



Complete with Lens Protection Film



Tray with Grid and Space



Place Cameras on the Tray







## Camera Modules Package Solution

Full Tray of Cameras



Cover Tray with Lid



Put Tray into Anti-Static Bag



Vacuum the Anti-Static Bag





## Camera Modules Package Solution

**Sealed Vacuum Bag with Labels**

- 1. Model and Description 2. Quantity 3. Shipping Date 4. Caution**







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## Large Order Package Solution

Place Foam Sheets Between Trays

Foam Sheets are Slightly Larger than Trays



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Place Foam Sheets and Trays into Box

Foam Sheets are Tightly Fitting Box



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## Small Order Package Solution

Place Foam Sheets and Trays into Small Box



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Package in Small Box for Shipment

Foam Sheets are Nicely Fitting the Small Box



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Place Small Boxes into Larger Box



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## Carbon Box Package Solution

Seal the Carbon Box

Final Package Labelled Box



### Carbon Box Ready for Shipment

1. Delivery Address and Phone No.
2. Box No. and Ship Date
3. Fragile Caution





## Sample Order Package Solution

Place Sample into Small Anti-Static Bag



Place Connectors into Small Ant-Static Bag



### Sample Labels on the Small Bag

1. Camera Module or Connector Model
2. Shipping Date and Quantity
3. Caution







## Connectors Large Order Package Solution

Connectors in a Wheel



Label Connectors in the Wheel



The Wheel is Perfectly Fitting the Box



Connectors Box Ready for Shipment



## Company Kai Lap Technologies (KLT)

Kai Lap Technologies Group Limited. (KLT) was established in 2009, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. KLT is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

KLT provides OEM, ODM design, contract manufacturing, and builds the camera products. You may provide the requirements to us, even with a hand draft, our sales and engineering work together to meet your needs. We consider ourselves your last-term partner in developing practical and innovative solutions.

Our team covers everything from initial concept development to mass produced product. KLT specializes in customized camera design, raw material, electronic engineering, firmware/software development, product testing, and packing design. Our experienced strategic supply systems offer a robust and dependable manufacturing capacity for orders of various sizes.

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## Limited Warranty

KLT provides the following limited warranty if you purchased the Product(s) directly from KLT company or from KLT's website, [www.KaiLapTech.com](http://www.KaiLapTech.com). Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. KLT guarantees that the Product(s) will be free from defects in materials and workmanship under normal use for a period of one (1) year from the date you receive the product ("Warranty Period").

For all Product(s) that contain or develop material defects in materials or workmanship during the Warranty Period, KLT will, at its sole option, either: (i) repair the Product(s); (ii) replace the Product(s) with a new or refurbished Product(s) (replacement Product(s) being of identical model or functional equivalent); or (iii) provide you a refund of the price you paid for the Product(s).

This Limited Warranty of KLT is solely limited to repair and/or replacement on the terms set forth above. KLT is not reliable or responsible for any subsequent events.







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## KLT Strength

### Powerful Factory



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### Professional Service



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