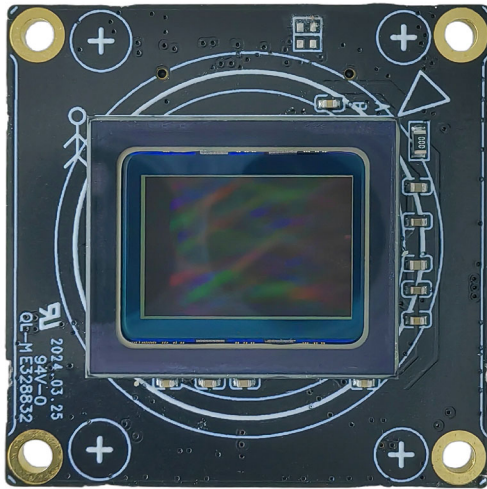


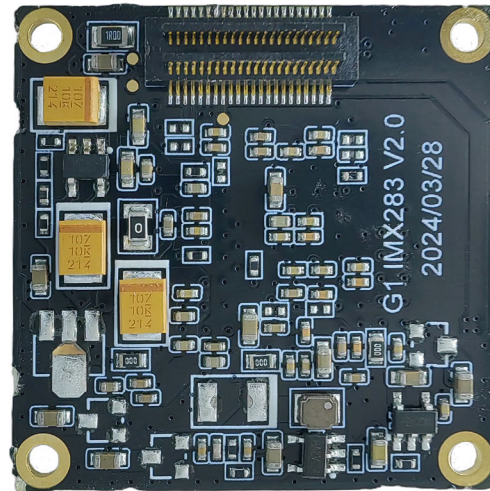


## KLT-CMNL-IMX283 V1.0

### 20.3MP Sony IMX283 No Lens Camera Module



Front View



Back View

### Overview

The KLT-CMNL-IMX283 V1.0 camera module No Lens image sensor board uses the Sony IMX283 high-quality image sensor, which has a diagonal of 15.86mm (1 inch) CMOS image sensor, a pixel of 2.4um, a color square pixel display, an effective pixel of 20.30 megapixels, and a high-definition image.

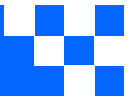
When used with the master board, it can support 20MP pixel high-definition photography, up to 4K@60FPS (differential), 4K@30FPS video shooting, with the characteristics of true color restoration and excellent image quality. It is connected by a board-to-board socket or coaxial cable adaptor. The board PCB frame size is 32x32mm.



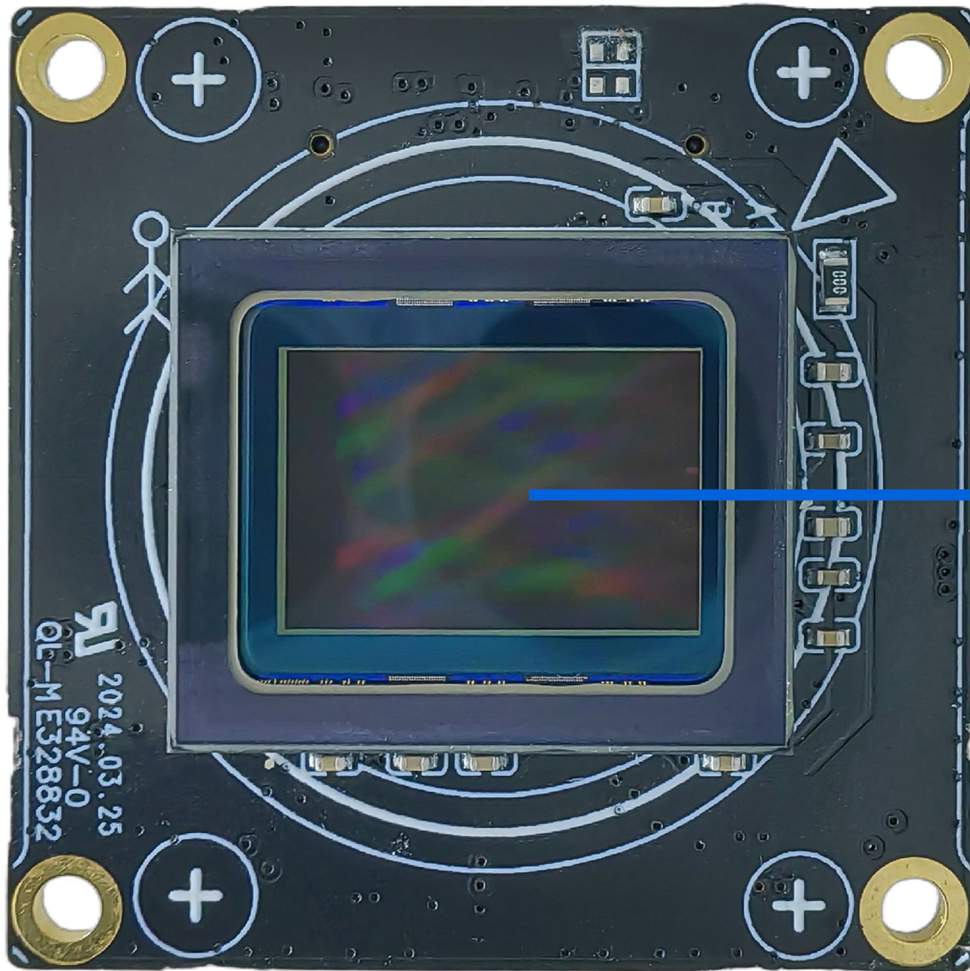
## KLT-CMNL-IMX283 V1.0 20.3MP Sony IMX283 No Lens Camera Module

### Specifications

<b>Model No.</b>	<b>KLT-CMNL-IMX283 V1.0</b>
<b>Image Sensor</b>	IMX283
<b>Image Sensor Type</b>	CMOS
<b>Effective Pixels</b>	20.30 Megapixels
<b>Sensor Size</b>	1"
<b>Pixel Size</b>	2.40 um x 2.40 um
<b>Video Frame Rate</b>	4K@24/25/30/FPS, 4K@48/50/60FPS (Differential) 2.7K@24/25/30/48/50/60FPS 1440@24/25/30/48/50/60FPS 1080P@24/25/30/48/50/60/120FPS 720P@24/25/30/48/50/60/120/240FPS
<b>Video Slow Motion</b>	OFF, 4K2X, 1080P4X, 720P8X
<b>Photo Format</b>	JPG
<b>Photo Resolution (with Master Board)</b>	20MP (5200x3900) 13MP (4160x3120) 12MP (4000x3000) 10MP (3648x2736) 8MP (3264x2448) 5MP (2592x1944) 3MP (2048x1536) 2MP (1920x1080)
<b>Operating Temperature</b>	-10°C to +60°C
<b>Storage Temperature</b>	-20°C to +80°C
<b>Humidity</b>	20% to 80%
<b>PCB Dimensions</b>	32 x 32 mm
<b>PCB Screw Hole Spacing</b>	28 x 28 mm
<b>PCB Screw Hole Diameter</b>	2 mm
<b>Lens Mount Screw Diameter</b>	1.6 mm

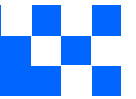


## KLT-CMNL-IMX283 V1.0 20.3MP Sony IMX283 No Lens Camera Module



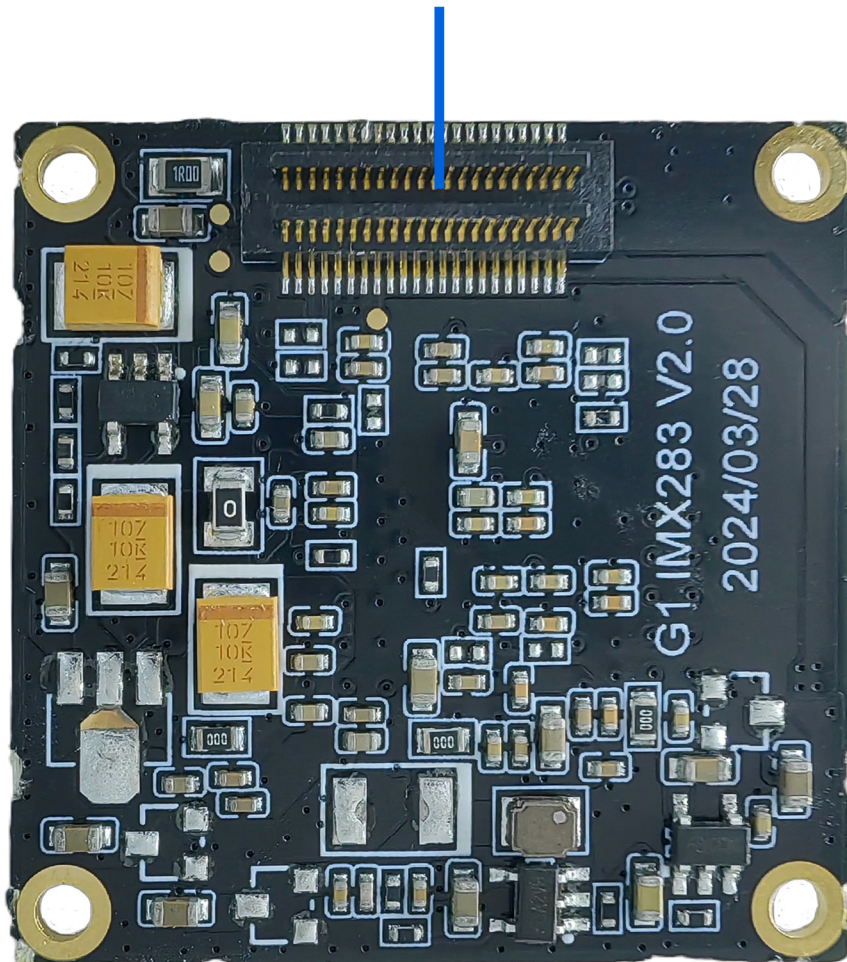
# Sony IMX283 sensor





**KLT-CMNL-IMX283 V1.0**  
**20.3MP Sony IMX283 No Lens Camera Module**

**Sensor通过板对板  
连接器连接G1主板**  
sensor Connect to the G1 motherboard





## [Product Information]

Ver.1.0

# IMX283CQJ

Diagonal 15.86 mm (Type 1) CMOS Image Sensor with Square Pixel for Color Cameras

---

### Description

The IMX283CQJ is a diagonal 15.86 mm (Type 1) CMOS image sensor with a color square pixel array and approximately 20.30 M effective pixels. 12-bit digital output makes it possible to output the signals of approximately 20.30 M effective pixels with high definition for shooting still pictures. It also operates with three power supply voltages: analog 2.9 V, digital 1.2 V and 1.8 V, and achieves low power consumption. 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 the 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.

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### Features

- ◆ CMOS active pixel type pixels
- ◆ Input clock frequency 6 to 27 MHz
- ◆ MIPI Specifications (CSI-2 high-speed serial interface)
- ◆ All-pixel scan mode
  - Various readout modes (\*)
- ◆ High-sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Vertical and horizontal arbitrary cropping function
- ◆ Variable-speed shutter function (minimum unit: 1 horizontal period)
- ◆ Low power consumption
- ◆ H driver, V driver and I<sup>2</sup>C communication circuit on chip
- ◆ CDS/PGA on chip: Gain +27 dB (step pitch 0.1 dB)
- ◆ 9-bit/10-bit/12-bit A/D conversion on chip
- ◆ R, G, B primary color mosaic filters on chip
- ◆ 118-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.  
Sony logo is a registered trademark of Sony Corporation.

## Device Structure

◆ CMOS image sensor	
◆ Image size	Diagonal 15.86 mm (Type 1)
◆ Total number of pixels	5592 (H) × 3710 (V) approx. 20.75 M pixels
◆ Number of effective pixels	
- Type 1 approx. 20.30 M pixels use	5496 (H) × 3694 (V) approx. 20.30 M pixels
- Type 1/1.4 approx. 8.42 M pixels use	3872 (H) × 2174 (V) approx. 8.42 M pixels
◆ Number of active pixels	
- Type 1 approx. 20.30 M pixels use	5496 (H) × 3672 (V) approx. 20.18 M pixels diagonal 15.86 mm
- Type 1/1.4 approx. 8.42 M pixels use	3872 (H) × 2168 (V) approx. 8.39 M pixels diagonal 10.65 mm
◆ Number of recommended recording pixels	
- Type 1 approx. 20.30 M pixels use	5472 (H) × 3648 (V) approx. 19.96 M pixels aspect ratio 3:2
- Type 1/1.4 approx. 8.42 M pixels use	3840 (H) × 2160 (V) approx. 8.29 M pixels aspect ratio 16:9
◆ Chip size	16.226 mm (H) × 12.654 mm (V) (include scribe area)
◆ Unit cell size	2.40 μm (H) × 2.40 μm (V)
◆ Optical black	Horizontal (H) direction : Front 48 pixels, rear 0 pixel Vertical (V) direction : Front 16 pixels, rear 0 pixel
◆ Package	118 pin LGA

## Image Sensor Characteristics

(T<sub>j</sub> = 60 °C)

Item	Value	Remarks
Sensitivity (F5.6)	Typ. 1874 digit	1/30 s integration
Saturation signal	Min. 3824 digit	

## Basic Drive Mode

### Type 1 Approx. 20.30 M Pixels (3:2)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 0	5472 (H) × 3648 (V) approx. 19.96 M pixels	21.40	12
Readout mode 1	5472 (H) × 3648 (V) approx. 19.96 M pixels	25.48	10
Readout mode 1A	5472 (H) × 3078 (V) approx. 16.84 M pixels	30.17	10
Readout mode 1S	3000 (H) × 3000 (V) approx. 9.00 M pixels	42.96	10
Readout mode 2	2736 (H) × 1824 (V) approx. 4.99 M pixels	51.80	12
Readout mode 2A	2736 (H) × 1538 (V) approx. 4.21 M pixels	60.27	12
Readout mode 3	1824 (H) × 1216 (V) approx. 2.22 M pixels	60.36	12
Readout mode 4	1824 (H) × 370 (V) approx. 0.67 M pixels	240.21	12
Readout mode 5	1824 (H) × 190 (V) approx. 0.35 M pixels	452.03	12
Readout mode 6	2736 (H) × 1538 (V) approx. 4.21 M pixels	60.01	10

### Type 1/1.4 Approx. 8.42 M Pixels (16:9)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 1	3840 (H) × 2160 (V) approx. 8.29 M pixels	60.16	10

## [Product Information]

Ver.1.0

# IMX283CQJ

Diagonal 15.86 mm (Type 1) CMOS Image Sensor with Square Pixel for Color Cameras

---

### Description

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- ◆ Variable-speed shutter function (minimum unit: 1 horizontal period)
- ◆ Low power consumption
- ◆ H driver, V driver and I<sup>2</sup>C communication circuit on chip
- ◆ CDS/PGA on chip: Gain +27 dB (step pitch 0.1 dB)
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Readout mode 6	2736 (H) × 1538 (V) approx. 4.21 M pixels	60.01	10

### Type 1/1.4 Approx. 8.42 M Pixels (16:9)

Drive mode	Number of recording pixels	Max frame rate [frame/s]	Output data bit length [bit]
Readout mode 1	3840 (H) × 2160 (V) approx. 8.29 M pixels	60.16	10





## Cameras Applications



Automotive Driver Pilot



Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



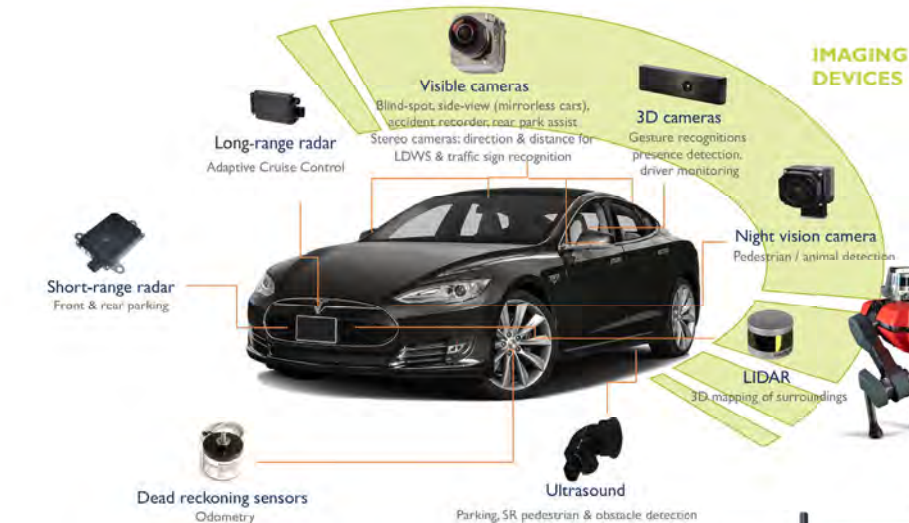
Interactive Pet Camera





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## Cameras Applications







## Camera Module Pinout Definition Reference Chart

OmniVision	Sony	Samsung	On-Semi	Aptina	Himax	GalaxyCore	PixArt	SmartSens	Sensors
Pin Signal									
Description									
DGND	GND								
AGND									
PCLK	DCK								
XCLR	PWDN	XSHUTDOWN	STANDBY						
MCLK	XVCLK	XCLK	INCK						
RESET	RST								
NC	NULL								
SDA	SIO_D	SIOD							
SCL	SIO_C	SIOC							
VSYNC	XVS	FSYNC							
HREF	XHS								
DOVDD									
AFVDD									
AVDD									
DVDD									
STROBE	FSTROBE								
FSIN									
SID									
ILPWM									
FREX									
GPIO									
SLASEL									
AFEN									
<b>MIPI Interface</b>									
MDN0	DN0	MD0N	DATA_N	DMO1N					
MDP0	DP0	MD0P	DATA_P	DMO1P					
MDN1	DN1	MD1N	DATA2_N	DMO2N					
MDP1	DP1	MD1P	DATA2_P	DMO2P					
MDN2	DN2	MD2N	DATA3_N	DMO3N					
MDP2	DP2	MD2P	DATA3_P	DMO3P					
MDN3	DN3	MD3N	DATA4_N	DMO4N					
MDP3	DP3	MD3P	DATA4_P	DMO4P					
MCN	CLKN	CLK_N	DCKN						
MCP	CLKP	MCP	CLK_P	DCKN					
<b>DVP Parallel Interface</b>									
D0	DO0	Y0							
D1	DO1	Y1							
D2	DO2	Y2							
D3	DO3	Y3							
D4	DO4	Y4							
D5	DO5	Y5							
D6	DO6	Y6							
D7	DO7	Y7							
D8	DO8	Y8							
D9	DO9	Y9							
D10	DO10	Y10							
D11	DO11	Y11							



## 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	Not Allowed
			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



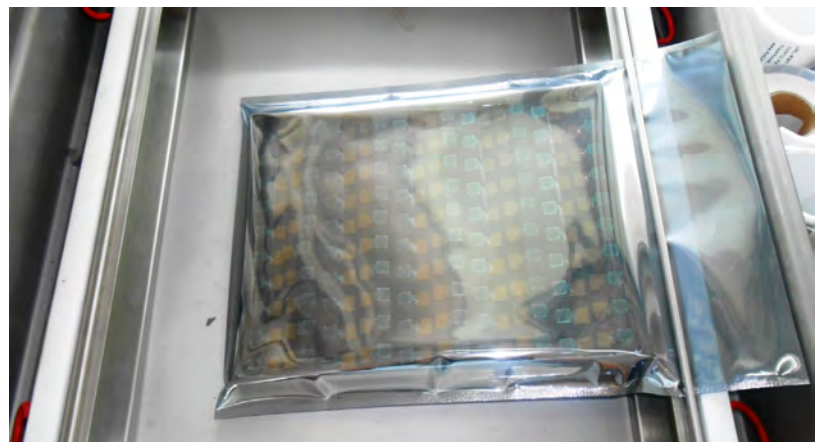
Cover Tray with Lid



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





## Large Order Package Solution

Place Foam Sheets Between Trays

Foam Sheets are Slightly Larger than Trays



Place Foam Sheets and Trays into Box

Foam Sheets are Tightly Fitting Box







## Small Order Package Solution

Place Foam Sheets and Trays into Small Box



Foam Sheets are Nicely Fitting the Small Box



Package in Small Box for Shipment



Place Small Boxes into Larger Box







# CMOS CAMERA MODULES



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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



[www.KaiLapTech.com](http://www.KaiLapTech.com) [sales@KaiLapTech.com](mailto:sales@KaiLapTech.com) Tel: (852) 6908 1256 Fax: (852) 3017 6778

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## 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







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## 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





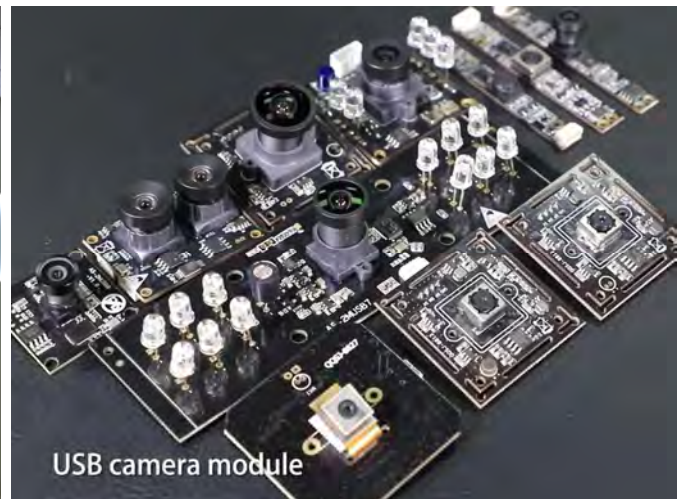
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## Company Kai Lap Technologies (KLT)

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.



## 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.







# CMOS CAMERA MODULES



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## KLT Strength

### Powerful Factory



### Professional Service



### Promised Delivery



[www.KaiLapTech.com](http://www.KaiLapTech.com) [sales@KaiLapTech.com](mailto:sales@KaiLapTech.com) Tel: (852) 6908 1256 Fax: (852) 3017 6778

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