

**KLT-K5MF-OV12895 V1.0****12MP OmniVision OV12895 MIPI Interface M12 Fixed Focus Camera Module**

Front View



Back View

**Specifications**

<b>Camera Module No.</b>	<b>KLT-K5MF-OV12895 V1.0</b>
<b>Resolution</b>	12MP
<b>Image Sensor</b>	OV12895
<b>Sensor Type</b>	1/2.3"
<b>Pixel Size</b>	1.55 um x 1.55 um
<b>EFL</b>	3.30 mm
<b>F.NO</b>	2.80
<b>Pixel</b>	4096 x 3072
<b>View Angle</b>	150.0°(DFOV) 110.0°(HFOV) 80.0°(VFOV)
<b>Lens Dimensions</b>	14.70 x 14.70 x 19.92 mm
<b>Module Size</b>	40.00 x 23.00 mm
<b>Module Type</b>	Fixed Focus
<b>Interface</b>	MIPI
<b>Auto Focus VCM Driver IC</b>	None
<b>Lens Model</b>	N/A
<b>Lens Type</b>	650nm IR Cut
<b>Operating Temperature</b>	-30°C to +85°C
<b>Mating Connector</b>	AXE540124



## KLT-K5MF-OV12895 V1.0

### 12MP OmniVision OV12895 MIPI Interface M12 Fixed Focus Camera Module



Top View



Side View



Bottom View

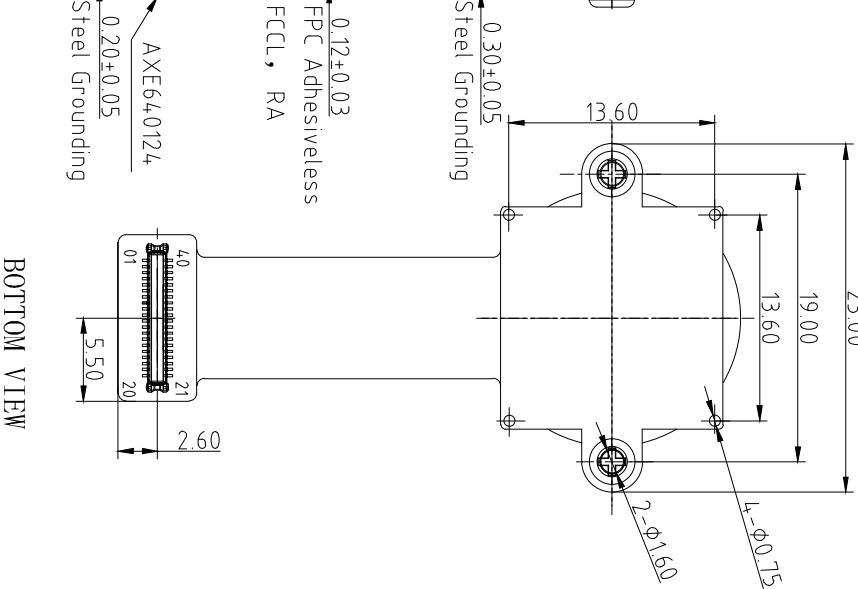
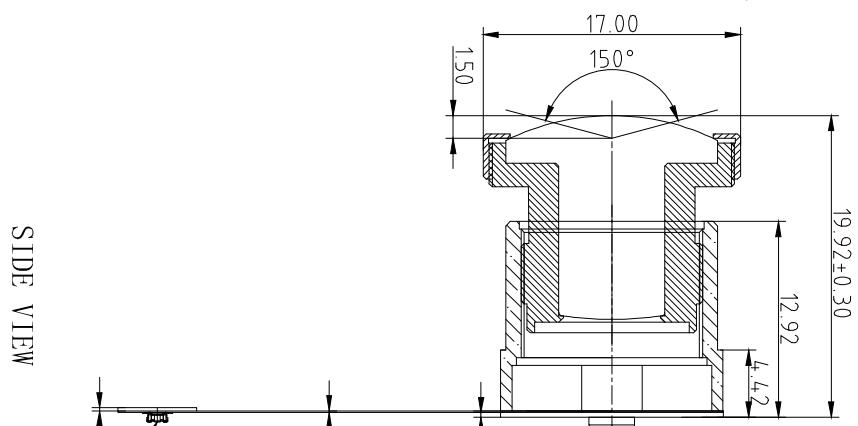
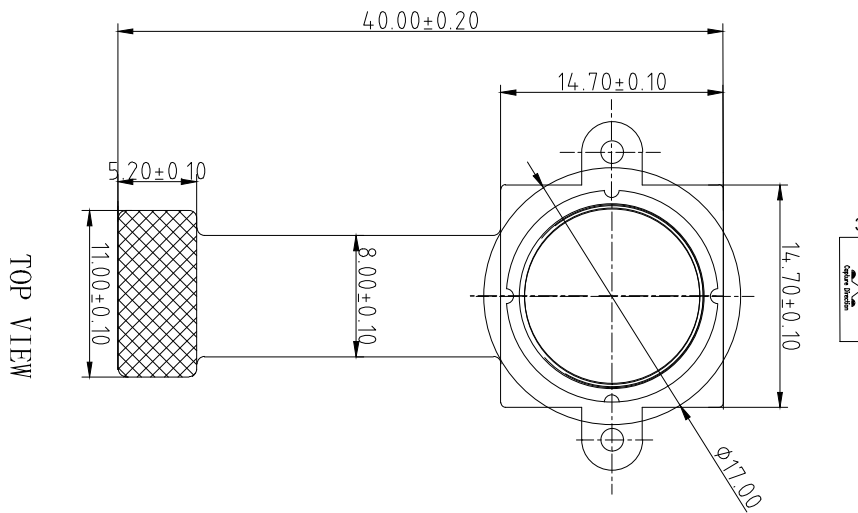
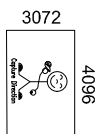


Mating Connector

# ROHS

## PIN SIGNAL

1	XSHUTDOWN
2	PWDNB
3	DGND
4	MDP0
5	MDN0
6	DGND
7	MDP1
8	MDN1
9	DGND
10	MDP2
11	MDN2
12	DGND
13	MDP3
14	MDN3
15	DGND
16	MCP
17	MCN
18	SID
19	STROBE
20	ILPWW
21	FSIN
22	FREX
23	HREF
24	VSYNC
25	SCL
26	SDA
27	DGND
28	XVCLK
29	DVDD1.2V
30	DOV/DD1.8V
31	DGND
32	AVDD2.8V
33	AGND
34	DGND
35	NC
36	NC
37	NC
38	NC
39	DGND
40	DGND



AXE640124  
0.20±0.05  
Steel Grounding

0.12±0.03  
FPC Adhesiveless  
FCCL, RA

0.30±0.05  
Steel Grounding

### Parameter:

#### 1、Sensor specification:

Image Sensor: 0V12895  
Pixel: 1.55um×1.55um  
Lens Type: 1/2.3  
Important Voltage Description: DVDD1.2V (external power supply);

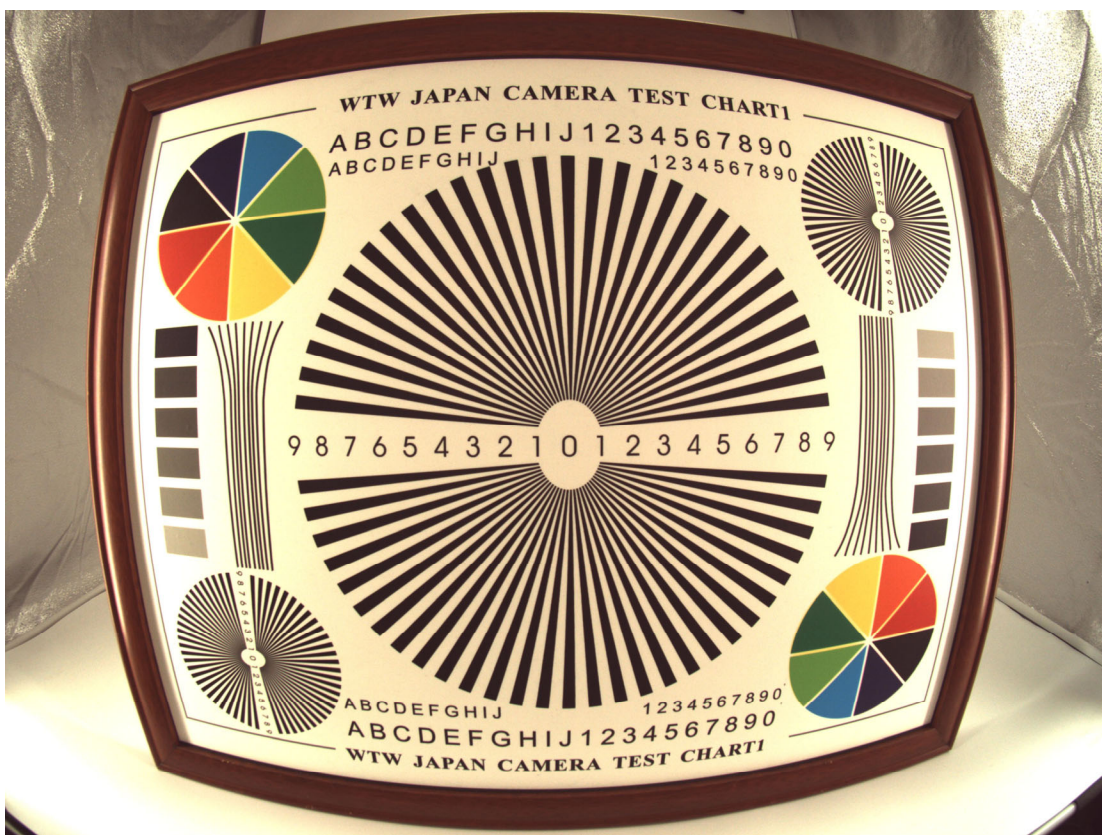
#### 2、Lens specification:

FOV: 150°(D), 110°(H), 80°(V)  
F/NO.: 2.8  
TV distortion: <-35%(V)  
Focal length: 3.3mm  
Composition: 7G+IR FILTER  
IR Cut Coating: 650nm±10nm@50%

## Kai Lap Technologies Group Ltd

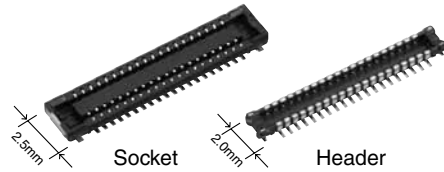
Designed By	Kevin	Model Name:	KLT-K5MF-0V12895 V1.0		
Checked By	Aouly Yan	Projection Type:	Third Angle	Unit:	mm
		Scale:	1:1	Sheet:	1 of 1
		Version:		Version:	1/0

**Real Test Images**  
**K5MF-OV12895 V1.0**



Real Test Images  
K5MF-OV12895 V1.0





RoHS compliant

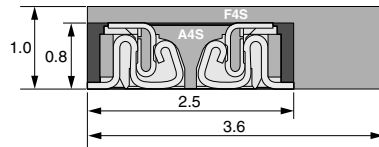
For board-to-FPC

## Narrow pitch connectors (0.4mm pitch)

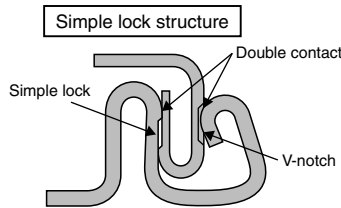
# A4S Series

### FEATURES

- 2.5 mm wide slim two-piece style connectors  
Compact and slim structure contributes overall miniaturization of product design. <Compared to F4S series (40 pin contacts, when mated)>
  - Width: 30% down
  - Footprint: 30% down



- "TOUGH CONTACT ADVANCED" ensures high resistance to various environments in lieu of slim and low profile body
- Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.



The connector gives the tactile feedback when inserted, allowing reliable mating.

- Mated heights of 0.8 and 1.0 mm are available for the same foot pattern.
- Connectors for inspection available

### APPLICATIONS

Recommended for board-to-FPC connections of mobile equipment, such as cellular phones, smart phones, laptops, and portable music players

## ORDERING INFORMATION

	AXE				2	4
5: Narrow Pitch Connector A4S (0.4 mm pitch) Socket						
6: Narrow Pitch Connector A4S (0.4 mm pitch) Header						
Number of pins (2 digits)						
Mated height						
<Socket>						
1: For mated height 0.8/1.0 mm						
<Header>						
1: For mated height 0.8 mm						
2: For mated height 1.0 mm						
Functions						
2: Without positioning bosses						
Surface treatment (Contact portion / Terminal portion)						
<Socket>						
4: Ni plating on base, Au plating on surface (for Ni barrier available)						
<Header>						
4: Ni plating on base, Au plating on surface						

**PRODUCT TYPES**

Mated height	Number of pins	Part number		Packing		
		Socket	Header	Inner carton (1-reel)	Outer carton	
0.8mm	10	AXE510124	AXE610124	5,000 pieces	10,000 pieces	
	12	AXE512124	AXE612124			
	14	AXE514124	AXE614124			
	16	AXE516124	AXE616124			
	18	AXE518124	AXE618124			
	20	AXE520124	AXE620124			
	22	AXE522124	AXE622124			
	24	AXE524124	AXE624124			
	26	AXE526124	AXE626124			
	28	AXE528124	AXE628124			
	30	AXE530124	AXE630124			
	32	AXE532124	AXE632124			
	34	AXE534124	AXE634124			
	36	AXE536124	AXE636124			
	38	AXE538124	AXE638124			
	40	AXE540124	AXE640124			
	44	AXE544124	AXE644124			
	50	AXE550124	AXE650124			
	1.0mm	54	AXE554124			AXE654124
		56	AXE556124			AXE656124
60		AXE560124	AXE660124			
64		AXE564124	AXE664124			
70		AXE570124	AXE670124			
80		AXE580124	AXE680124			
10		AXE510124	AXE610224			
12		AXE512124	AXE612224			
14		AXE514124	AXE614224			
20		AXE520124	AXE620224			
24		AXE524124	AXE624224			
26		AXE526124	AXE626224			
30		AXE530124	AXE630224			
32		AXE532124	AXE632224			
40	AXE540124	AXE640224				
44	AXE544124	AXE644224				
50	AXE550124	AXE650224				
54	AXE554124	AXE654224				
60	AXE560124	AXE660224				
70	AXE570124	AXE670224				
80	AXE580124	AXE680224				

- Notes: 1. Order unit:  
 For volume production: 1-inner carton (1-reel) units  
 Samples for mounting check: 50-connector units. Please contact our sales office.  
 Samples: Small lot orders are possible. Please contact our sales office.
2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our sales office.
3. Please contact us for connectors having a number of pins other than those listed above.

# AXE5, 6

## SPECIFICATIONS

### ■ Characteristics

	Item	Specifications	Conditions
Electrical characteristics	Rated current	0.3A/pin contact (Max. 5 A at total pin contacts)	
	Rated voltage	60V AC/DC	
	Breakdown voltage	150V AC for 1 min.	No short-circuiting or damage at a detection current of 1 mA when the specified voltage is applied for one minute.
	Insulation resistance	Min. 1,000MΩ (initial)	Using 250V DC megger (applied for 1 min.)
	Contact resistance	Max. 90mΩ	Based on the contact resistance measurement method specified by JIS C 5402.
Mechanical characteristics	Composite insertion force	Max. 1.200N/pin contacts × pin contacts (initial)	
	Composite removal force	Min. 0.165N/pin contacts × pin contacts	
	Contact holding force (Socket contact)	Min. 0.20N/pin contacts	Measuring the maximum force. As the contact is axially pull out.
Environmental characteristics	Ambient temperature	-55°C to +85°C	No freezing at low temperatures. No dew condensation.
	Soldering heat resistance	Peak temperature: 260°C or less (on the surface of the PC board around the connector terminals)	Infrared reflow soldering
		300°C within 5 sec. 350°C within 3 sec.	Soldering iron
	Storage temperature	-55°C to +85°C (product only) -40°C to +50°C (emboss packing)	No freezing at low temperatures. No dew condensation.
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Sequence 1. -55 <sup>±3</sup> °C, 30 minutes 2. ~, Max. 5 minutes 3. 85 <sup>±3</sup> °C, 30 minutes 4. ~, Max. 5 minutes
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Bath temperature 40±2°C, humidity 90 to 95% R.H.
	Saltwater spray resistance (header and socket mated)	24 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Bath temperature 35±2°C, saltwater concentration 5±1%
H <sub>2</sub> S resistance (header and socket mated)	48 hours, contact resistance max. 90mΩ	Bath temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.	
Lifetime characteristics	Insertion and removal life	30 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		20 pin contact type: Socket: 0.02 g Header: 0.01 g	

### ■ Material and surface treatment

Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have nickel barriers (exposed nickel portions). Soldering terminals: Sockets: Base: Ni plating Surface: Pd+Au flash plating (except the terminal tips) Headers: Base: Ni plating Surface: Au plating (except the terminal tips)

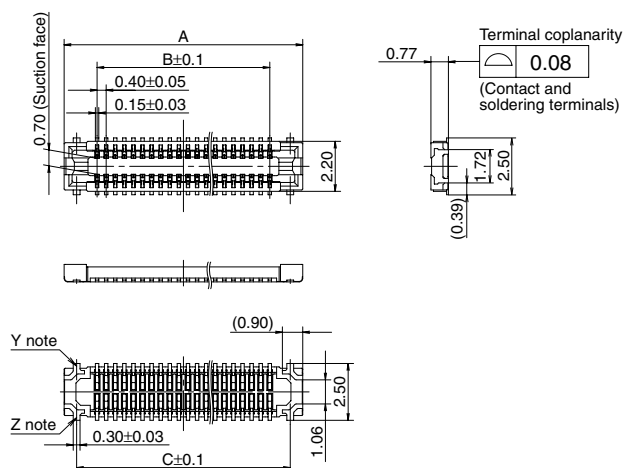
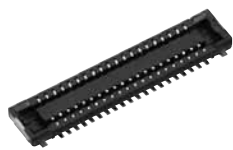


**DIMENSIONS** (Unit: mm)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e>

**Socket (Mated height: 0.8 mm/1.0 mm)**

**CAD Data**



General tolerance: ±0.2

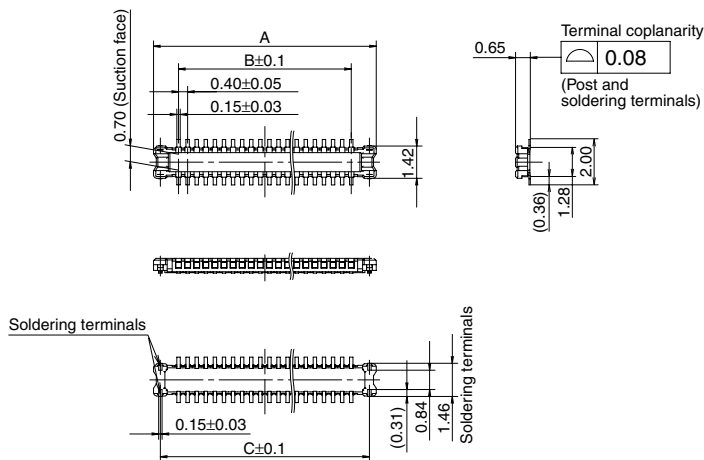
Note: Since the soldering terminals has a single-piece construction, sections Y and Z are electrically connected.

Dimension table (mm)

Number of pins/dimension	A	B	C
10	4.5	1.6	3.4
12	4.9	2.0	3.8
14	5.3	2.4	4.2
16	5.7	2.8	4.6
18	6.1	3.2	5.0
20	6.5	3.6	5.4
22	6.9	4.0	5.8
24	7.3	4.4	6.2
26	7.7	4.8	6.6
28	8.1	5.2	7.0
30	8.5	5.6	7.4
32	8.9	6.0	7.8
34	9.3	6.4	8.2
36	9.7	6.8	8.6
38	10.1	7.2	9.0
40	10.5	7.6	9.4
44	11.3	8.4	10.2
50	12.5	9.6	11.4
54	13.3	10.4	12.2
56	13.7	10.8	12.6
60	14.5	11.6	13.4
64	15.3	12.4	14.2
70	16.5	13.6	15.4
80	18.5	15.6	17.4

**Header (Mated height: 0.8 mm)**

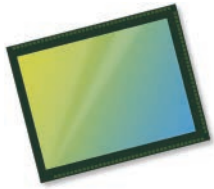
**CAD Data**



General tolerance: ±0.2

Dimension table (mm)

Number of pins/dimension	A	B	C
10	3.8	1.6	3.2
12	4.2	2.0	3.6
14	4.6	2.4	4.0
16	5.0	2.8	4.4
18	5.4	3.2	4.8
20	5.8	3.6	5.2
22	6.2	4.0	5.6
24	6.6	4.4	6.0
26	7.0	4.8	6.4
28	7.4	5.2	6.8
30	7.8	5.6	7.2
32	8.2	6.0	7.6
34	8.6	6.4	8.0
36	9.0	6.8	8.4
38	9.4	7.2	8.8
40	9.8	7.6	9.2
44	10.6	8.4	10.0
50	11.8	9.6	11.2
54	12.6	10.4	12.0
56	13.0	10.8	12.4
60	13.8	11.6	13.2
64	14.6	12.4	14.0
70	15.8	13.6	15.2
80	17.8	15.6	17.2



# OV12895 12MP product brief



## 12-Megapixel PureCel®Plus-S Sensor for High-End Consumer Drones and Action Cameras



available in  
a lead-free  
package

OmniVision's OV12895 is a high-speed PureCel®Plus-S image sensor that brings 4K2K video and 12-megapixel images to consumer-grade drones, surveillance systems, and 360-degree action cameras. Leveraging a 1.55-micron pixel, the OV12895 captures stunning still images using 10-bit or optional 12-bit readout architecture that provides high-bit depth snapshots.

The OV12895 is built on OmniVision's PureCel®Plus-S stacked-die architecture, featuring backside illumination for ultra-high resolution and crisp, vibrant images across all light levels. The stacked-die structure allows for additional sensor functionality while enabling smaller die sizes compared to non-stacked sensors.

The OV12895 captures ultra-high-resolution 4K2K video at 60 frames per second (fps) and full high-definition (FHD) 1080p videos at 240 fps with full field of view, enabling high-quality slow-motion video capture.

Available in the widely used 1/2.3-inch optical format, the OV12895's low chief ray angle of 5 degrees is suitable for mature lens ecosystems. The sensor currently is available in both RW and CLGA package formats.

Find out more at [www.ovt.com](http://www.ovt.com).



## Applications

- Consumer-grade Drones
- Surveillance Systems
- 360-degree Action Cameras

## Product Features

- 1.55  $\mu\text{m}$  x 1.55  $\mu\text{m}$  pixel
- optical size of 1/2.3"
- 5° CRA
- enhanced dual camera support
- high-speed architecture for fast frames per second (fps)
- programmable controls for:
  - gain
  - exposure
  - frame rate
  - image size
  - horizontal mirror
  - vertical flip
  - cropping
  - panning
  - windowing
- support for image sizes:
  - 12MP (4096x3072)
  - 4K2K (3840x2160)
  - 1080p (1920x1080), and more
- two-wire serial bus control (SCCB)
- strobe output to control flash
- total embedded one-time programmable (OTP) memory: 4096 bytes, 64 bytes for customer use, remaining bytes for internal use
- two on-chip phase lock loops (PLLs)
- image quality controls for:
  - defect pixel correction
  - automatic black level calibration
  - lens shading correction
  - alternate row HDR
- built-in temperature sensor

# OV12895



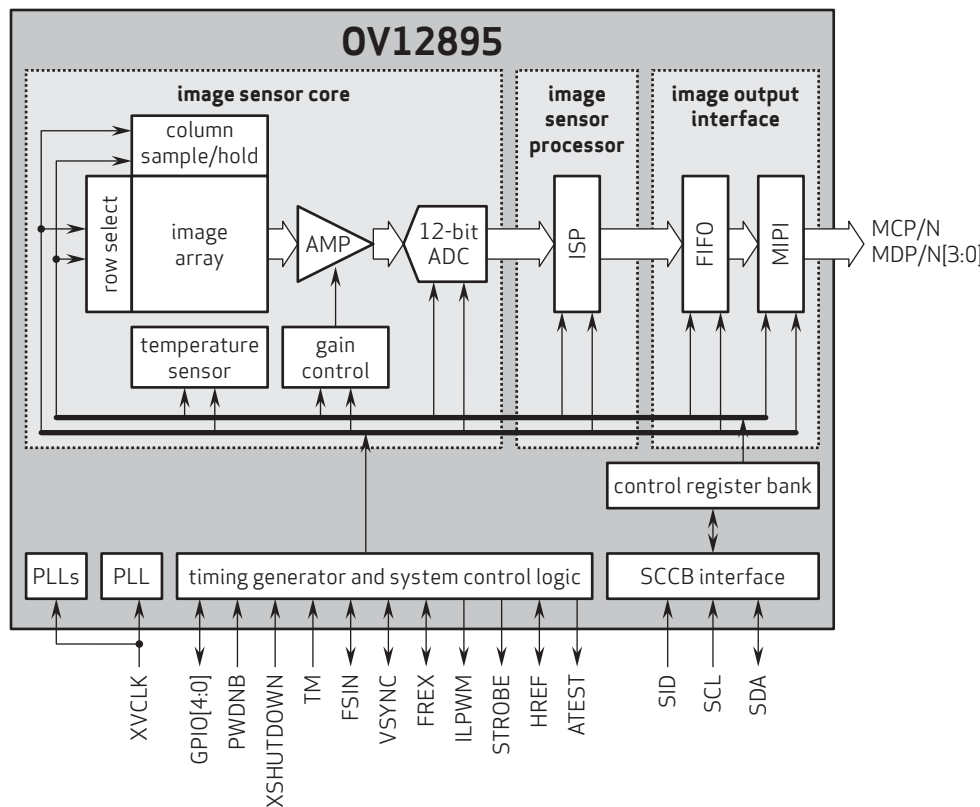
## Ordering Information

- **OV12895-GA5A** (color, chip probing, 150  $\mu\text{m}$  backgrinding, reconstructed wafer with good die)
- **OV12895-C61A** (color, lead-free) 161-pin CLGA

## Technical Specifications

- **active array size:** 4096 x 3072
- **maximum image transfer rate:**
  - 12MP (12-bit) (4:3): 30 fps
  - 12MP (10-bit) (4:3): 45 fps
  - 4K2K (16:9): 60 fps
  - 1080p HD (crop+bin): 240 fps
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable image:** 0°C to +60°C junction temperature
- **output formats:** 10/12-bit RGB RAW, DPCM 10-8 compression
- **lens size:** 1/2.3"
- **lens chief ray angle:** 5° linear
- **scan mode:** progressive
- **pixel size:** 1.55  $\mu\text{m}$  x 1.55  $\mu\text{m}$
- **image area:** 6398.4  $\mu\text{m}$  x 4811.2  $\mu\text{m}$
- **power supply:**
  - **core:** 1.2V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **power requirements:**
  - **active:** 320 mW @ full-res, 30 fps, 12-bit
  - **XSHUTDOWN:** <10  $\mu\text{W}$

## Functional Block Diagram



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Santa Clara, CA 95054  
USA

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www.ovt.com

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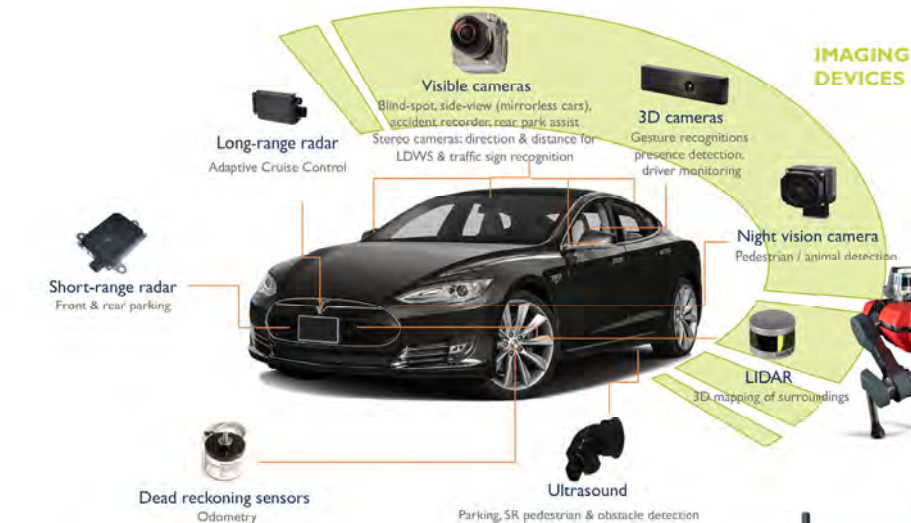


OmniVision



*your BEST camera module partner*

## Cameras Applications



## IMAGING DEVICES





## 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



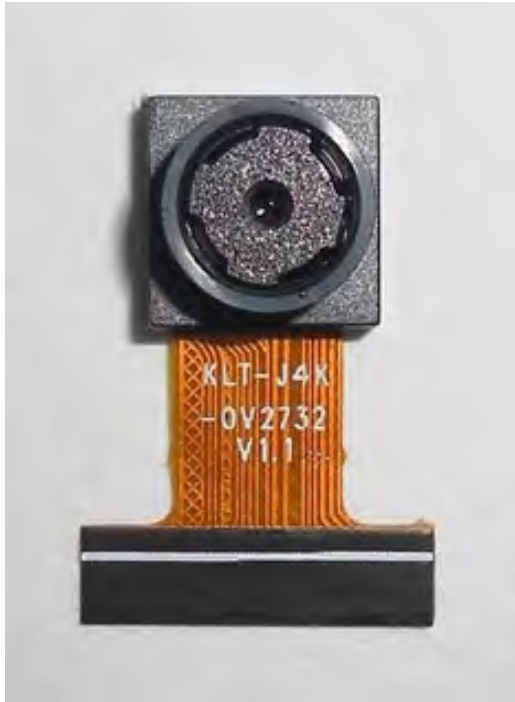


Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches	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



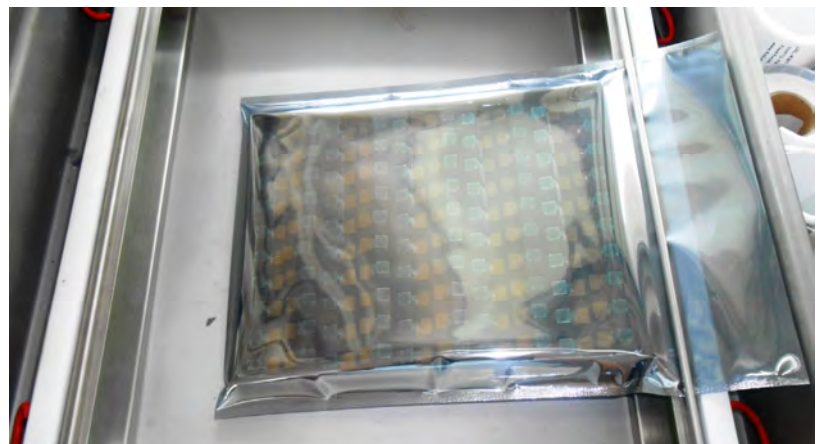
Cover Tray with Lid



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





*your BEST camera module partner*

## 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

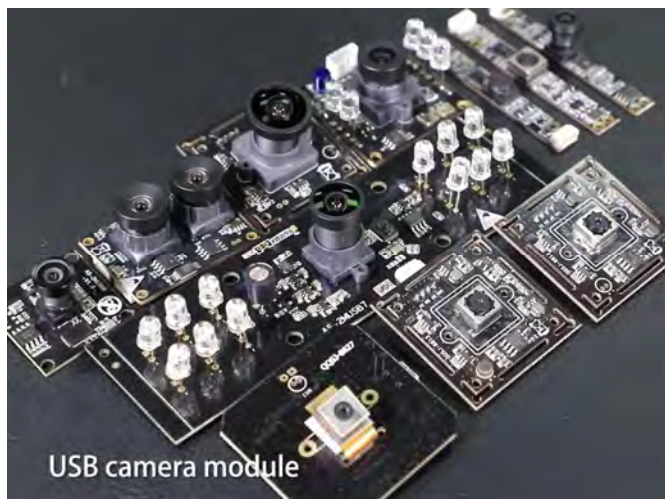


**Company Kai Lap Technologies (KLT)**

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.

**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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