

KLT-MFB24-AR0144CS V1.0

1MP OnSemi AR0144CS Global Shutter MIPI Interface Fixed Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	KLT-MFB24-AR0144CS V1.0
Resolution	1MP
Image Sensor	AR0144CS Global Shutter
Sensor Type	1/4"
Pixel Size	3.0 um x 3.0 um
EFL	3.29 mm
F.NO	2.80
Pixel	1280 x 800
View Angle	68.7°(DFOV) 58.1°(HFOV) 45.0°(VFOV)
Lens Dimensions	8.50 x 8.50 x 4.90 mm
Module Size	100.00 x 8.50 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Type	650nm IR Cut
Operating Temperature	-40°C to +85°C
Mating Connector	BBR43-30KB533

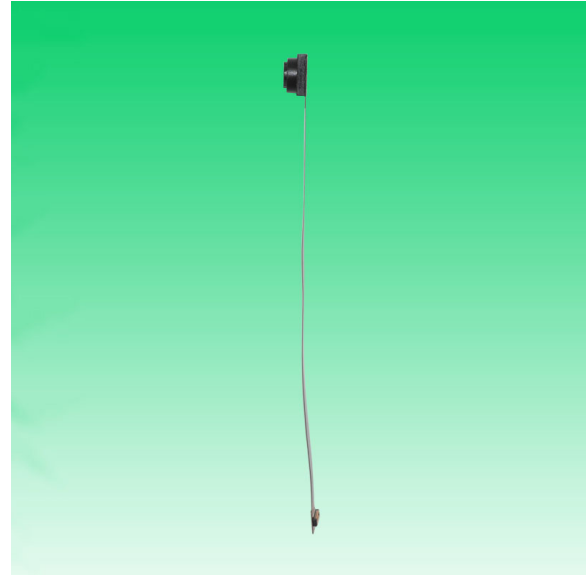


KLT-MFB24-AR0144CS V1.0

1MP OnSemi AR0144CS Global Shutter MIPI Interface Fixed Focus Camera Module



Top View



Side View



Bottom View



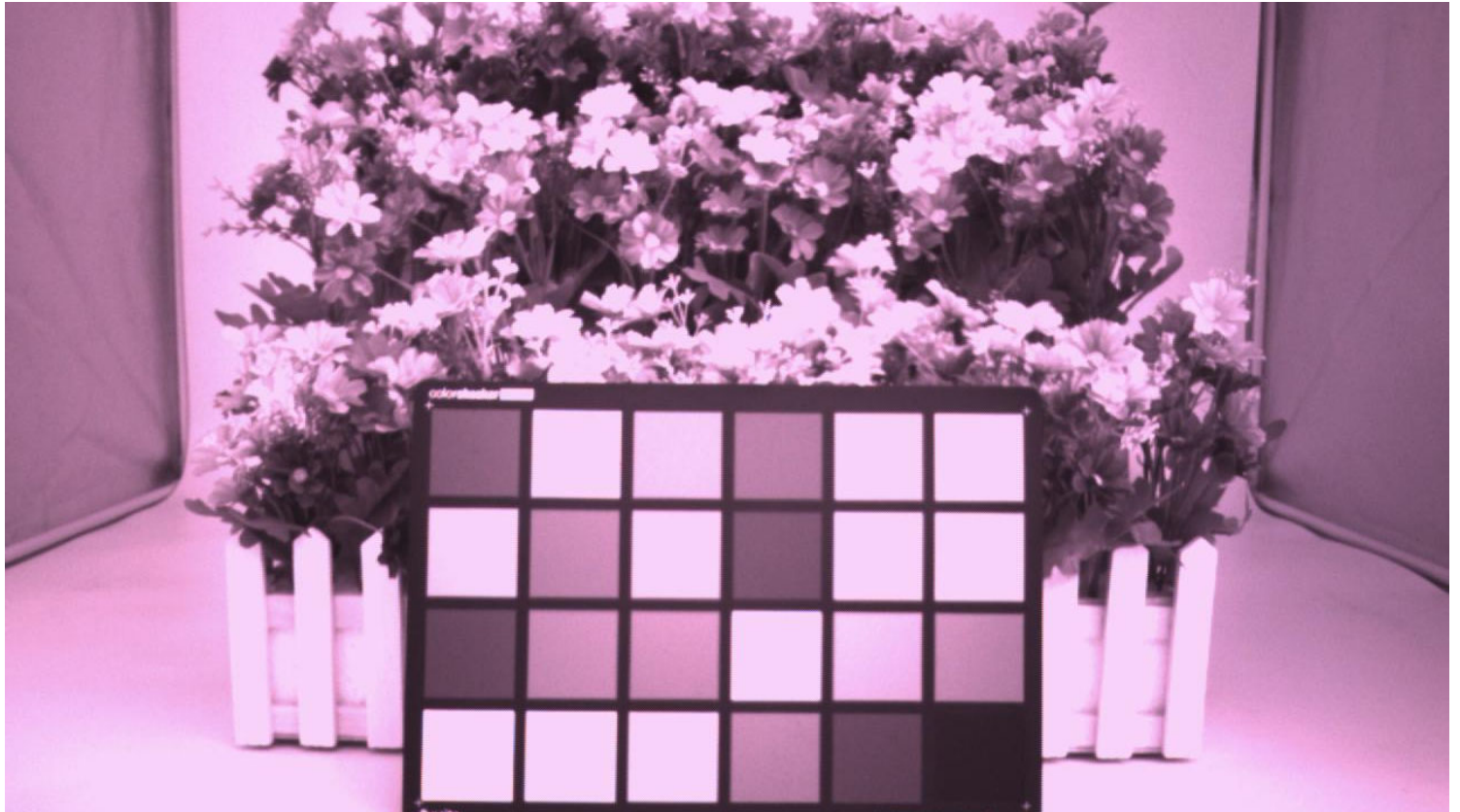
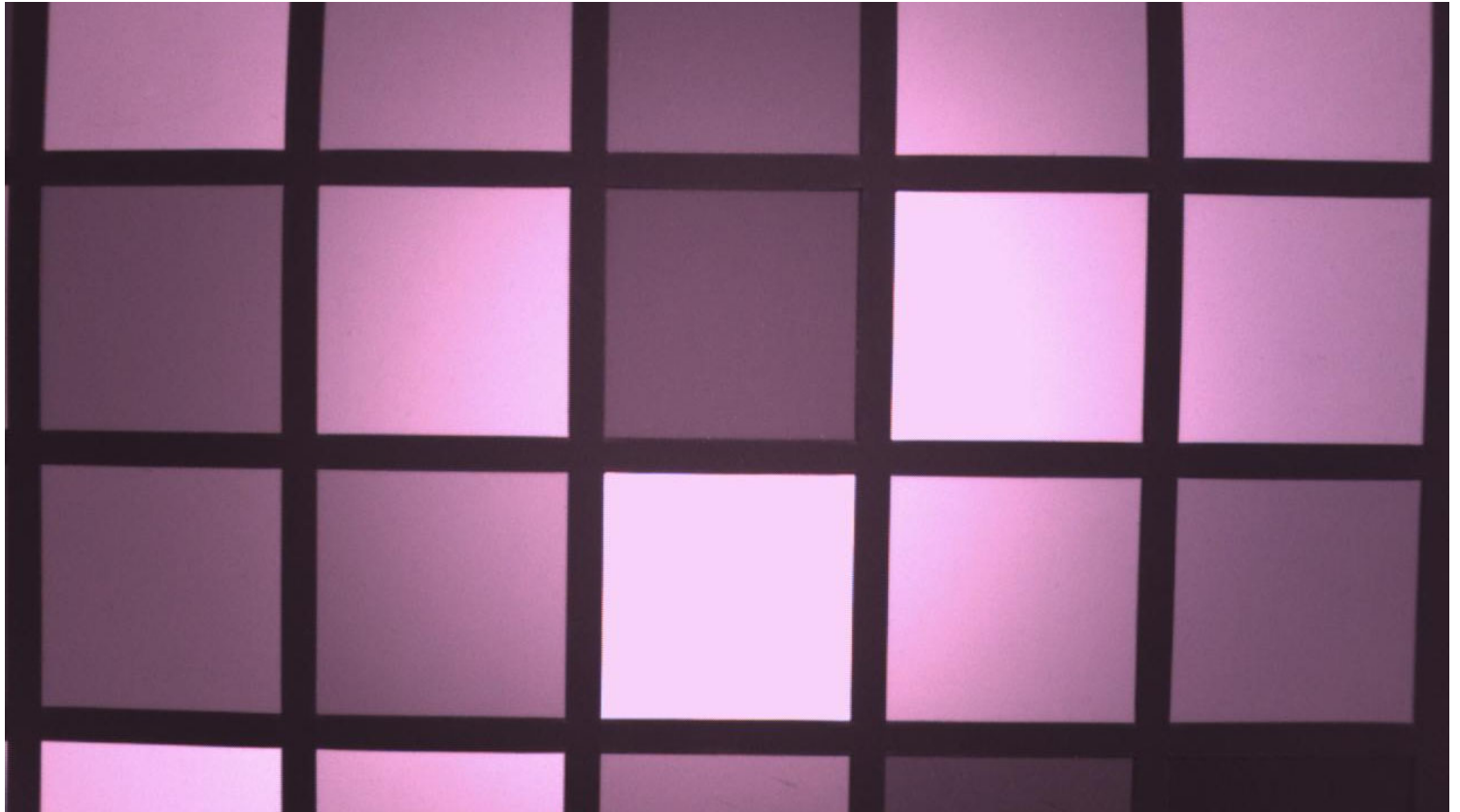
Mating Connector



CMOS CAMERA MODULES

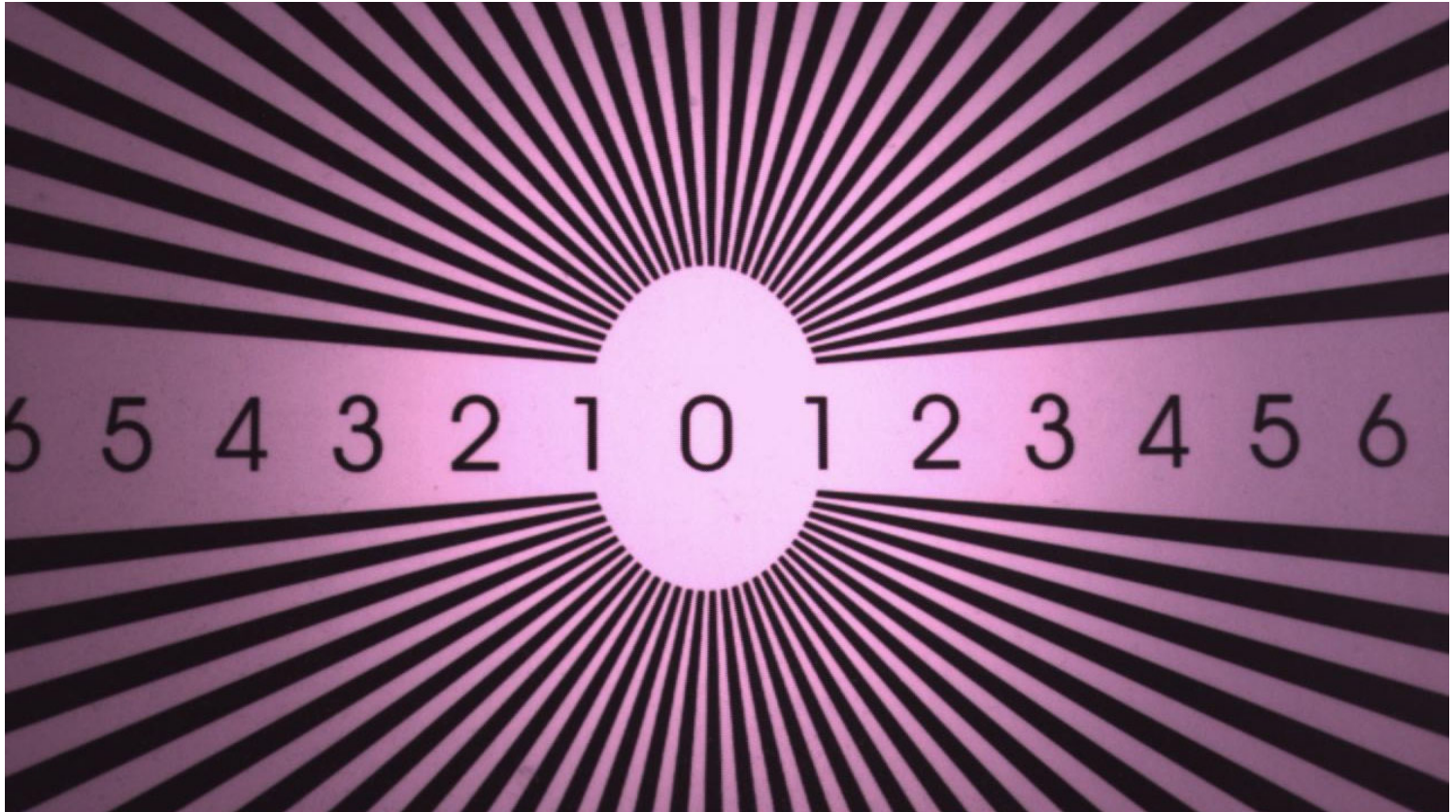


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www.KaiLapTech.com sales@KaiLapTech.com Tel: (852) 6908 1256 Fax: (852) 3017 6778

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Photographing the industry standard ColorChecker Classic is an important step in attaining consistent, predictable color at capture.

The ColorChecker Classic target has long been trusted as an industry standard and is the ideal visual color reference for your photographic workflow. It consists of an array of 24 scientifically prepared color patches that represent natural, chromatic and primary colors, as well as neutral grays for creating custom neutral white balance.

The patches represent the colors you would find in nature, such as sky blue, skin tones and leaf green. Since they exemplify the color of their real world counterparts and reflect light consistently throughout the visible spectrum, the patches will match the colors of natural objects under any lighting condition, and with any color reproduction process. Each square is individually colored using a solid tone to produce pure, flat, rich color without dots or mixed tints.

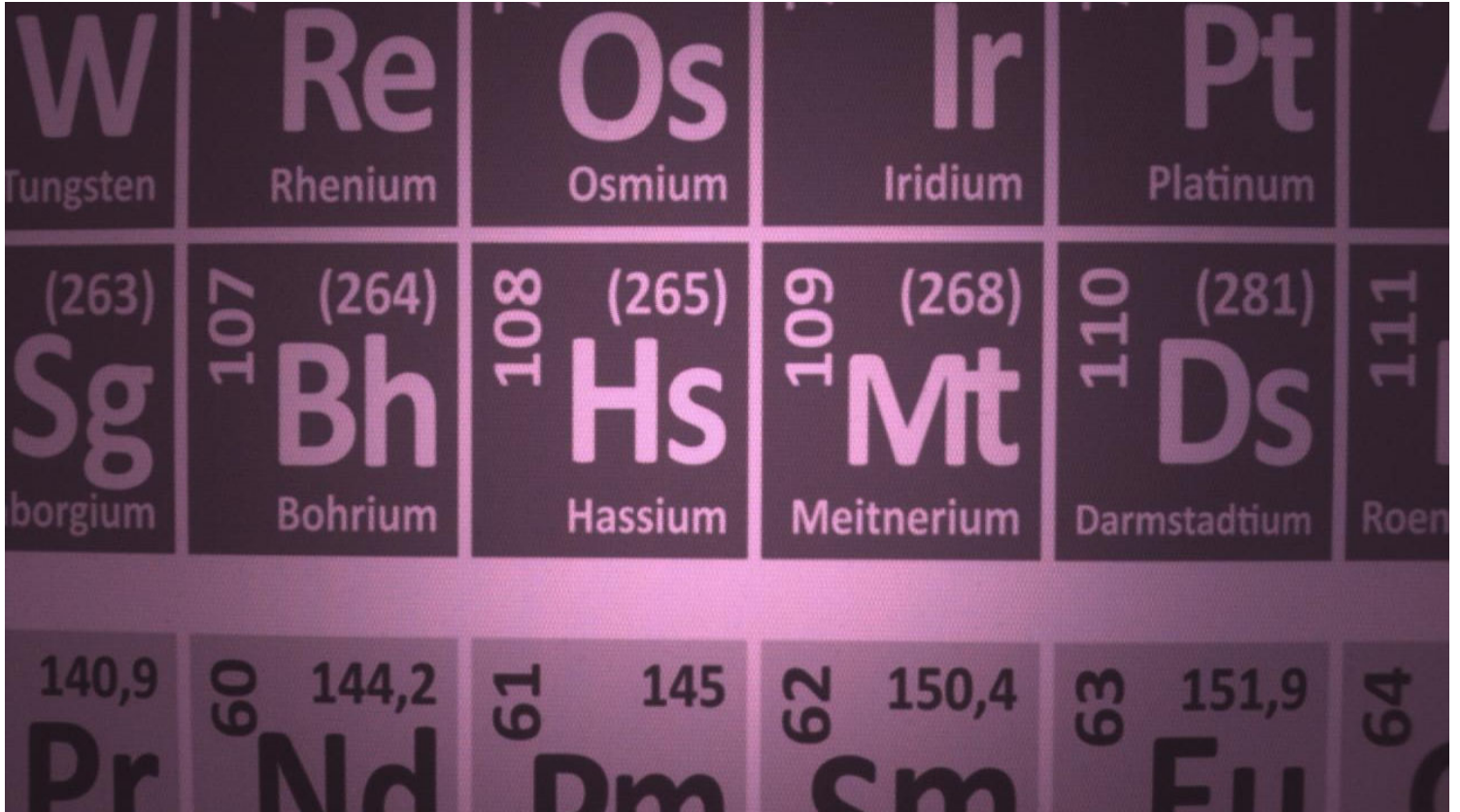
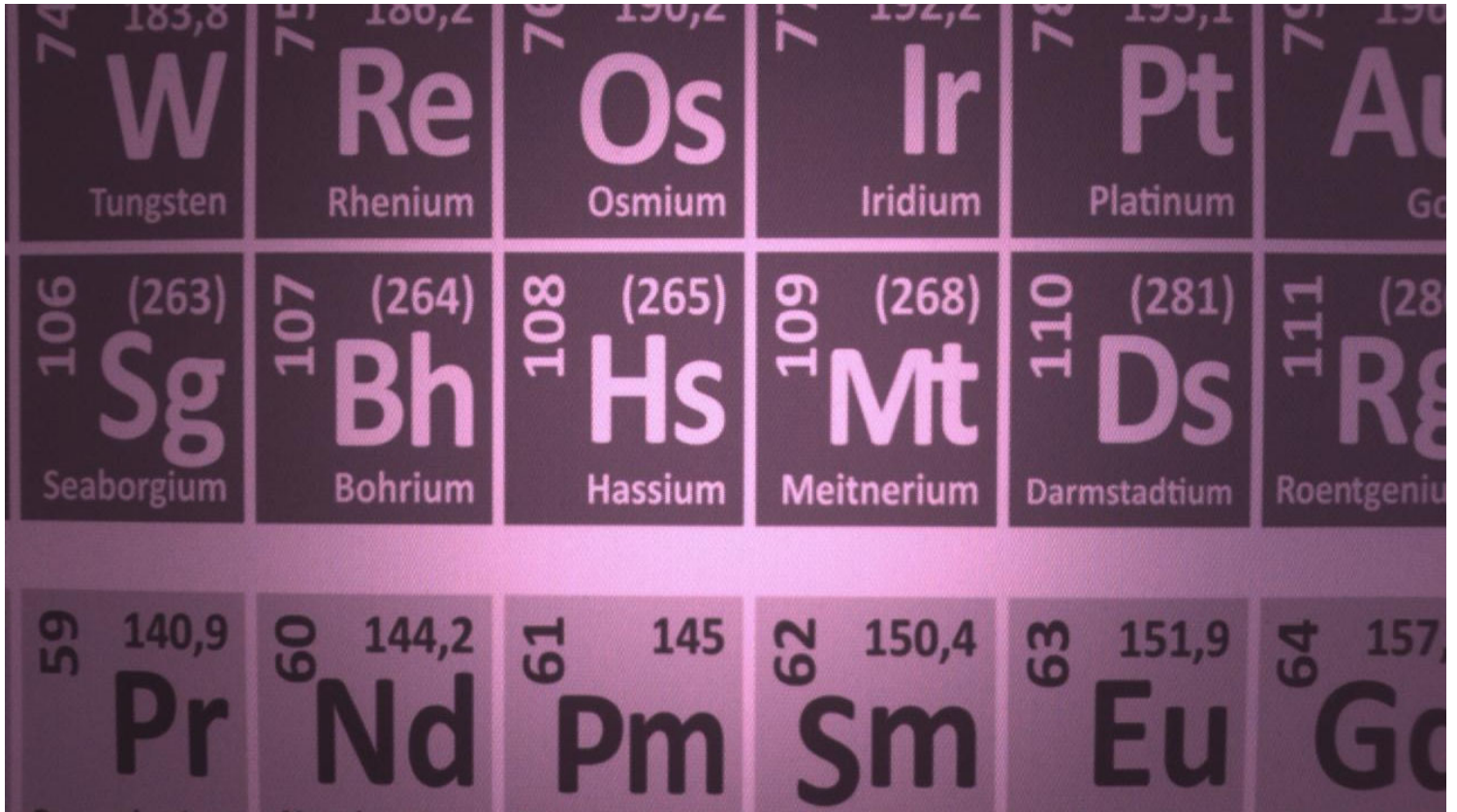
ColorChecker Classic is an essential tool for establishing a color foundation right from capture to get consistent, predictable and repeatable results from image to image and camera to camera. Quickly and easily create custom camera profiles for your Raw workflow when combined with ColorChecker camera profiling software.*

The ColorChecker Classic can be used for a variety of applications, including:

- Digital Photography: Visual color reference, create camera profiles, correct white balance and perform color corrections
- Film Photography: Check films, lights, filters and paper
- Graphic Arts: Check any printing or proofing process

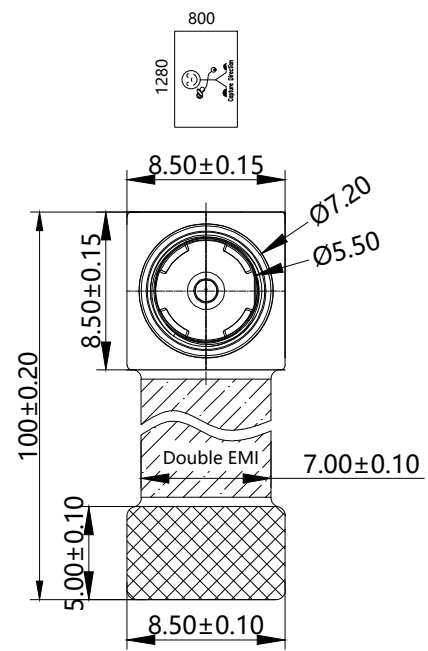


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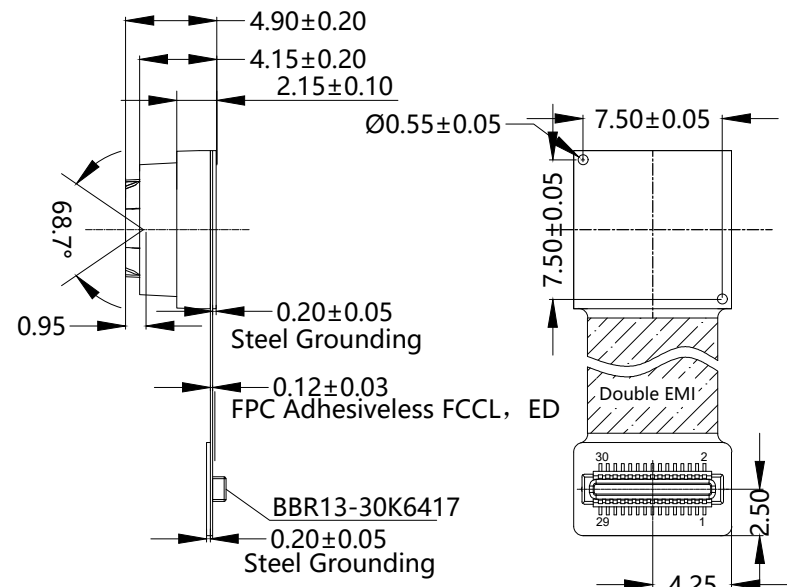


RoHS	
0	SIGNAL
1	GND
2	GND
3	GND
4	GND
5	NC
6	NC
7	SDA
8	DOVDD1.8V
9	SCL
10	DVDD1.2V
11	GND
12	XSHUTDOWN
13	MCN
14	NC
15	MCP
16	GND
17	MD0N
18	MCLK
19	MD0P
20	GND
21	MD1N
22	FLASH
23	MD1P
24	AVDD2.8V
25	NC
26	AGND
27	MD2N
28	MD3N
29	MD2P
30	MD3P

Version	Information
V1.0	First Version



TOP VIEW



SIDE VIEW

BOTTOM VIEW

NOTE:
1.The device slave address:0x20;

Parameters:	
1、 Sensor specification: Image Sensor: AR0144CSSC20SUKA0-CRBR Pixel: 3um*3um Lens Type: 1/4 Important Voltage Description: DVDD1.2V (external power supply);	2、 Lens specification: FOV: 68.7°(D);58.1°(H);45°(V) F/NO.: 2.8 TV distortion: <1.0% Focal length: 3.29mm Composition: 4P+IR FILTER IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By	Kevin	Model Name:	KLT-MFB24-AR0144CS V1.0		
Checked By	Jacky	Projection Type:	Unit: mm	Sheet:	Version:
		 Third Angle	Scale: 1:1	1 of 1	1/0

Product Overview

AR0144CS: CMOS Image Sensor, Digital, Global Shutter, 1.0 MP, 1/4-Inch

For complete documentation, see the [data sheet](#).

The AR0144 is a 1/4-inch 1.0 Mp CMOS digital image sensor with an active-pixel array of 1280H x 800V. It incorporates a new innovative global shutter pixel design optimized for accurate and fast capture of moving scenes. The sensor produces clear, low noise images in both low-light and bright scenes. It includes sophisticated camera functions such as auto exposure control, windowing, row skip mode, column-skip mode, pixel-binning and both video and single frame modes. It is programmable through a simple two-wire serial interface. The AR0144 produces extraordinarily clear, sharp digital pictures, and its ability to capture both continuous video and single frames makes it the perfect choice for a wide range of applications, including scanning and industrial inspection.

Features

- Best Global Shutter Efficiency
- Low Dark Current/Hot Pixels
- High Linear Full Well
- Low Operational Power
- Small Form Factor

Applications

- Barcode Scanning
- 3D Scanning
- Virtual/Augmented Reality
- Positional Tracking
- Gesture Recognition

Benefits

- Improved image quality for fast moving objects
- Total Noise Floor Reduction, SNR Improvement
- High Dynamic Range
- Ideal for battery powered applications
- Ideal for space constrained applications like Handheld Scanners

End Products

- Barcode Scanners
- Head Mounted Displays
- Biometric Scanners
- Virtual Reality/Augmented Reality Glasses
- Drones

Part Electrical Specifications

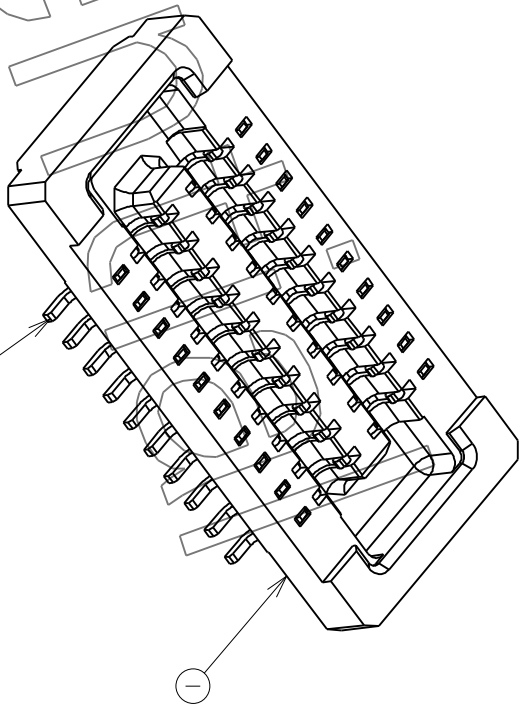
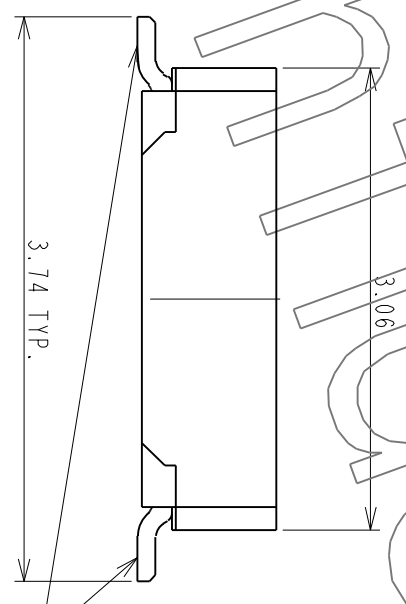
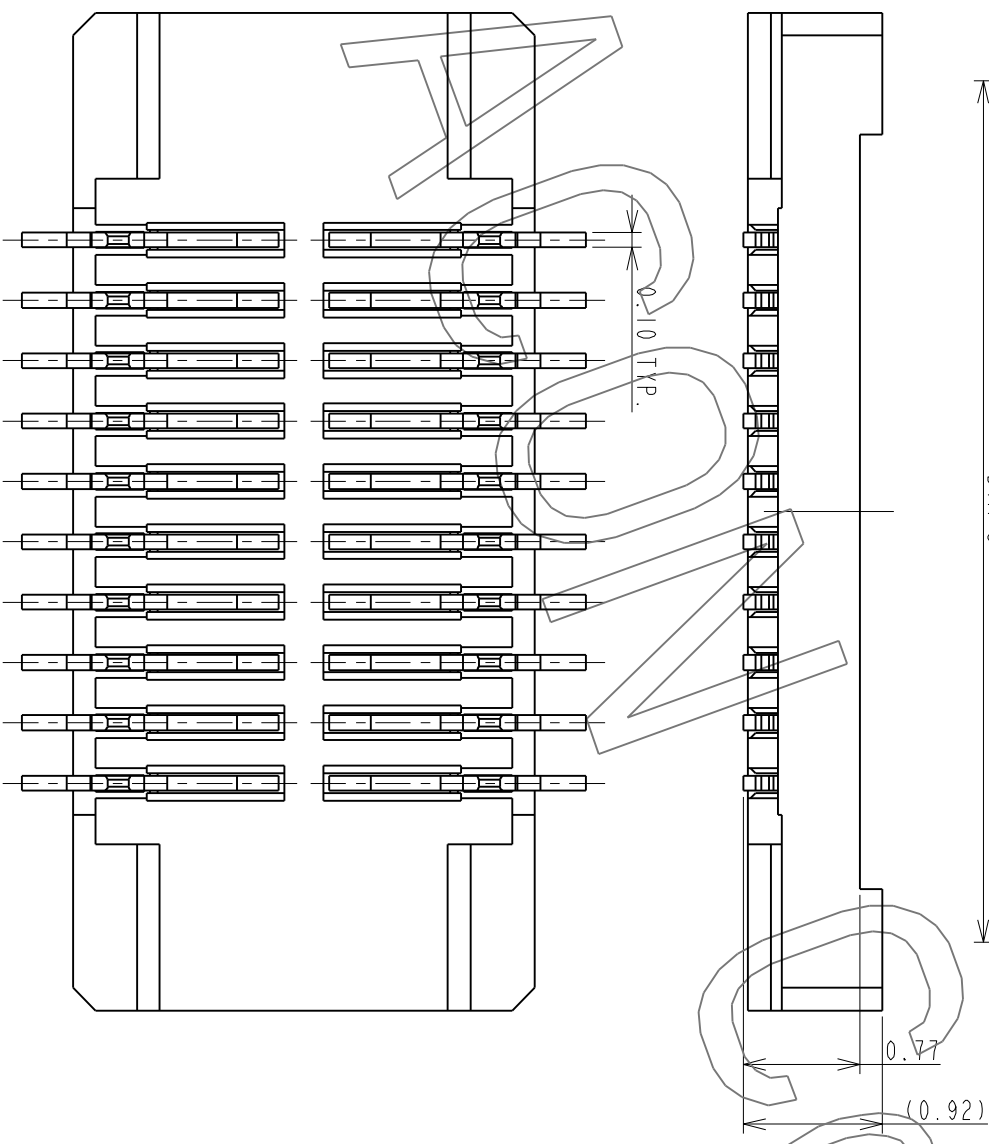
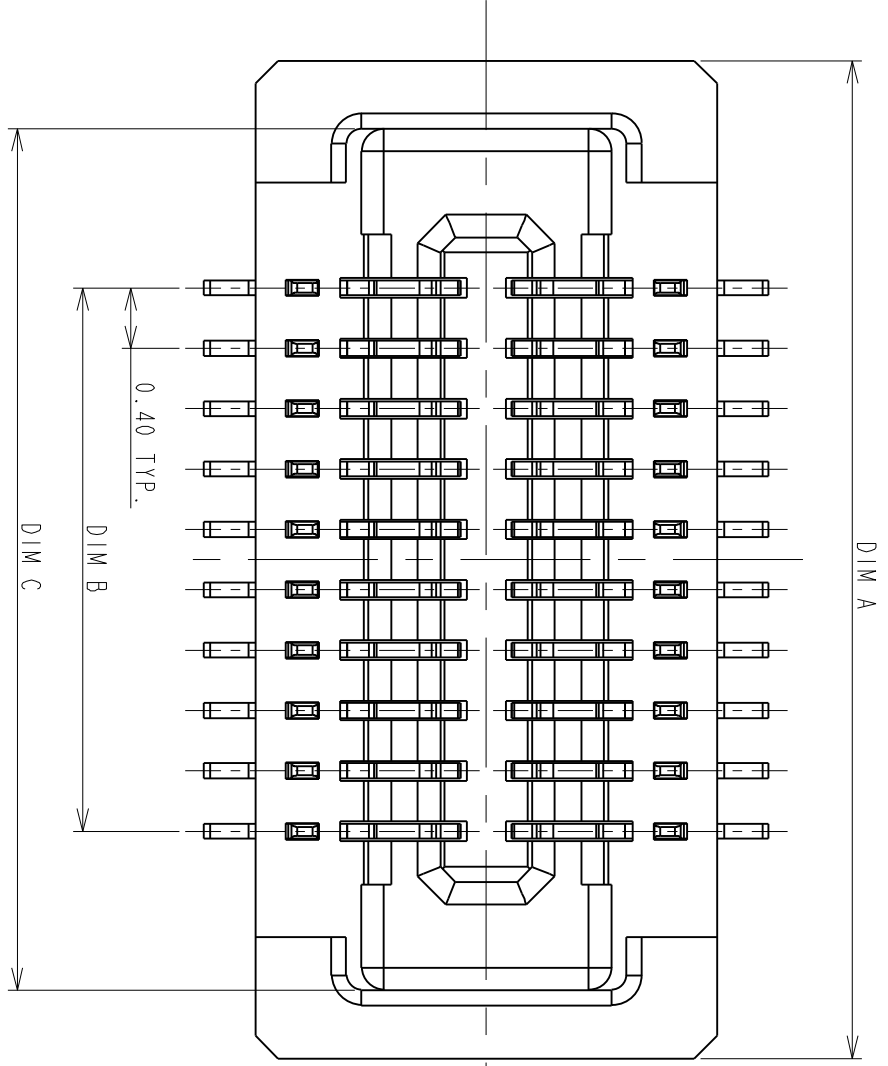
Product	Pricing (\$/Unit)	Compliance	Status	Type	Megapixels	Frame Rate (fps)	Optical Format	Shutter Type	Pixel Size (µm)	Output Interface	Color	Package Type
AR0144CSC00SUD20		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	
AR0144CSC00SUKA0-CPBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	ODCSP-69
AR0144CSC00SUKA0-CPBR1		Pb-free Halide free	Active									ODCSP-69
AR0144CSC00SUKA0-CPBR2		Pb-free Halide free	Active									ODCSP-69
AR0144CSC00SUKA0-CRBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	ODCSP-69
AR0144CSC00SUKA0-CRBR1		Pb-free Halide free	Active									ODCSP-69
AR0144CSC20SUD20		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	
AR0144CSC20SUKA0-CPBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	ODCSP-69
AR0144CSC20SUKA0-CRBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	RGB	ODCSP-69
AR0144CSSM00SUD20		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	
AR0144CSSM00SUKA0-CPBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM00SUKA0-CPBR1		Pb-free Halide free	Active									ODCSP-69
AR0144CSSM00SUKA0-CPBR2		Pb-free Halide free	Active									ODCSP-69
AR0144CSSM00SUKA0-CRBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM20SUD20		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	
AR0144CSSM20SUKA0-CPBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM20SUKA0-CPBR1		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM20SUKA0-CRBR		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM20SUKA0-CRBR1		Pb-free Halide free	Active	CMOS	1MP	60	1/4 inch	Global Shutter	3.0 x 3.0	Multi	Mono	ODCSP-69
AR0144CSSM28SUD20		Pb-free Halide free	Active	CMOS	1MP	60	1/4 Inch	Global Shutter	3.0 x 3.0	Multi	Mono	
AR0144CSSM28SUKA0-CPBR		Pb-free Halide free	ProductP review									ODCSP-69

For more information please contact your local sales support at www.onsemi.com.

Created on: 6/17/2020

1 2 3 4 5 6 7 8

REV.	EC#	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
A	TJECR10018-02	NEW RELEASE PER NPRI 0009	11/05/10	RAIN	DICK, SON	HARDWARE
B	TJECR13014	AXI, AXI	05/13/13	RAIN	SteveM	Jeff



0.08
ALL OF PLACES

ITEM	NAME	Q'TY	PART #	MATERIAL / FINISH
2	CONTACT	XX	T-BBR43-100X30	COPPER ALLOY/PLATING GOLD
1	HOUSING	1	I-BBR43-1XXX33	HIGH TEMP RESIN/UL 94 V-0

TOLERANCES UNLESS OTHERWISE SPECIFIED	
GENERAL	.XX ±0.38
DESIGN	.XXX ±0.25
RAIN	04/15/10
CHECKED	DATE
HARDWARE	04/24/10
APPROVED	DATE
DICK, LEE	04/24/10



P0.4#11.0mm BOARD TO BOARD
CONN. RECEPTACLE
WITHOUT HOLD DOWN

SCALE	SHEET	UNIT	SERIES	DWG NO.	REV.
20:1	1 OF 2	MM	BBR	C-BBR43-04-01	B

CUSTOMER DRAWING

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All materials meet the ACON's spec. environment-related substances management technical standard

F E D C B A



PRODUCT NUMBERING CODE:
 BBR43 - XX K X 5 X X
 1 2 3 4 5 6 7

1. PRODUCTION CODE:
 BBR43: BOARD TO BOARD 0.4 PITCH RECEPTACLE

2. POSITIONS:
 XX: POSITIONS(SEE TABLE A)

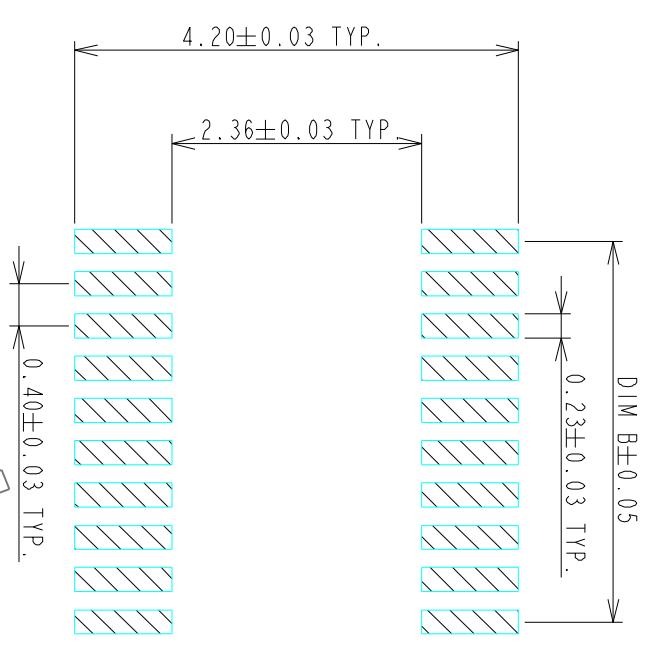
3. INSULATOR COLOR:
 K: BLACK

4. CONTACT PLATING:
 1: GOLD 10u" MIN
 2: GOLD 5u" MIN
 3: GOLD 10u" MIN
 B: GOLD 4u" MIN FOR SPOT PLATING
 ALL OVER: NI 50~100u"

5. TYPE OF HEIGHT:
 5: H=0.77mm

6. TYPE OF HOLD DOWN:
 3: WITHOUT HOLD DOWN

7. OTHER
 2: WITH POST, FINISHED PRODUCTS
 3: WITHOUT POST, FINISHED PRODUCTS



RECOMMENDED P.C. BOARD PATTERN DIMENSION (WITHOUT HOLD DOWN)

NOTES:
 1.0: RATING
 1.1: VOLTAGE: 60V AC/DC
 1.2: CURRENT: 0.5 AMPS
 1.3: OPERATION TEMPERATURE: -40°C TO +85°C
 2.0: ELECTRICAL CHARACTERISTIC:
 2.1: CONTACT RESISTANCE: 50 mΩ MAX INITIAL
 2.2: INSULATION RESISTANCE: 1000 MΩ MIN INITIAL
 2.3: DIELECTRIC WITHSTANDING VOLTAGE: 250V AC FOR ONE MINUTE
 3.0 TOLERANCES UNLESS OTHERWISE SPECIFIED
 GENERAL: DIMENSION >10.00 ±0.13
 DIMENSION 5.00~10.00 ±0.10
 DIMENSION <5.00 ±0.05

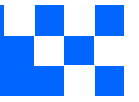
4.0 ALL COPPLANARITY IS 0.08mm MAX. BEFORE REFLOW
ALL COPPLANARITY IS 0.10mm MAX. AFTER REFLOW

POSITIONS	DIM A	DIM B	DIM C
10	4.61	1.60	3.71
14	5.41	2.40	4.51
16	5.81	2.80	4.91
18	6.21	3.20	5.31
20	6.61	3.60	5.71
22	7.01	4.00	6.11
24	7.41	4.40	6.51
26	7.81	4.80	6.91
30	8.61	5.60	7.71
32	9.01	6.00	8.11
34	9.41	6.40	8.51
40	10.61	7.60	9.71
44	11.41	8.4	10.51
48	12.21	9.20	11.31
50	12.61	9.60	11.71
54	13.41	10.40	12.51
60	14.61	11.60	13.71
70	16.61	13.60	15.71
80	18.61	15.60	17.71

TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN		DATE	
GENERAL X	±0.38	RAIN	04/15/10		
XX	±0.13	DESIGN			
ANGLES X°	±3.0°	RAIN	04/15/10		
SCALE	20:1	CHECKED			
SHEET	2 OF 2	HARDWARE	04/24/10		
UNIT	MM	APPROVED			
		DICK. LEE	04/24/10		
		CUSTOMER DRAWING			
		SERIES	BBR		
		DWG NO.	C-BBR43-04-01		
		SIZE	A3		
		REV.	B		



P0.4*H1.0mm BOARD TO BOARD
 CONN. RECEPTACLE
 WITHOUT HOLD DOWN



Cameras Applications



Automotive Driver Pilot



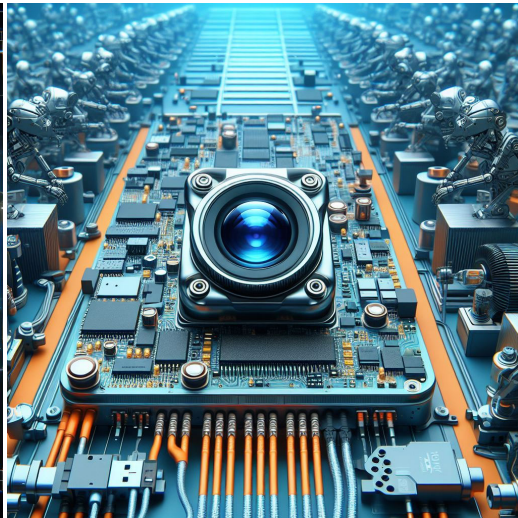
Live Streaming



Video Conference



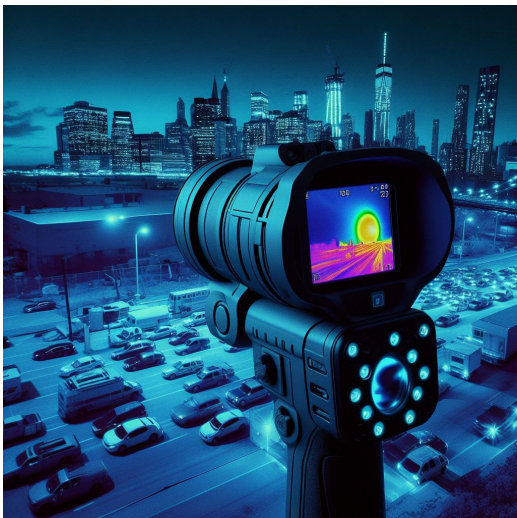
Eye Tracker Biometric Detection



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									
MIPI Interface									
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					
DVP Parallel Interface									
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



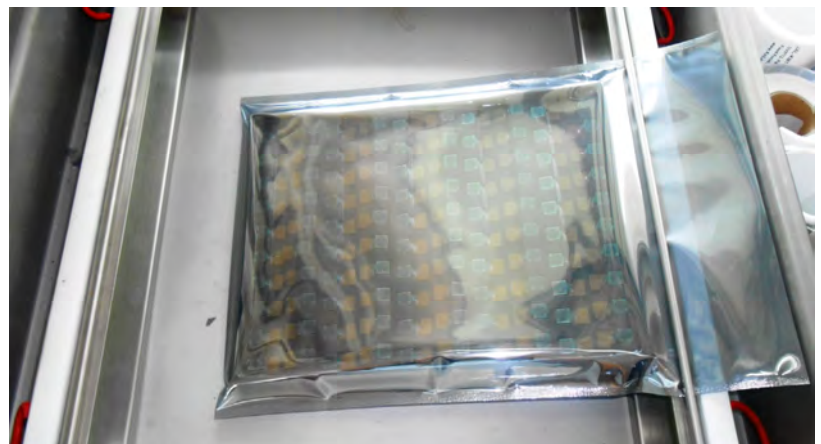
Cover Tray with Lid



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





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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



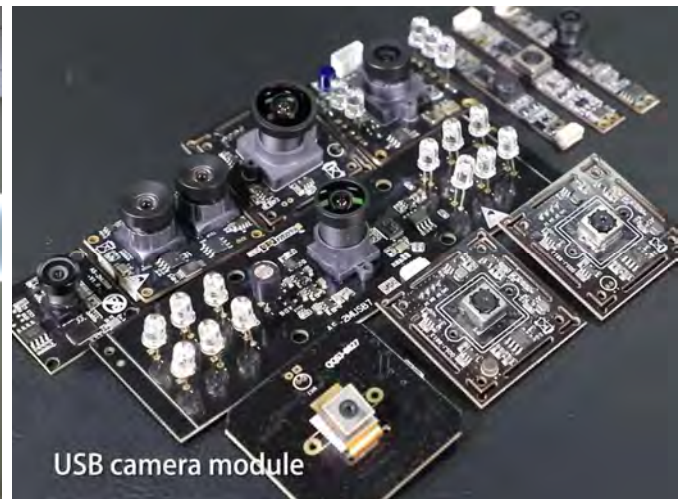


Company Kai Lap Technologies (KLT)

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.



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. 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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