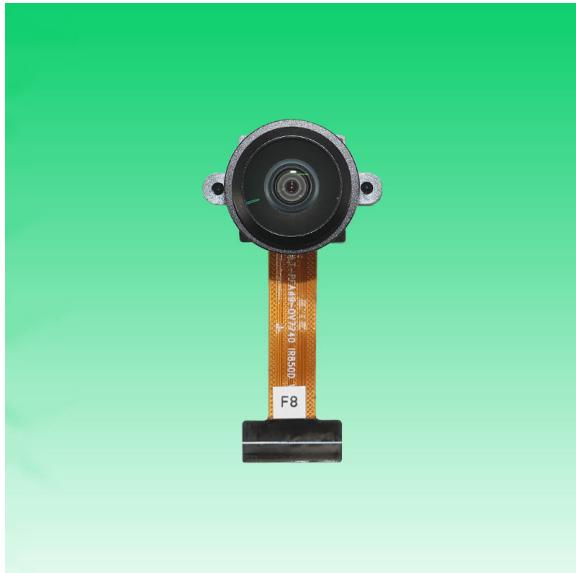


KLT-PFA49-OV7740 IR850D V1.2

**0.3MP OmniVision OV7740 DVP Parallel Interface M12 850nm Dual Pass
Fixed Focus Camera Module**



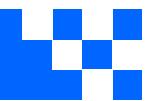
Front View



Back View

Specifications

Camera Module No.	KLT-PFA49-OV7740 IR850D V1.2
Resolution	0.3 MP
Image Sensor	OV7740
Sensor Type	1/5"
Pixel Size	4.2 um x 4.2 um
EFL	0.90 mm
F.NO	2
Pixel	656 x 488
View Angle	173.0°(DFOV) 142.0°(HFOV) 112.0°(VFOV)
Lens Dimensions	13.10 x 13.10 x 13.56 mm
Module Size	40.55 x 22.00 mm
Module Type	Fixed Focus
Interface	DVP Parallel
Auto Focus VCM Driver IC	None
Lens Type	650nm IR Cut + 850nm IR Pass
Operating Temperature	-30°C to +70°C
Mating Connector	FH12-24S-0.5SH

**KLT-PFA49-OV7740 IR850D V1.2**

**0.3MP OmniVision OV7740 DVP Parallel Interface M12 850nm Dual Pass
Fixed Focus Camera Module**



Top View



Side View



Bottom View

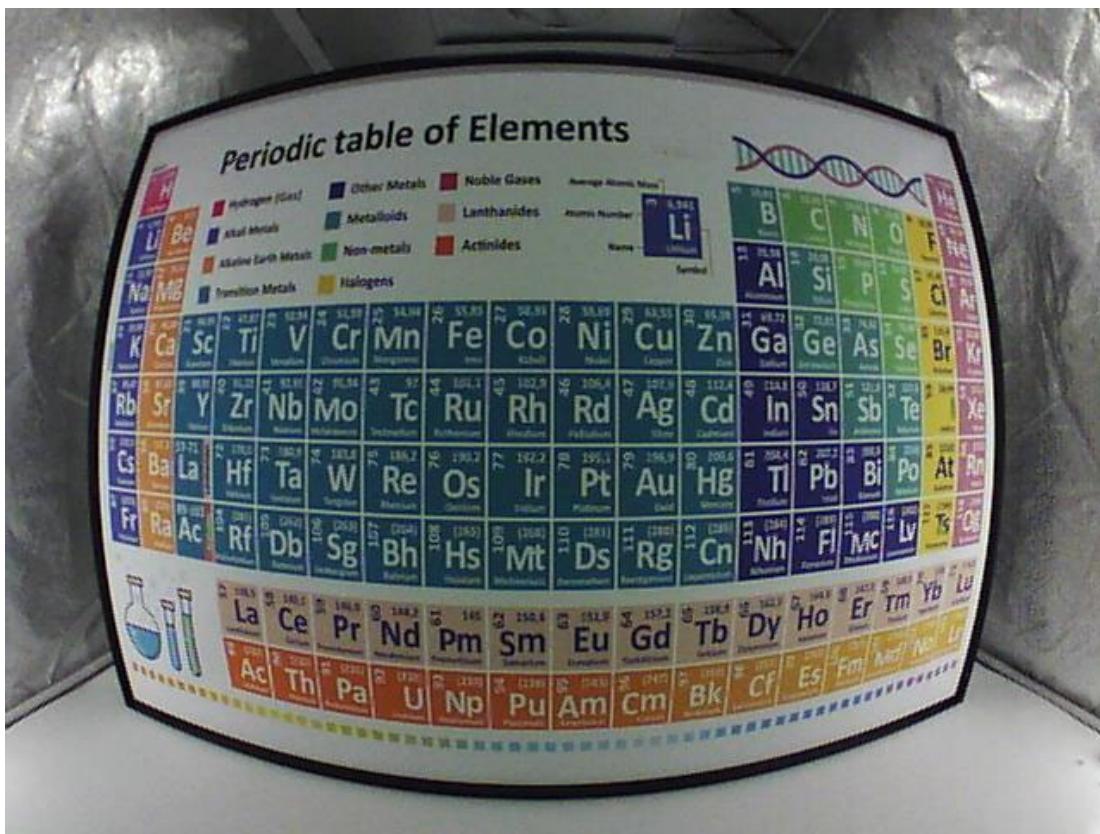


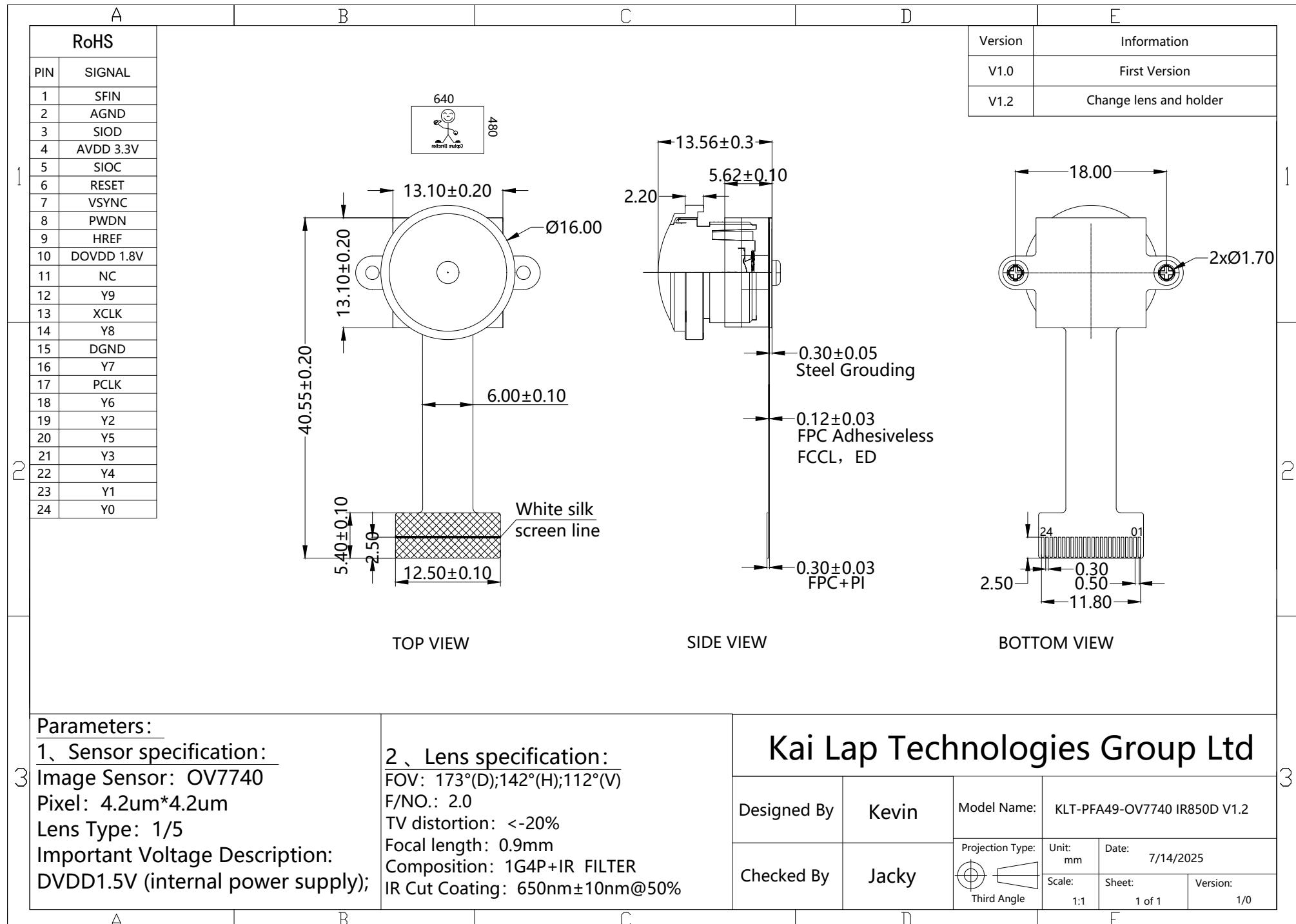
Mating Connector

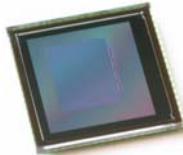


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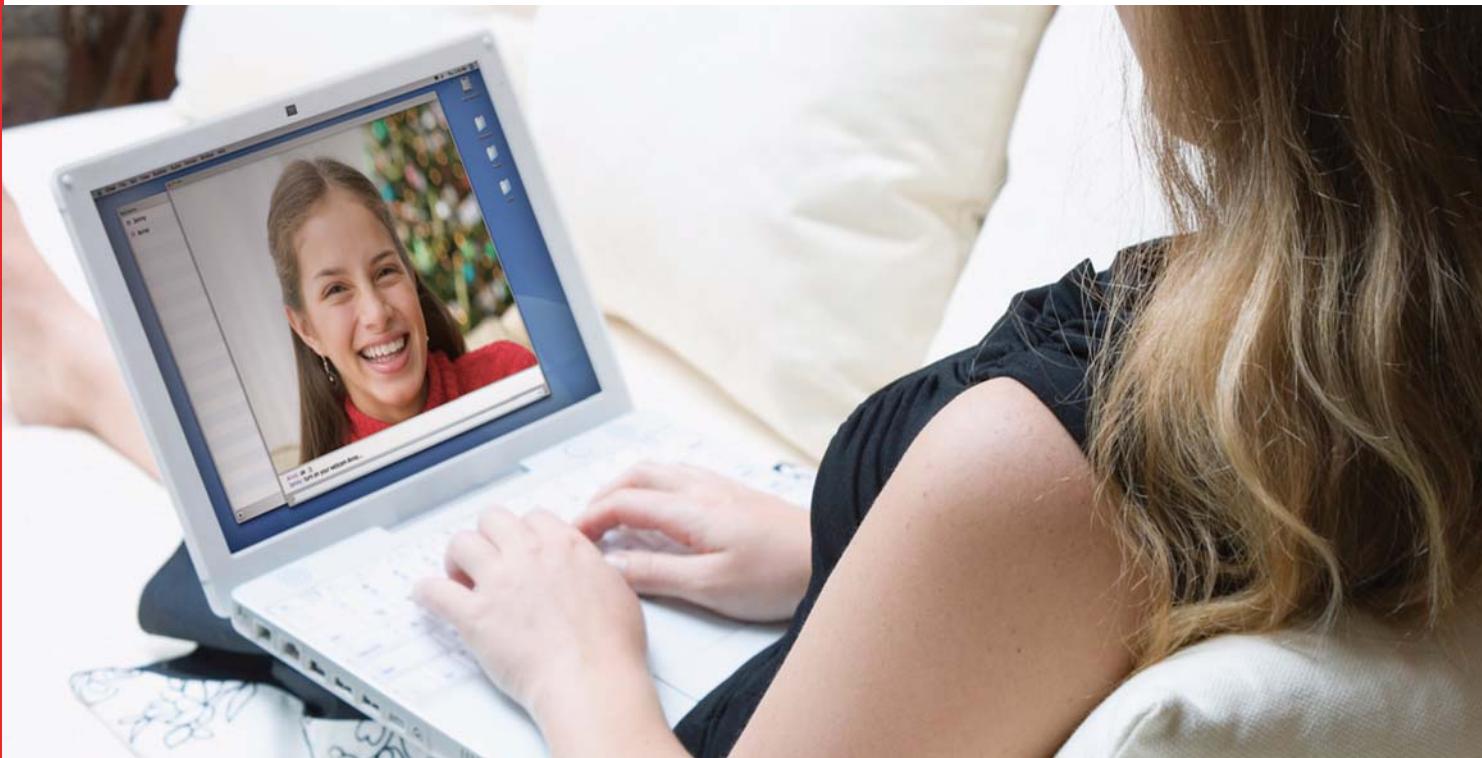








OV7740/OV7241 VGA product brief



available in
a lead-free
package

Ultra-High Sensitivity CMOS Image Sensor

The OV7740 (color) CameraChip™ sensor is a low power, high sensitivity VGA CMOS image sensor that provides the full functionality of a single-chip VGA camera in a small footprint.

Using OmniVision's proprietary OmniPixel3-HS™ technology, the 1/5-inch OV7740 boasts a best-in-class low light sensitivity of 6.0 V/lux-sec, making it ideal for integrated notebook cameras, as well as stand-alone PC webcams, security and gaming applications.

The OV7740 can operate at 30 frames per second (fps) in VGA resolution and 60 fps in QVGA resolution with complete user control over image quality, formatting and output data transfer. It supports a digital video parallel port, and provides full-frame, sub-sampled, windowed or scaled 8-bit/10-bit RAW RGB and 8-bit YUV images.

All required image processing functions including exposure control, gamma, white balance, color saturation, hue control, defective pixel canceling, noise canceling, etc., are programmable through the serial camera control bus (SCCB) interface.

In addition, the OV7740 uses proprietary technology to improve image quality by reducing or eliminating common lighting/electrical sources of image contamination, such as fixed pattern noise and smearing, to produce a clean and fully stable color image.

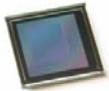
For storage purposes, the OV7740 also includes one-time programmable (OTP) memory.

Find out more at www.ovt.com.

Applications

- PC multimedia
- Games
- Security and Surveillance

OV7740/OV7241



ordering information

- OV07740-A32T
(color, lead-free, 32-pin CSP3)
- OV07740-A32A
(color, lead-free, 32-pin CSP3)
- OV07241-A32A
(b&w, lead-free, 32-pin CSP3)

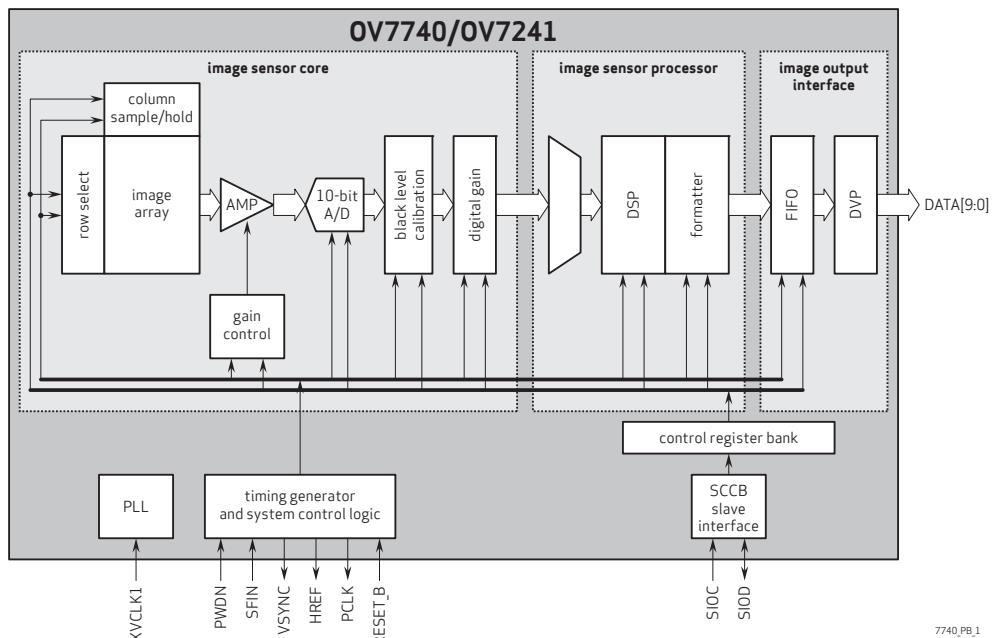
Product Features

- support for output formats: RAW RGB and YUV
- support for image sizes: VGA, QVGA, CIF and any size smaller
- support for black sun cancellation
- support for internal and external frame synchronization
- standard SCCB serial interface
- digital video port (DVP) parallel output interface
- embedded one-time programmable (OTP) memory
- on-chip phase lock loop (PLL)
- embedded 1.5 V regulator for core

Product Specifications

- **array size:** 656 x 488
- **power supply:**
 - core: 1.5VDC \pm 5%
 - analog: 3.0 - 3.6V
 - I/O: 1.7 - 3.47V
- **power requirements:**
 - active: 48 mA
 - standby: 20 μ A
- **temperature range:**
 - operating: -30° C to 70° C junction temperature
 - stable image: 0° C to 50° C junction temperature
- **output format:**
 - 8-/10-bit raw RGB data
 - 8-bit YUV
- **lens size:** 1/5"
- **lens chief ray angle:** 25°
- **input clock frequency:** 6 - 27 MHz
- **max S/N ratio:** 38 dB
- **dynamic range:** 71 dB @ 8x gain
- **max image transfer rate:**
 - VGA (640x480): 30 fps
 - QVGA (320 x 240): 60 fps
- **sensitivity:** 6.0 V/lux-sec
- **shutter:** rolling shutter
- **maximum exposure interval:** 502 \times t_{ROW}
- **gamma correction:** programmable
- **pixel size:** 4.2 μ m x 4.2 μ m
- **dark current:** 30 mV/s @ 60° C junction temperature
- **image area:** 2755.2 μ m x 2049.6 μ m
- **package dimensions:**
 - 4185 μ m x 4345 μ m

Functional Block Diagram



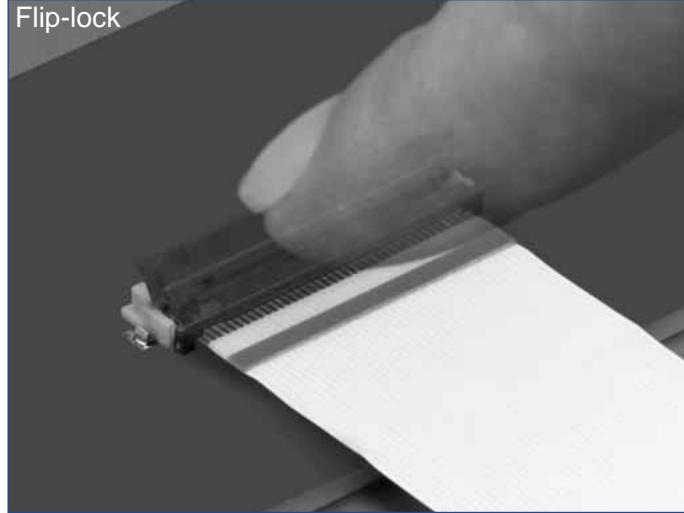
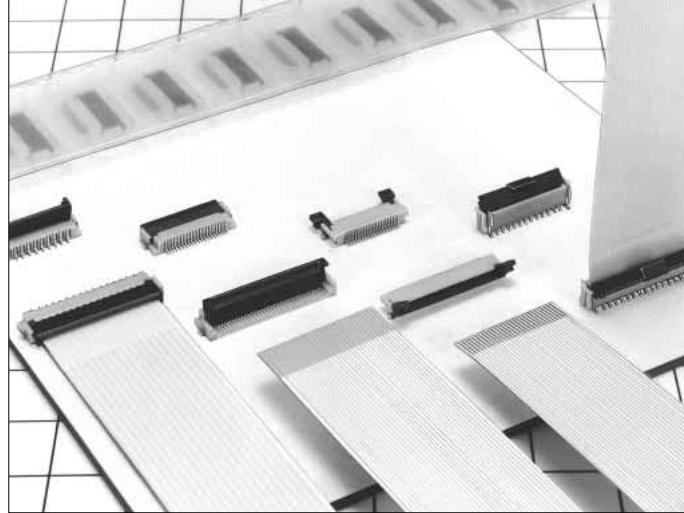
4275 Burton Drive
Santa Clara, CA 95054

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www.ovt.com

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0.5mm and 1mm Pitch Connectors For FPC/FFC

FH12 Series



■Features

1. Ease of Use and Space Savings

Only one finger or 6.9N (Newtons) of force is required to lock Hirose's rotational actuator (flip-lock) as compared to using 2 fingers and 39.2N to close a FFC/FPC connector from our competition.

The Flip-Lock design also allows customers to place 2 or more connectors side by side as there is no need to waste additional board space for a side latch.

2. Strengthened Flip-lock Actuator

The standard Flip-Lock requires only 2.0mm height above the board. A strengthened lock lever is available which only requires an additional 0.4mm.

3. Supports Thin FPC (0.18mm)

Hirose does not require double-sided FPC to have any additional strengthening plate or stiffener and can therefore support a thickness of as little as 0.18mm +/- 0.05.

4. Hirose Ensures Reliability

Hirose's patented half tuning fork contacts maintain the required normal force without relying on the connector housing. With our competitor's conventional products the housing walls support the contact force, which does not provide for long-term reliability.

5. Prevention of Solder Bridge

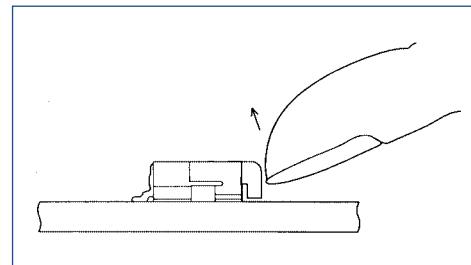
Excess solder cavity absorbs excessive solder and avoids solder bridging.

6. Three different assembly types

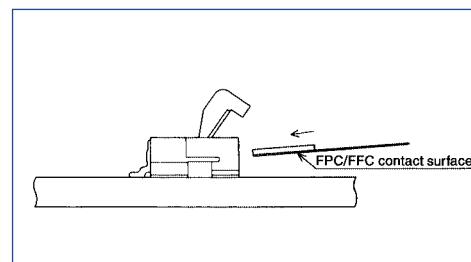
FH12 is offered in Top & Bottom Contact and Vertical Mount and offered in both a 0.5mm contact pitch as well as a 1.0mm contact pitch (bottom contact only).

Rotating One-touch Mechanism

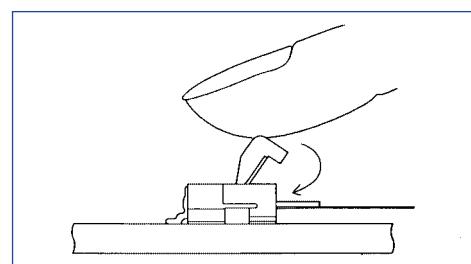
①



②



③



■Applications

Notebook computers, printers, PDAs, digital cameras and other compact devices for interconnecting the main circuit board with the LCD, HDD or other device.

■Product Specifications

Rating	Current rating: 0.5A DC(Note 1) Voltage rating: 50V AC	Operating Temperature Range: -40 to +70°C (Note 2) Operating Humidity Range: Relative humidity, 90% max. (Not dewed)	Storage Temperature Range: -10 to +50°C (Note 3) Storage Humidity Range: Relative humidity, 90% max. (Not dewed)
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Applicable FPC	t=0.3±0.05 Gold plated	t=0.18 ± 0.05 for FH12F-*S-0.5SH
----------------	------------------------	----------------------------------

Item	Specification	Conditions
1. Insulation resistance	500M ohms minimum	100V DC
2. Withstanding voltage	No flashover or insulation breakdown.	150V AC/1 minute
3. Contact resistance	50m ohms maximum	1mA
4. Durability (Insertion/withdrawal)	Contact resistance: 50m ohms maximum No damage, cracks, or parts dislocation.	20 cycles
5. Vibration	No electrical discontinuity of 1μs or more Contact resistance: 50m ohms maximum. No damage, cracks, or parts dislocation.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours in each of the 3 directions.
6. Shock	No electrical discontinuity of 1μs or more Contact resistance: 50m ohms maximum. No damage, cracks, or parts dislocation.	Acceleration of 490 m/s ² , 11 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis.
7. Humidity(Steady state)	Contact resistance: 50m ohms maximum. Insulation resistance: 50M ohms minimum. No damage, cracks, or parts dislocation.	96 hours at 40°C and humidity of 90% to 95%
8. Temperature Cycle	Contact resistance: 50m ohms maximum. Insulation resistance: 50M ohms minimum. No damage, cracks, or parts dislocation.	Temperature: -40°C → 15 to 35°C → 85°C → 15 to 35°C, Time: 30 → 5 max. → 30 → 5 max.(minutes) 5 cycles
9. Resistance to Soldering heat	No deformation of components affecting performance.	Reflow: At the recommended temperature profile Manual soldering: 350±5°C for 3 seconds

Note 1: When passing the current through all of the contacts, use 70% of the current rating.

Note 2: Includes temperature rise caused by current flow.

Note 3: The term "storage" refers to products stored for long period of time prior to mounting and use. Operating Temperature Range and
Humidity range covers nonconducting condition of installed connectors in storage, shipment or during transportation.

■Material

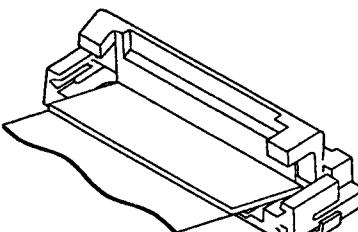
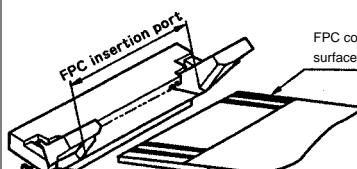
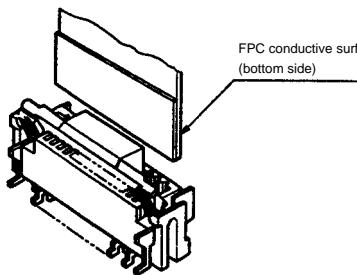
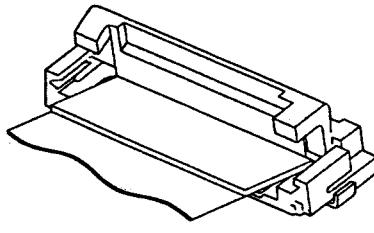
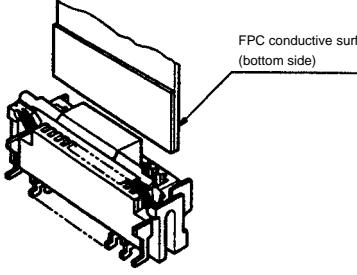
Part	Material	Finish	Remarks
Insulator	Polyamide, LCP(60 pos.)	Color : Beige	UL94V-0
Actuator	PPS	Color : Dark brown	
Contact	Phosphor bronze	Gold plated	_____
Metal Fittings	Brass	Tin plated	

■Ordering Information

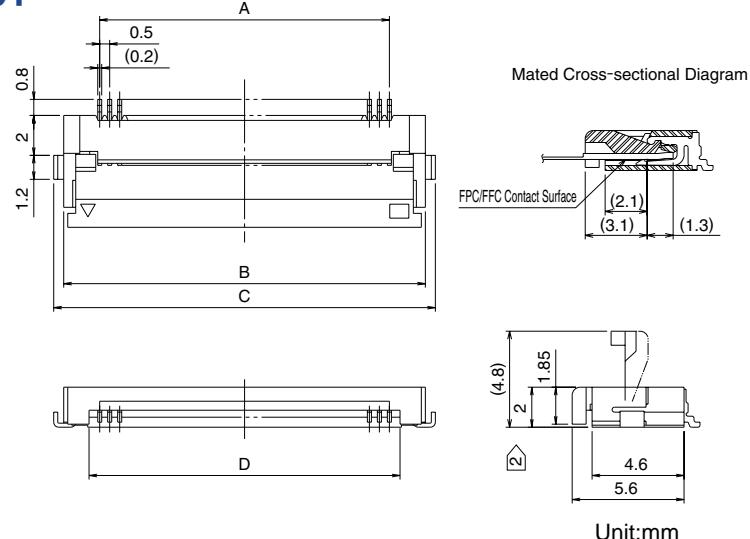
FH12 1 A 2 - 3 4 - 5 6 7 0.5 8 SH 9 (55)

① Series Name : FH12	⑤ Contact alignment: Single
② Blank : standard type A : Top contact type S : Type with strengthened flip-lock actuator F : Type with 0.18mm FPC End Thickness	⑥ Eccentric direction: Blank : standard type A : Eccentric type
③ Standard type : Number of contacts Eccentric type : Number of contacts in 0.5mm housing	⑦ Contacts Pitch : 0.5mm, 1mm
④ Standard type : Blank Eccentric type : Number of contacts	⑧ Contact type SH : SMT horizontal mounting type SV : SMT vertical mounting type
	⑨ Plating specification (55) : Gold plated

◆ Series Configuration

Pitch	Bottom Contact Type	Top Contact Type	Vertical mounting Type
0.5mm	 <p>FH12- ** S-0.5SH P.12</p> <p>Number of contacts 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 33, 34, 35, 36, 40, 45, 50, 53</p> <p>Type with Strengthened Lock Lever</p> <p>FH12S- ** S-0.5SH P.13</p> <p>Number of contacts 30, 40, 45, 50, 53</p> <p>Type with 0.18mm FPC End Thickness</p> <p>FH12F- ** S-0.5SH P.14</p> <p>Number of contacts 6, 8, 10, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 36, 40, 42, 45, 50</p>	 <p>FH12A- ** S-0.5SH P.15</p> <p>Number of contacts 10, 12, 15, 16, 18, 20, 22, 24, 26, 28, 29, 30, 32, 33, 34, 36, 40, 42, 45, 50</p>	 <p>FH12- ** S-0.5SV P.16</p> <p>Number of contacts 10, 12, 13, 15, 16, 17, 18, 20, 22, 24, 26, 30, 32, 33, 34, 36, 40, 45, 49, 50, 60</p>
1mm	 <p>Standard FH12- ** S-1SH P.18</p> <p>Eccentric FH12- ** (***) SA-1SH</p> <p>Standard</p> <p>Number of contacts 5, 6, 7, 8, 9, 11, 12, 16, 17, 22, 26</p> <p>Eccentric</p> <p>Number of contacts 4, 6, 8, 10, 11, 14, 19, 24</p>		 <p>FH12- ** S-1SV P.19</p> <p>Number of contacts 6, 7, 8, 16, 20, 22, 24</p>

■ 0.5mm Pitch Bottom Contact Type



Cameras Applications



Automotive Driver Pilot



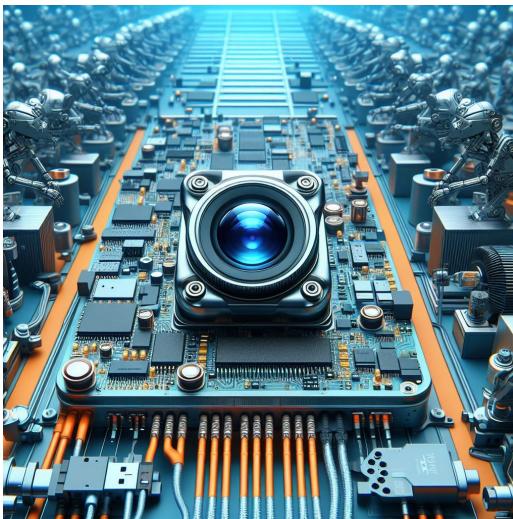
Live Streaming



Video Conference



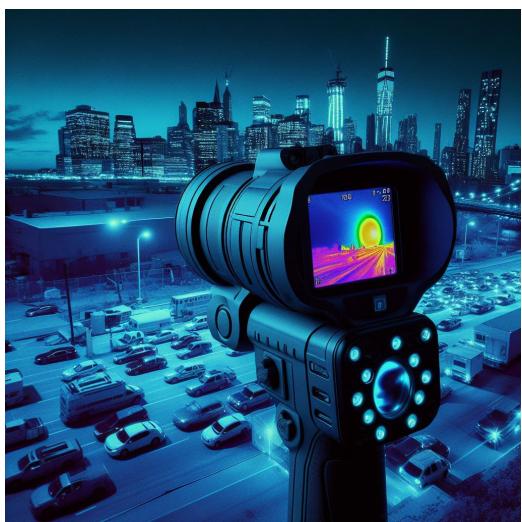
Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera

Cameras Applications



Camera Module Pinout Definition Reference Chart

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
FREX	frame exposure / mechanical shutter
GPIO	general purpose inputs
SLASEL	I2C slave address select
AFEN	CEN chip enable active high on VCM driver IC
MIPI Interface	
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
DVP Parallel Interface	
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

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
		Be Torn/Chopped	The Naked Eye
		Marking	The Naked Eye
	Holder	Scratches	The Naked Eye
		Gap	The Naked Eye
		Screw	The Naked Eye
		Damage	The Naked Eye
	Lens	Scratch	The Naked Eye
		Contamination	The Naked Eye
		Oil Film	The Naked Eye
		Cover Tape	The Naked Eye
Function	Image	No Communication	Test Board
		Bright Pixel	Black Board
		Dark Pixel	White board
		Blurry	The Naked Eye
		No Image	The Naked Eye
		Vertical Line	The Naked Eye
		Horizontal Line	The Naked Eye
		Light Leakage	The Naked Eye
		Blinking Image	The Naked Eye
		Bruise	Inspection Jig
		Resolution	Chart
		Color	The Naked Eye
		Noise	The Naked Eye
		Corner Dark	Less Than 100px By 100px
Dimension	Dimension	Color Resolution	The Naked Eye
		Height	The Naked Eye
		Width	The Naked Eye
		Length	The Naked Eye
		Overall	The Naked Eye

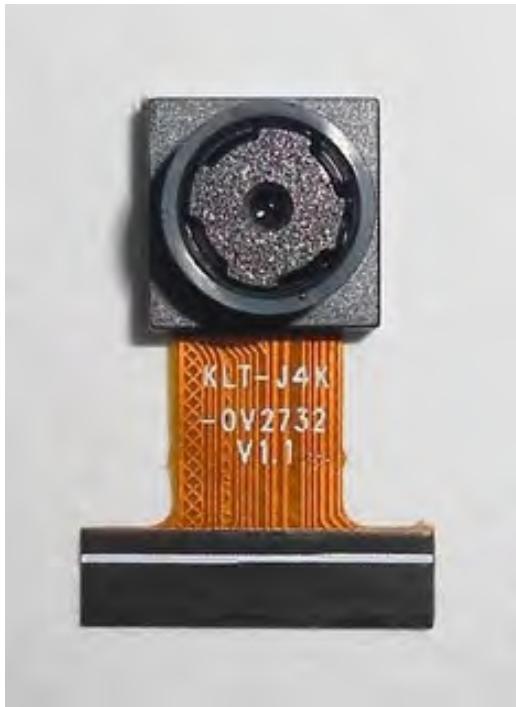


CMOS CAMERA MODULES

your *BEST* camera module partner

KLT Package Solutions

KLT Camera Module



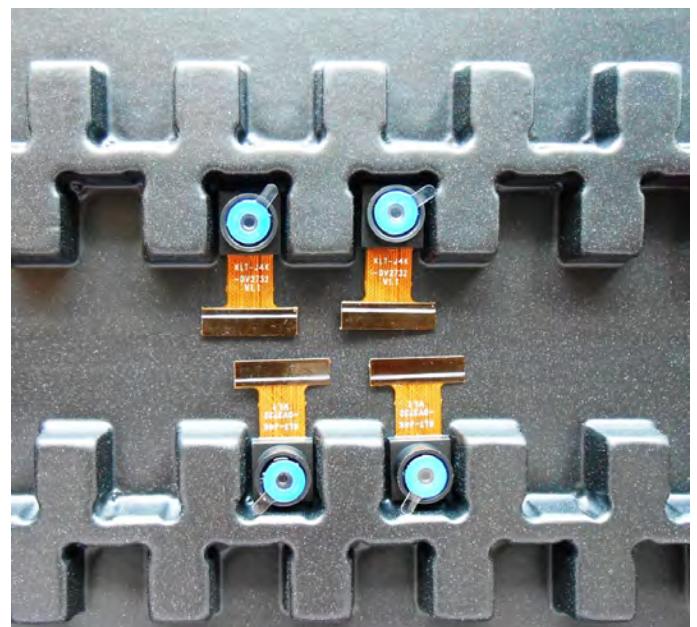
Complete with Lens Protection Film



Tray with Grid and Space



Place Cameras on the Tray



Camera Modules Package Solution

Full Tray of Cameras



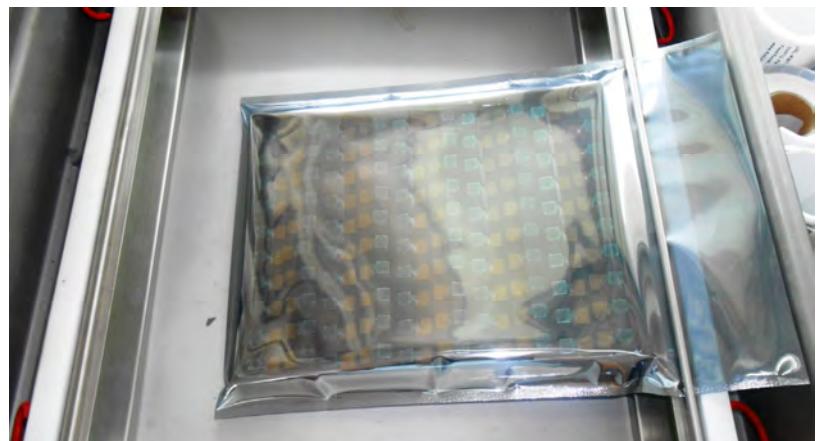
Cover Tray with Lid



Put Tray into Anti-Static Bag



Vacuum the Anti-Static Bag





CMOS CAMERA MODULES

your *BEST* camera module partner



Camera Modules Package Solution

Sealed Vacuum Bag with Labels

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



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

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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





CMOS CAMERA MODULES

your BEST camera module partner

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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CMOS CAMERA MODULES

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



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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





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

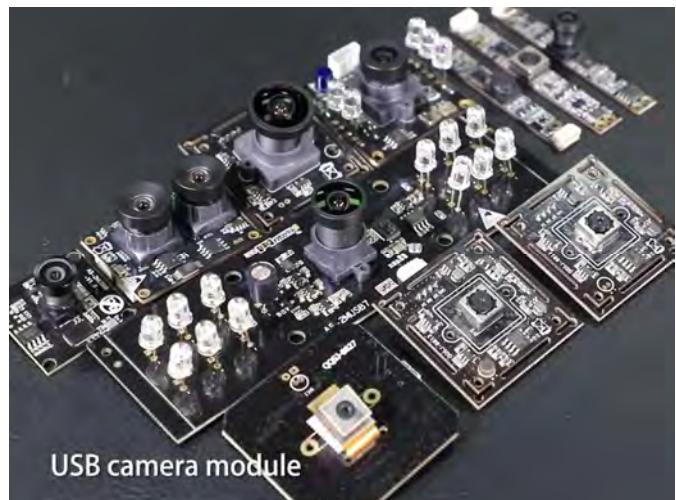


Company Kai Lap Technologies (KLT)

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.



KLT Strength**Powerful Factory****Professional Service****Promised Delivery**