



## HAMPO-K3MF-OV9714 V1.1

### 1MP OmniVision OV9714 MIPI Interface Fixed Focus Camera Module



Front View



Back View

#### Specifications

Camera Module No.	HAMPO-K3MF-OV9714 V1.1
Resolution	1MP
Image Sensor	OV9714
Sensor Type	1/4"
Pixel Size	3.0 um x 3.0 um
EFL	3.29 mm
F.NO	2.80
Pixel	1296 x 816
View Angle	68.7°(DFOV) 58.1°(HFOV) 45.0°(VFOV)
Lens Dimensions	8.00 x 8.00 x 4.97 mm
Module Size	66.00 x 11.00 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Model	HAMPO-LENS-M5101
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	AXE540124



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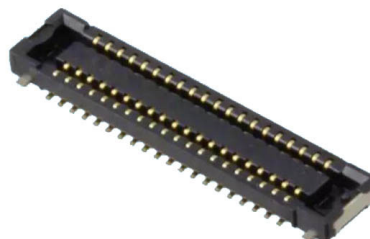
Top View



Side View



Bottom View



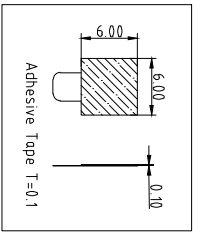
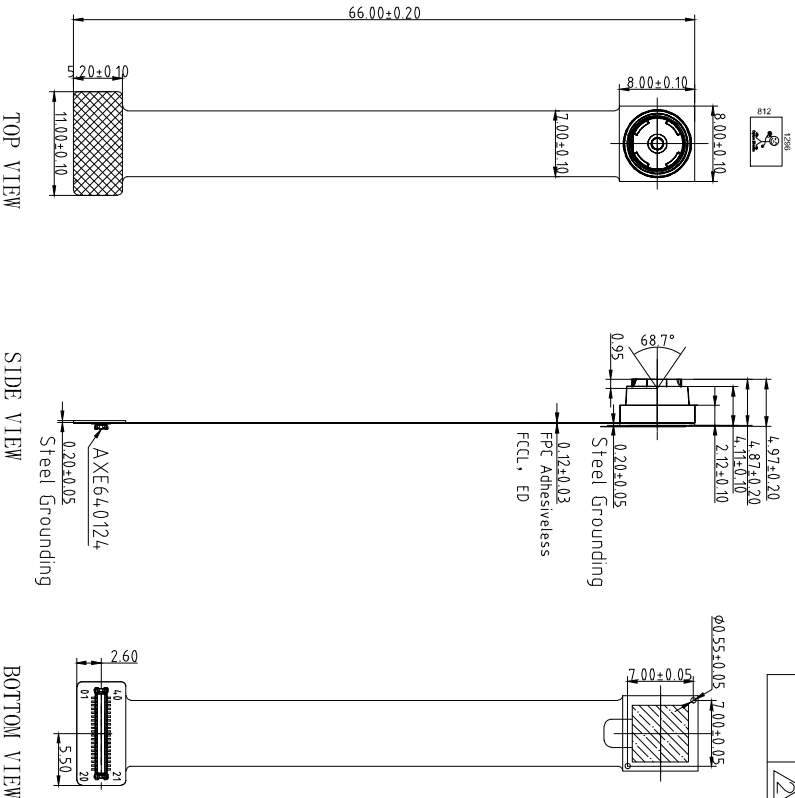
Mating Connector

ROHS

PIN SIGNAL

1	RESET
2	PWDN
3	DGND
4	MDP0
5	MDN0
6	DGND
7	STROBE
8	SID
9	DGND
10	FSM/VSNC
11	LED
12	DGND
13	MDP1
14	MDN1
15	DGND
16	MCP
17	MCN
18	NC
19	NC
20	NC
21	NC
22	NC
23	NC
24	NC
25	SCL
26	SDA
27	DGND
28	MCLK
29	DVDD1.5V
30	D0VDD1.8V
31	DGND
32	AVDD2.8V
33	AGND
34	DGND
35	NC
36	NC
37	NC
38	NC
39	DGND
40	DGND

Version	Mark	Information	Date
V1.1	PD	First Version	14-05-2019



Parameters:

1、Sensor specification:

Image Sensor: OV9714  
Pixel: 3um×3um  
Lens Type: 1/4  
Important Voltage Description: DVDD1.5V  
(external power supply);

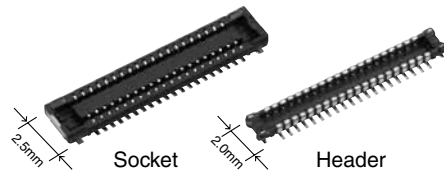
2、Lens specification:

FOV: 68.7°  
F/NO: 2.8  
TV distortion: <1.0%  
Focal length: 3.29mm  
Composition: 4P+IR FILTER  
IR Cut Coating: 650nm±10nm@50%

Designed By	Kevin	Model Name:	K3MF-OV9714 V1.1
Checked By	Aouly Yan	Projection Type:	Third Angle
		Unit:	mm
		Scale:	1:1
		Sheet:	1 of 1
		Version:	1/0

# HAMPO-LENS-M5101

[illegible]



RoHS compliant

For board-to-FPC

**Narrow pitch connectors  
(0.4mm pitch)**

**A4S Series**

## FEATURES

### 1. 2.5 mm wide slim two-piece style connectors

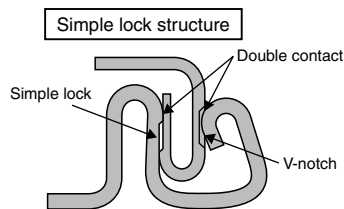
Compact and slim structure contributes overall miniaturization of product design.  
<Compared to F4S series (40 pin contacts, when mated)>

- Width: 30% down
- Footprint: 30% down



2. “**TOUGH CONTACT ADVANCED**” ensures high resistance to various environments in lieu of slim and low profile body

3. Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.



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

4. Mated heights of 0.8 and 1.0 mm are available for the same foot pattern.  
5. 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

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

AXE

# 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		
	54	AXE554124	AXE654124		
	56	AXE556124	AXE656124		
1.0mm	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.

# 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) 300°C within 5 sec. 350°C within 3 sec.	Infrared reflow soldering 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. −55.0°C, 30 minutes 2. ~, Max. 5 minutes 3. 85.0°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

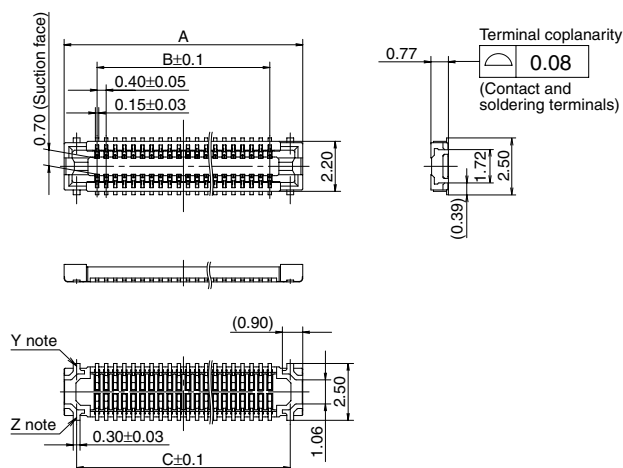
Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have 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

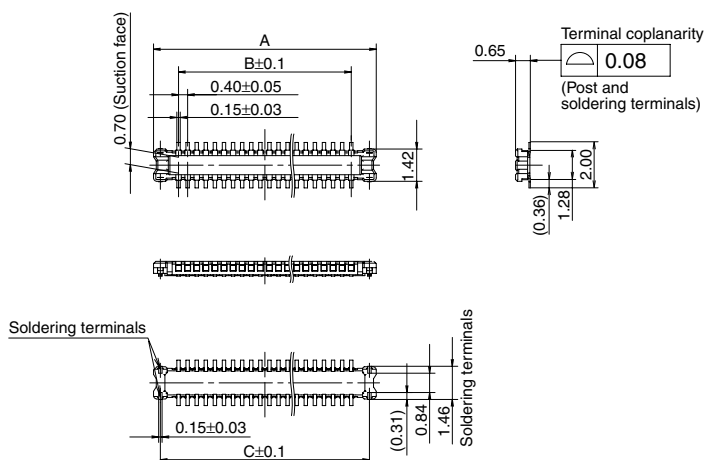
Note: Since the soldering terminals has a single-piece construction, sections Y and Z are electrically connected.

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**

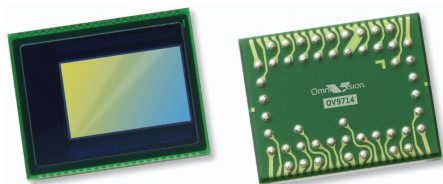


General tolerance: ±0.2

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





# OV9714 720p product brief



## Native High Definition OV9714 CameraChip™ With Improved Dynamic Range and 720p/60 Video



available in  
a lead-free  
package

The 1/4-inch OV9714 is a native high-definition (HD) image sensor capable of capturing high quality 720p video at 60 frames per second (fps) or cropped VGA at 120 fps. Built on an enhanced OmniPixel3-HS™ pixel, the OV9714 combines excellent low-light performance of 3300 mV/lux-sec and high dynamic range (HDR) with fast frame rates, making it ideally suited for entertainment, notebook, telepresence and high-end security applications.

The sensor's new and improved OmniPixel3-HS pixel architecture offers better low-light sensitivity, signal to noise ratio (SNR) performance and a 5 dB improvement in dynamic range compared to the previous generation. The OV9714's 12-bit RGB RAW output capability

provides optimized HDR, while the embedded sequential line- or frame-based HDR features allow higher dynamic range for high-contrast scenes often encountered indoors.

The OV9714's fast frame rate minimizes latency delay, resulting in quick response time for interactive gaming and real-time communication applications. Additionally, the sensor offers frame synchronization functionality for use in 3D (stereo) camera systems.

The sensor comes with a standard 2-lane MIPI interface and fits into an 8 x 6 x 4.5 mm module size.

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

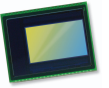
## Applications

- PC Multimedia
- Tablets
- Security
- Entertainment
- Cellular and Mobile Phones
- Games

## Product Features

- automatic black level calibration (ABLC)
- programmable controls for frame rate, mirror and flip, cropping and windowing
- image quality controls: lens correction and defective pixel canceling
- supports output formats: 8/10/12-bit RAW RGB (MIPI/LVDS)
- supports horizontal and vertical sub-sampling
- supports images sizes: 1280x800, 640x400, 320x200, and 160x100
- fast mode switching
- support 2x2 binning
- standard serial SCCB interface
- two-lane MIPI/LVDS serial output interface
- embedded 256 bits one-time programmable (OTP) memory for part identification, etc.
- on-chip phase lock loop (PLL)
- programmable I/O drive capability
- built-in 1.5V regulator for core
- support alternate frame HDR/line HDR

# OV9714



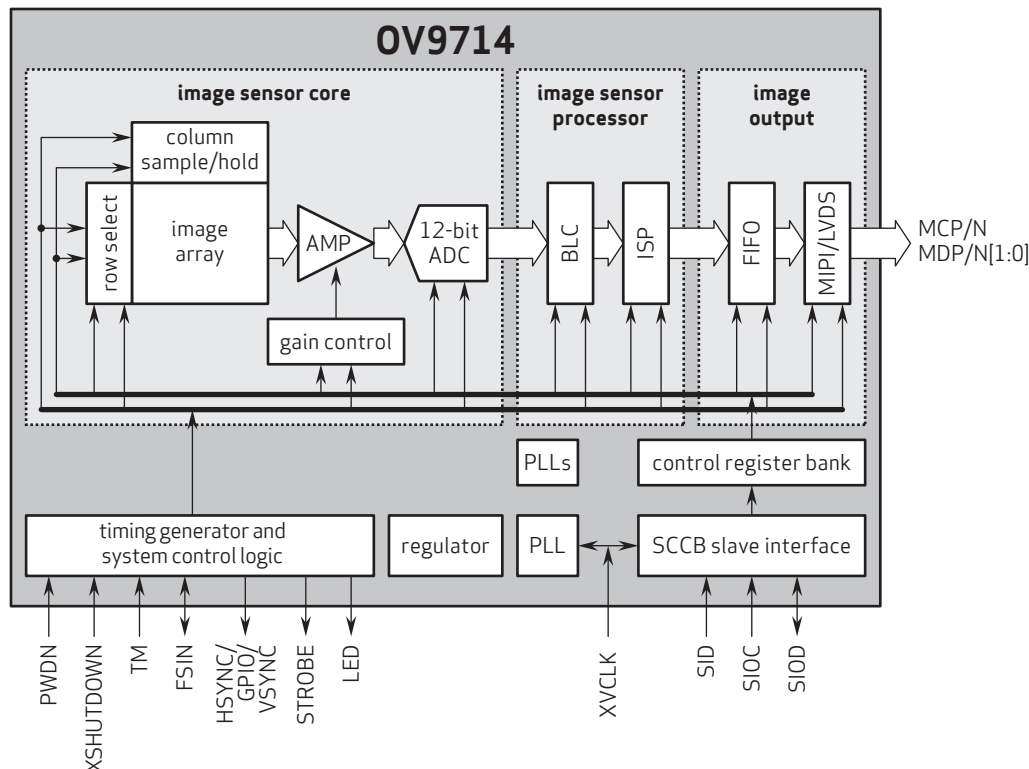
## Ordering Information

- **OV9714-A49A**  
(color, lead-free, 49-pin CSP3)

## Product Specifications

- **active array size:** 1296 x 812
- **power supply:**
  - core: 1.5 VDC  $\pm 5\%$
  - analog: 2.6 - 3.0V
  - I/O: 1.7 - 3.0V
- **power requirements:**
  - active: 95 mA
  - standby: 30  $\mu$ A
  - xshutdown: 5  $\mu$ A
- **temperature range:**
  - operating: -30°C to 85°C junction temperature
  - stable image: 0°C to 50°C junction temperature
- **output formats:** 12-bit RGB RAW
- **lens size:** 1/4"
- **lens chief ray angle:** 28.7° non-linear
- **input clock frequency:** 6 - 27 MHz
- **max S/N ratio:** 39 dB
- **dynamic range:** 73 dB @ 8x gain
- **maximum image transfer rate:**
  - 1280x800: 60 fps
  - 640x400: 120 fps
  - 320x200: 240 fps
- **sensitivity:** 3300 mV/lux-sec
- **scan mode:** progressive
- **maximum exposure interval:** 800 x  $t_{row}$
- **pixel size:** 3.0  $\mu$ m x 3.0  $\mu$ m
- **dark current:** 2.3 mV/s @ 50°C junction temperature
- **image area:** 3936  $\mu$ m x 2460  $\mu$ m
- **package dimensions:** 6110  $\mu$ m x 4930  $\mu$ m

## Functional Block Diagram



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**OmniVision**





## 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





## Camera Inspection Standard

Inspection Item		Inspection Method	Standard of Inspection
Category	Item		
Appearance	FPC/ PCB	Color	Major Difference is Not Allowed.
		Be Torn/Chopped	Copper Crack Exposure is Not Allowed.
		Marking	Clear, Recognizable (Within 30cm Distance)
	Holder	Scratches	The Inside Crack Exposure is Not Allowed
		Gap	Meet the Height Standard
		Screw	Make Sure Screws Are Presented (If Any)
		Damage	The Inside Crack Exposure is Not Allowed
	Lens	Scratch	No Effect On Resolution Standard
		Contamination	No Effect On Resolution Standard
		Oil Film	No Effect On Resolution Standard
		Cover Tape	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



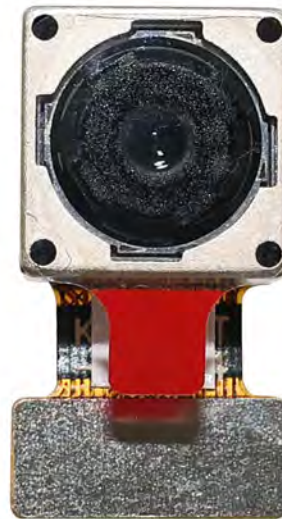


## HAMPO Package Solutions

Hampo Camera Module



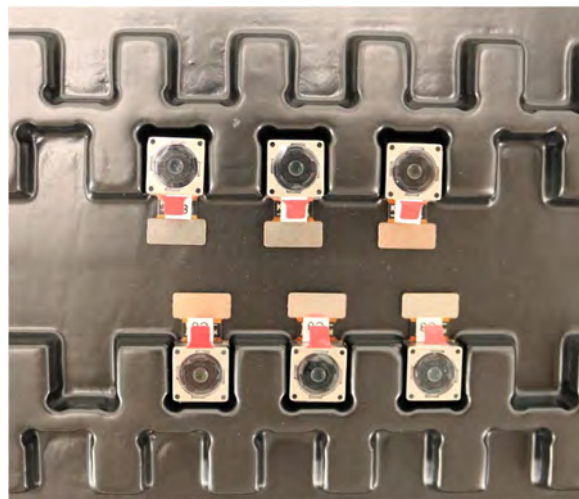
Complete with Lens Protection Film



Tray with Grid and Space



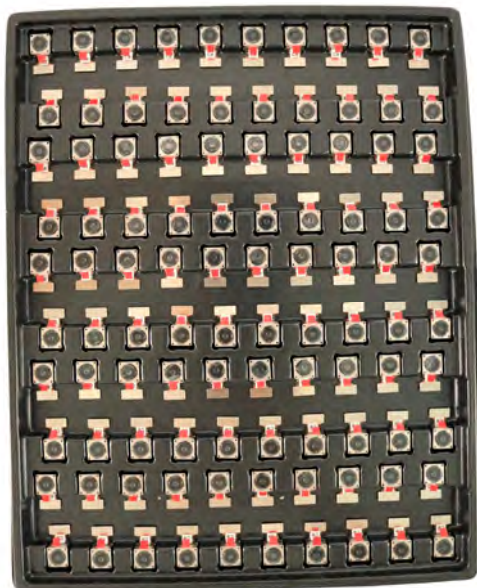
Place Cameras on the Tray



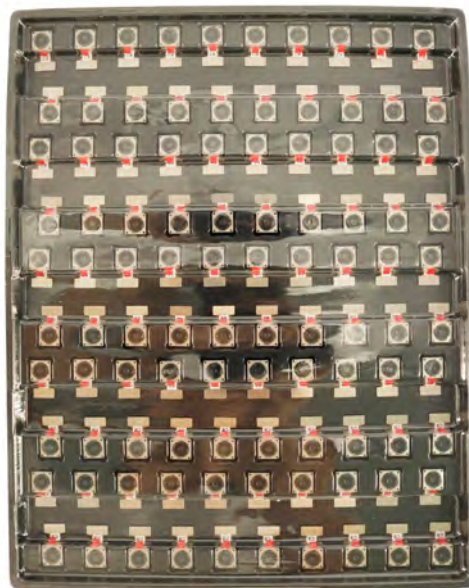


## Camera Modules Package Solution

Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag



Vacuum the Anti-Static Bag







## Camera Modules Package Solution

### Sealed Vacuum Anti-Static Bag with Labels

1. Model and Description 2. Quantity 3. Manufacturing Date Code 4. Caution







## Large Order Package Solution

Place Foam Sheets Between Tray Bags



Foam Sheets are Larger Than Trays



Place Foam Sheets and Trays into Box



Foam Sheets are Tightly Fitting in Box



Seal the Carbon Box



Label the Carbon Shipping Box





## Small Order Package Solution

Place Foam Sheets and Trays into Box



Foam Sheets are Nicely Fitting in Box



Cameras Packaged in Small Box



Labels on Small Box



Place Small Boxes into Carbon Box



Label the Carbon Shipping Box





## Sample Order and Connector Package Solution

Place Camera Sample into Anti-Static Bag



Place Connectors into Anti-Static Bag



Label the Sample Bags



Place Connectors into Reel



Place Samples into the Carbon Box



Place Connectors into the Carbon Box







## Company HAMPO

Dongguan Hampo Electronic Technology Co., Ltd. was established in 2015, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. Hampo is occupying 150,000 square feet automated plants with 500 employees of annual throughput 180,000,000 units cameras.

Hampo 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. Hampo 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

Hampo provides the following limited warranty if you purchased the Product(s) directly from Hampo company or from Hampo's website, [www.hampotech.com](http://www.hampotech.com). Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. Hampo 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, Hampo 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 Hampo is solely limited to repair and/or replacement on the terms set forth above. Hampo is not reliable or responsible for any subsequent events.







## Hampo Strength

### Powerful Factory



### Professional Service



### Promised Delivery

