



HAMPO-KM1-OV9712-1D V6.0
1MP OmniVision OV9712-1D DVP Parallel Interface
Fixed Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	HAMPO-KM1-OV9712-1D V6.0
Resolution	1MP
Image Sensor	OV9712-1D
Sensor Type	1/4"
Pixel Size	3.0 um x 3.0 um
EFL	2.33
F.NO	2.80
Pixel	1280 x 800
View Angle	120.0°(DFOV) 99.0°(HFOV) 55.0°(VFOV)
Lens Dimensions	10.40 x 10.40 x 12.80 mm
Module Size	100.00 x 10.40 mm
Module Type	Fixed Focus
Interface	DVP Parallel
Auto Focus VCM Driver IC	None
Lens Model	HAMPO-LENS-TRC-4021B1
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +70°C
Mating Connector	AXT524124



HAMPO-KM1-OV9712-1D V6.0
1MP OmniVision OV9712-1D DVP Parallel Interface
Fixed Focus Camera Module



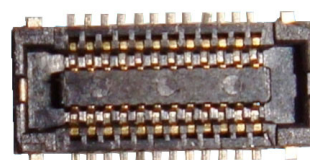
Top View



Side View



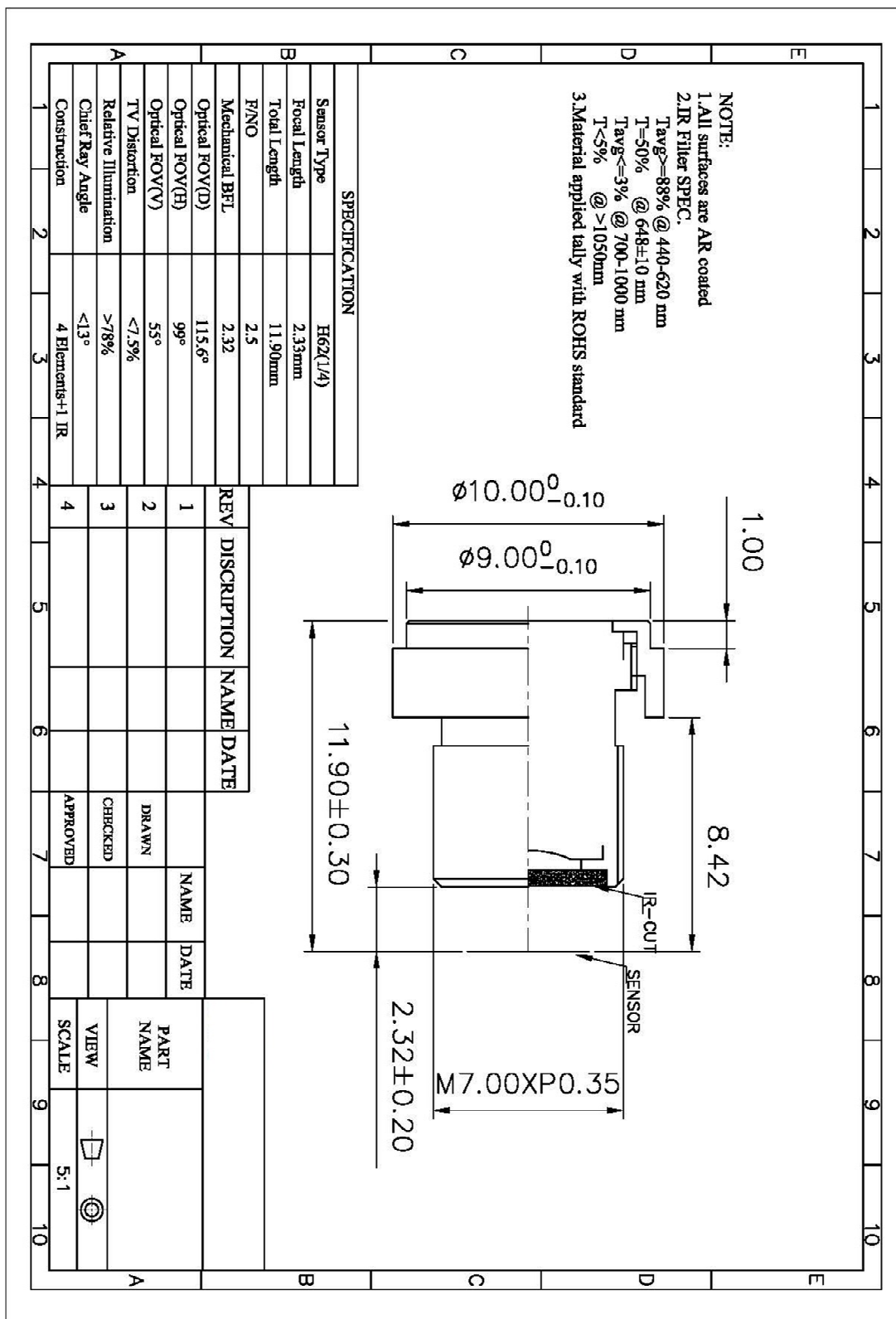
Bottom View



Mating Connector



HAMPO-LENS-TRC-4021B1





Socket



Header

Compliance with RoHS Directive

NARROW-PITCH, THIN AND SLIM CONNECTOR FOR BOARD-TO-FPC CONNECTION

NARROW PITCH (0.4 mm) CONNECTORS F4S SERIES

FEATURES

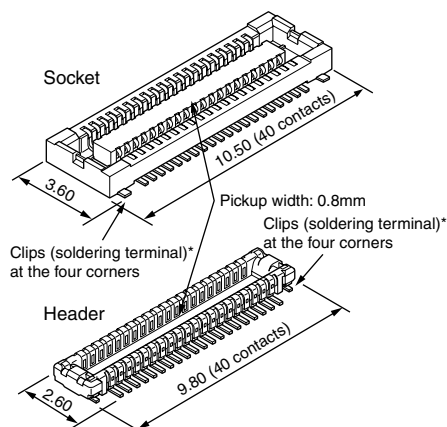
1. Space-saving (3.6 mm widthwise)

The required space is smaller than our F4 series (40-contact type):

Socket — 27% smaller,

Header — 38% smaller

The small size contributes to the miniaturization of target equipment.



* Clips for preventing the solder joints from being removed

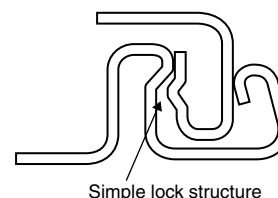
2. Highly reliable

TOUGH CONTACT has strong resistance to adverse environments.

(See Page 6 for details of the structure)

Note: If extra resistance to shock caused by dropping is required, we recommend using our previous F4 Series.

3. The simple lock structure gives tactile feedback that ensures a superior mating/unmating operation feel.



Simple lock structure

4. Gull-wing type terminals

The gull-wing type terminals facilitate automatic mounting inspections.

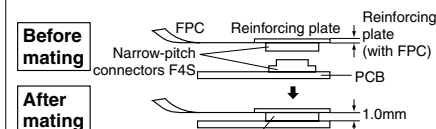
5. Connectors for inspection available

Connectors for inspection are available that are ideal for modular unit inspection and inspection in device assembly processes.

APPLICATIONS

Compact portable devices “Cellular phones, DVC, Digital cameras, etc”

Example of Board-to-FPC connections



The simple lock mechanism ensures that the connector clicks into position when it is inserted for reliable single-action insertion on the PCB.

ORDERING INFORMATION

AXT 4

5: Narrow Pitch Connector F4S (0.4 mm pitch) Socket

6: Narrow Pitch Connector F4S (0.4 mm pitch) Header

Number of contacts (2 digits)

Mated height

<Socket>

1: For mated height 1.0 mm

2: For mated height 1.2 mm

<Header>

1: For mated height 1.0 mm

2: For mated height 1.2 mm

Functions

<Socket, Header>

2: Without positioning bosses

Surface treatment (Contact portion / Terminal portion)

<Socket>

4: Base: Ni plating Surface: Au plating (for Ni barrier available)

<Header>

4: Base: Ni plating Surface: Au plating

Note: Please note that models with a mated height of 1.0 mm (7th digit of part number is “1”) and 1.2 mm (7th digit of part number is “2”) are not compatible.

AXT5, 6

PRODUCT TYPES TOUGH CONTACT

Mated height	Number of contacts	Part number		Packing	
		Socket	Header	Inner carton	Outer carton
1.0mm	10	AXT510124	AXT610124	3,000 pieces	6,000 pieces
	12	AXT512124	AXT612124		
	14	AXT514124	AXT614124		
	16	AXT516124	AXT616124		
	18	AXT518124	AXT618124		
	20	AXT520124	AXT620124		
	22	AXT522124	AXT622124		
	24	AXT524124	AXT624124		
	26	AXT526124	AXT626124		
	28	AXT528124	AXT628124		
	30	AXT530124	AXT630124		
	32	AXT532124	AXT632124		
	34	AXT534124	AXT634124		
	36	AXT536124	AXT636124		
	38	AXT538124	AXT638124		
	40	AXT540124	AXT640124		
	42	AXT542124	AXT642124		
	44	AXT544124	AXT644124		
	46	AXT546124	AXT646124		
	48	AXT548124	AXT648124		
	50	AXT550124	AXT650124		
	54	AXT554124	AXT654124		
	60	AXT560124	AXT660124		
	64	AXT564124	AXT664124		
	70	AXT570124	AXT670124		
	80	AXT580124	AXT680124		
1.2mm	10	AXT510224	AXT610224		
	30	AXT530224	AXT630224		
	40	AXT540224	AXT640224		
	50	AXT550224	AXT650224		
	80	AXT580224	AXT680224		

- Notes: 1. Order unit: For mass production: in 1-inner-box (1-reel) units
 Samples for mounting check: in 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 contacts other than those listed above.

SPECIFICATIONS

1. Characteristics

	Item	Specifications	Conditions
Electrical characteristics	Rated current	0.3A/contact (Max. 5 A at total 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. 0.981N/contacts × contacts (initial)	
	Composite removal force	Min. 0.165N/contacts × contacts	
	Contact holding force (Socket contact)	Min. 0.49N/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 $\frac{3}{5}$ °C, 30 minutes 2. ~, Max. 5 minutes 3. 85 $\frac{3}{5}$ °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 ₂ 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	50 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		20-contact type: Socket: 0.03 g Header: 0.01 g	

2. Material and surface treatment

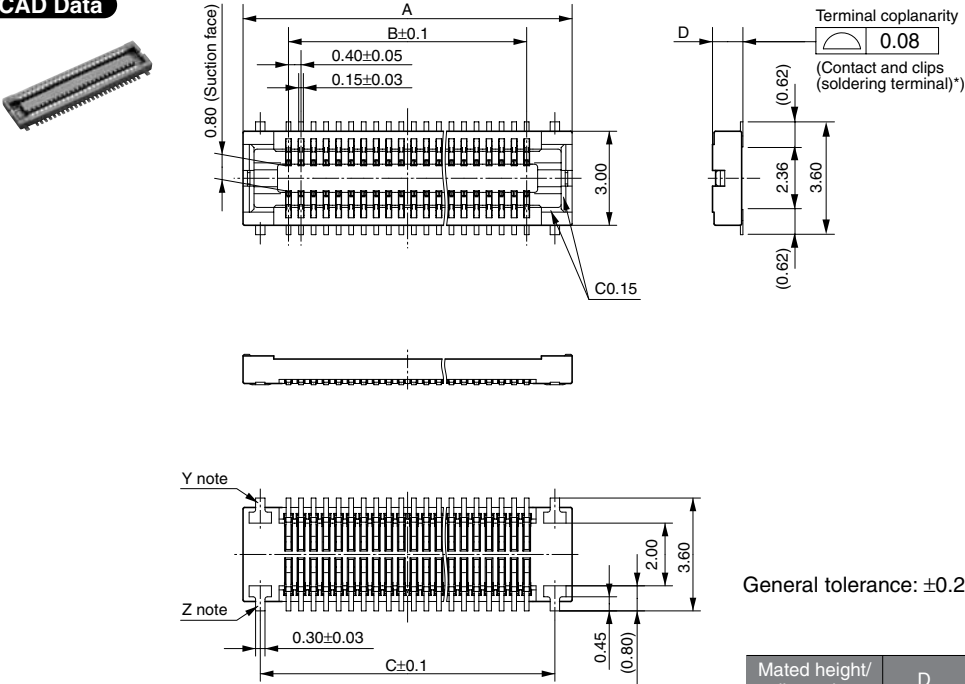
Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have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

AXT5, 6

DIMENSIONS (Unit: mm) The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

Socket (Mated height: 1.0 mm and 1.2 mm)

CAD Data



General tolerance: ±0.2

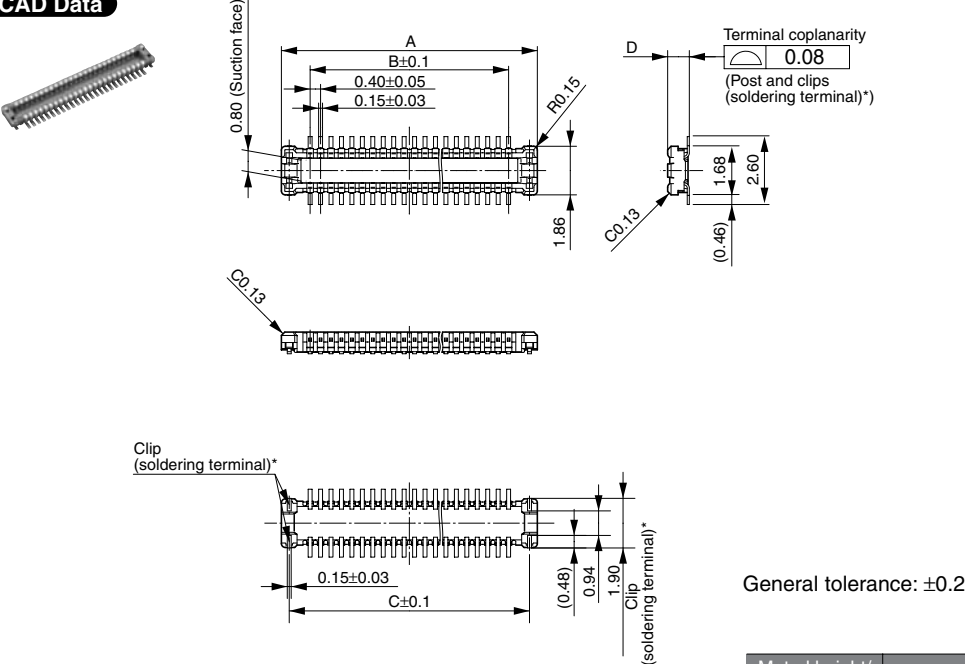
Mated height/ dimension	D
1.0mm	0.97
1.2mm	1.17

Dimension table (mm)

Number of contacts/ 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
42	10.9	8.0	9.8
44	11.3	8.4	10.2
46	11.7	8.8	10.6
48	12.1	9.2	11.0
50	12.5	9.6	11.4
54	13.3	10.4	12.2
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: 1.0 mm and 1.2 mm)

CAD Data



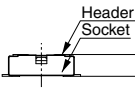
General tolerance: ±0.2

Mated height/ dimension	D
1.0mm	0.83
1.2mm	1.01

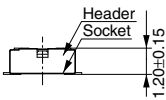
Dimension table (mm)

Number of contacts/ 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
42	10.2	8.0	9.6
44	10.6	8.4	10.0
46	11.0	8.8	10.4
48	11.4	9.2	10.8
50	11.8	9.6	11.2
54	12.6	10.4	12.0
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

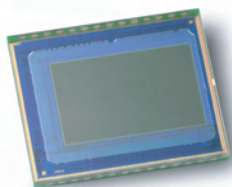
• **Socket and Header are mated**



Mated height: 1.0 mm



Mated height: 1.2 mm



OV9712-1D ^{720p} HD video image sensor product brief



The OV9712-1D Offers Best-in-Class 720p HD Video Performance at 30 Frames Per Second (fps)



available in
a lead-free
package

Enabled by OmniVision's proprietary OmniPixel3-HS™ high sensitivity pixel technology with $3 \times 3 \mu\text{m}$ pixel and low-light sensitivity of 3.7 V/lux-sec, the OV9712-1D provides vivid imaging in virtually every lighting condition from bright daylight to nearly complete darkness. OV9712-1D has been re-optimized to improve QE, sensitivity and SNR.

The 1/4-inch OV9712-1D sensor provides full-frame, sub-sampled or windowed 8-bit/10-bit images in raw RGB format via the digital video port and with complete user control over image quality, formatting and output data transfer. The OV9712-1D offers a chief ray angle (CRA) of 25°.

The OV9712-1D incorporates advanced image processing functions, including exposure control, gain control, white balance, lens correction and defective pixel correction, programmable through the serial camera control bus (SCCB) interface. For storage purposes, it includes one-time programmable (OTP) memory.

The OV9712-1D is available in a CSP package and is capable of operating within a temperature range of -30°C to +70°C.

Find out more at www.ovt.com.



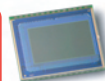
Applications

- Security
- Car DVR
- Notebooks
- Telepresence
- Mobile Phones
- Digital Still Cameras
- Webcams
- Medical
- Entertainment

Product Features

- high sensitivity for low-light operation
- ultra low power and low cost
- automatic image control functions:
 - automatic exposure control (AEC)
 - automatic gain control (AGC)
 - automatic white balance (AWB)
 - automatic band filter (ABF)
 - automatic black level calibration (ABLC)
- programmable controls:
 - frame rate
 - AEC/AGC 16-zone size/position/weight control
 - mirror
 - flip
 - windowing
- image quality controls:
 - lens correction
 - defective pixel canceling
- output support for raw RGB
- supports image sizes:
 - WXGA (1280x800)
 - 640 x 400
- support for horizontal and vertical sub-sampling
- support for black sun cancellation
- standard serial camera control bus (SCCB) interface
- digital video port (DVP) parallel output interface
- embedded one-time programmable (OTP) memory
- on-chip phase lock loop (PLL)
- built-in 1.5V regulator for core

OV9712-1D



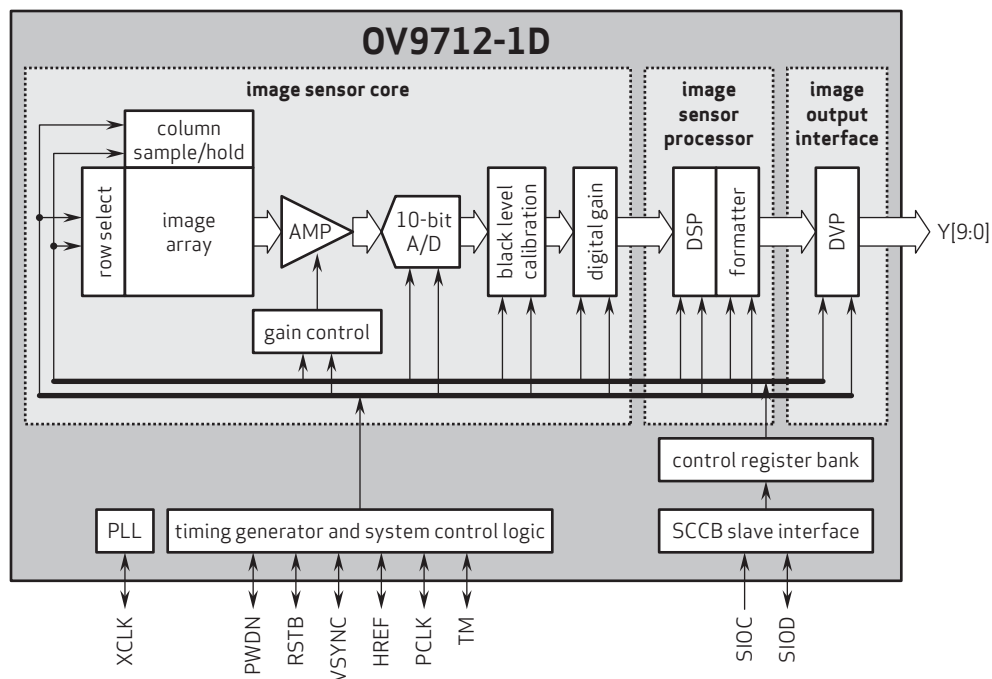
Ordering Information

- **OV09712-V28A-1D**
(color, lead-free, 28-pin CSP)
- **OV09712-G04A-1D**
(color, chip probing, 200 μ m backgrinding, reconstructed wafer)
- **OV09211-V28A**
(B&W, lead-free, 28-pin CSP)
- **OV09211-G04A**
(B&W, chip probing, 200 μ m backgrinding, reconstructed wafer)

Product Specifications

- **active array size:** 1280 x 800
- **power supply:**
 - core: 1.5 VDC \pm 5% (built-in regulator)
 - analog: 3.0 - 3.6V
 - I/O: 1.7 - 3.6V
- **power requirements:**
 - active: 110 mW
 - standby: 50 μ A
- **temperature range:**
 - operating: -30°C to +70°C junction temperature
 - stable image: 0°C to +50°C junction temperature
- **output formats:** 10-bit RAW RGB data
- **lens size:** 1/4"
- **lens chief ray angle:** 25° non-linear
- **input clock frequency:** 6 - 27 MHz
- **scan mode:** progressive
- **maximum image transfer rate:**
 - WXGA (1280x800): 30 fps
 - 640 x 400: 60 fps
- **sensitivity:** 3700 mV/Lux-sec
- **max S/N ratio:** 40 dB
- **dynamic range:** 69 dB @ 8x gain
- **maximum exposure interval:** 826 x t_{row}
- **pixel size:** 3 μ m x 3 μ m
- **image area:** 3888 μ m x 2430 μ m
- **package/die dimensions:**
 - CSP: 5415 μ m x 4415 μ m
 - COB: 5430 μ m x 4430 μ m

Functional Block Diagram



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USA

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www.ovt.com

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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

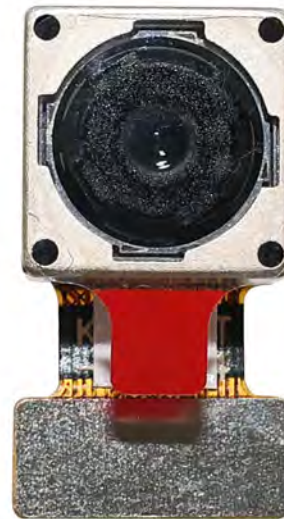


HAMPO Package Solutions

Hampo Camera Module



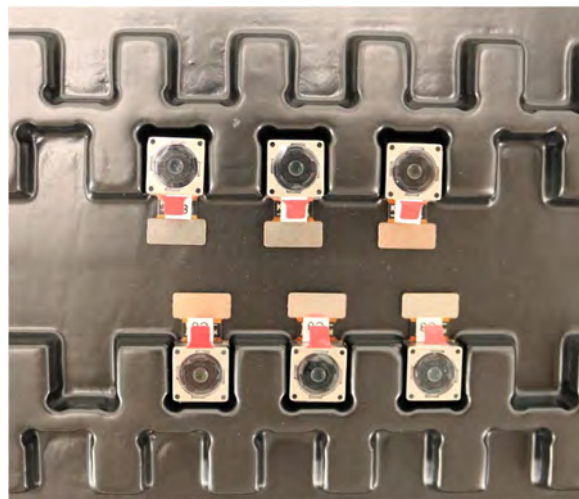
Complete with Lens Protection Film



Tray with Grid and Space



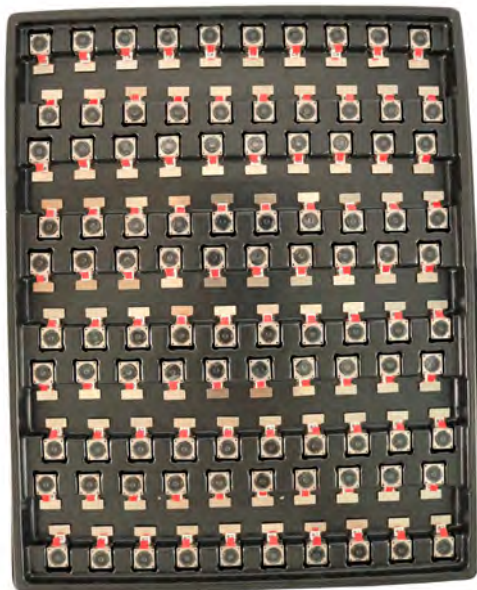
Place Cameras on the Tray



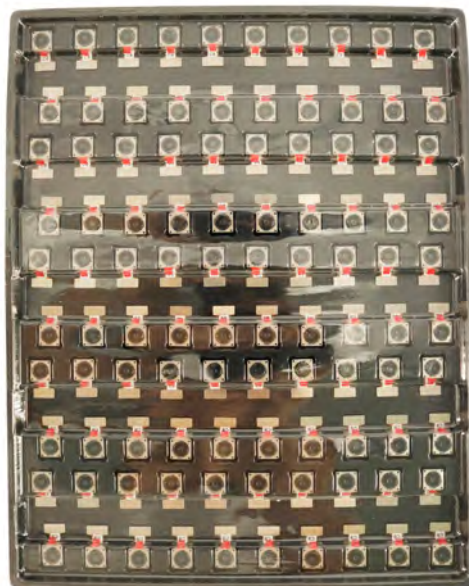


Camera Modules Package Solution

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





An open cardboard box is shown from a top-down perspective. Inside the box, there is a stack of several white, flat, rectangular objects, which appear to be solar panels or similar thin electronic components. The objects are stacked neatly, and their edges are visible. The box is made of brown cardboard, and the top flaps are open, revealing the contents. The background is a plain, light-colored surface.

An open, empty cardboard box with a white interior lining. The box is shown from a top-down perspective, with the lid flaps open and folded outwards. The interior is lined with a white material, possibly foam or paper, which is visible as a flat surface. The box is set against a plain white background.

HAMPO

HAMPO Model No.
HAMPO M6A12 (HMSR-V18)
HSRM, SMP Interface
Auto Focus, 70-8 Degree

DATE IN CHINA

Tray 1 of 1
300 PIECES
Production Date
20 August 2022
Date Code
2234 (Week 34, 2022)

3M

SCOTCH-BOND Multipurpose Plus
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive

3M

SCOTCH-BOND Multipurpose Plus
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive
 100% Solvent-Free Adhesive



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. 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

