



HAMPO-E7MA-OV5645 V2.1

5MP OmniVision OV5645 MIPI Interface Auto Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	HAMPO-E7MA-OV5645 V2.1
Resolution	5MP
Image Sensor	OV5645
Sensor Type	1/4"
Pixel Size	1.4 um x 1.4 um
EFL	3.29 mm
F.NO	2.80
Pixel	2592 x 1944
View Angle	68.7°(DFOV) 58.1°(HFOV) 45.0°(VFOV)
Lens Dimensions	8.50 x 8.50 x 5.17 mm
Module Size	100.00 x 8.50 mm
Module Type	Auto Focus
Interface	MIPI
Auto Focus VCM Driver IC	Embedded
Lens Model	HAMPO-LENS-M5101
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +70°C
Mating Connector	AXK724147G



HAMPO-E7MA-OV5645 V2.1

5MP OmniVision OV5645 MIPI Interface Auto Focus Camera Module



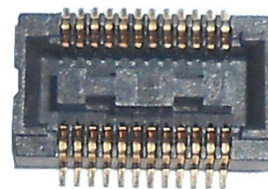
Top View



Side View



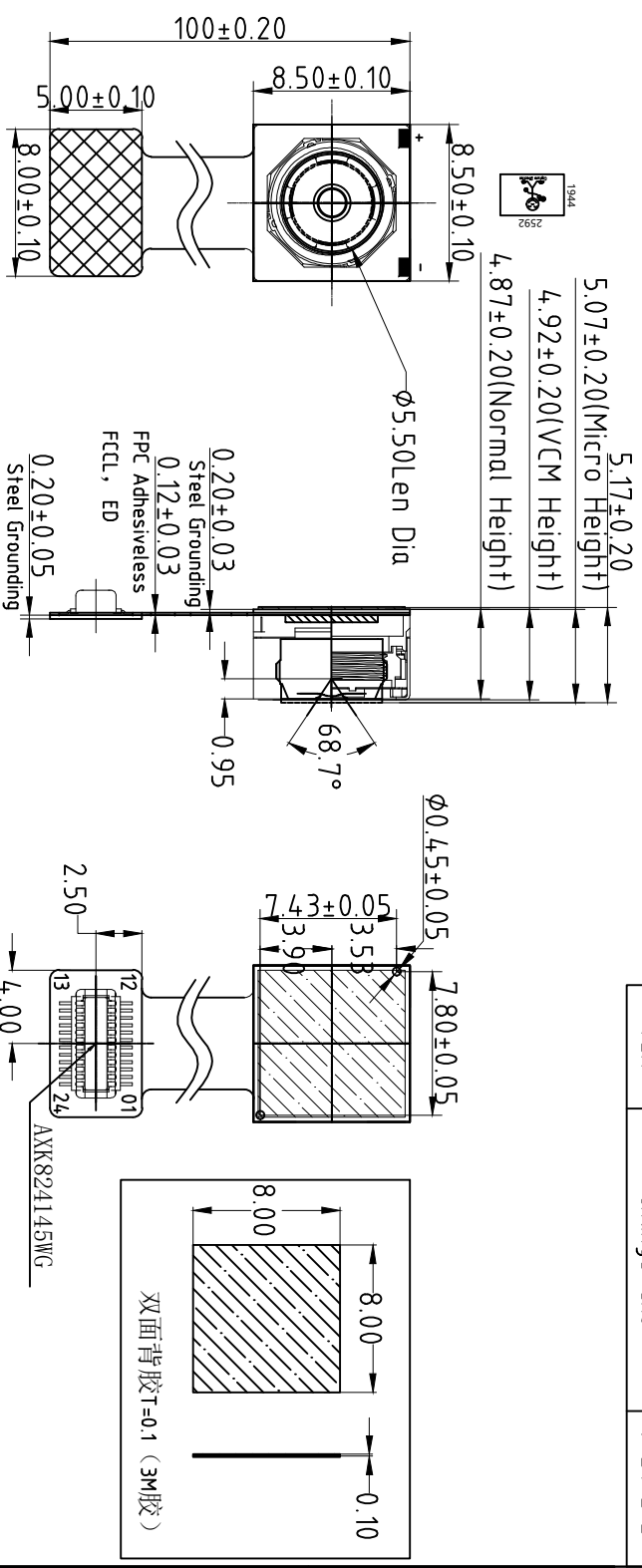
Bottom View



Mating Connector

D		E	
Version	Information	Date	
V1.0	First Version	10-29-2018	
V2.1	Change lens	9-24-2020	

A		B	C	D
RoHS				
PIN	SIGNAL			
1	DATAP1			
2	IOVDD1.8V			
3	DVDD1.5V			
4	NC			
5	PWDN			
6	NC			
7	RESET			
8	SCL			
9	AVDD2.8V			
10	SDA			
11	AGND			
12	NC			
13	GND			
14	AFVDD2.8V			
15	DATAN0			
16	NC			
17	DATAP0			
18	NC			
19	CLKN			
20	NC			
21	CLKP			
22	GND			
23	DATAN1			
24	MCLK			



TOP VIEW

SIDE VIEW

BOTTOM VIEW

Parameter:

1、Sensor specification:

Image Sensor: OV5645
Pixel: 1.4umx1.4um
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:	E7MA-OV5645 V2.1	
Checked By	Aouly_Yan	Projection Type:	Unit: mm	Material: -----
		Scale: 1:1	Sheet: 1 of 1	Version: 1/0

HAMPO-LENS-M5101

SPECIFICATION	
1. SENSOR SIZE	1/4" (5M CSP)
2. MAX IMAGE CIRCLE	$\phi 4.90\text{mm}$
3. TOTAL TRACK	$4.18 \pm 0.1\text{mm}$
4. BFL	3.29mm
5. OPTICAL HPL	1.43mm
6. MECHANICAL HPL	0.85mm
7. F/NO	$2.8 \pm 5\%$
8. VIEW OF FIELD	VERTICAL OF HORIZONTAL DIAGONAL
	45.0° ($\gamma=1.36$) 58.1° ($\gamma=1.814$) 68.7° ($\gamma=2.288$)
9. OPTICAL DISTORTION	$< 1.0\%$
10. TV DISTORTION	$< 1.0\%$
11. RELATIVE ILLUMINATION	$> 42.3\%$
12. CONSTRUCTION	4P+IR FILTER
13. CHIEF RAY ANGLE	$< 25^\circ$
14. CUT FREQUENCY AT 50%	$650 \pm 10\text{nm}$
15. THREAD	M6.0X0.35P
16. IMAGE QUALITY	AXIS 0.7Y 200lp/mm
17. APPEARANCE QUALITY (Scratch/Dig)	CENTER 20/10 EDGE 40/20

MODIFY CONTENT	NAME	DATE

NOTE:

- 镜头表面不可有油污、灰尘、毛丝等异物。
- 镜头配VCM锁附高度为 $4.7 \pm 0.1\text{mm}$, 扭力为 $20-60\text{gf}\cdot\text{cm}$ 。
- 镜头承受推力为 $\geq 2.0\text{kg}$ 。
- 镜头品质参数需符合图中要求。

The technical drawing shows two views of a camera lens. The top view is a circular cross-section with a central optical axis. It features four mounting tabs around the perimeter, each labeled with a radius of R0.15. The outer diameter is indicated as 4-4.5°. The inner bore has a diameter of Ø4.7. The bottom view is a longitudinal section showing the internal optical elements and the mechanical housing. Key dimensions include a total length of 4.18 ± 0.10 mm, a rear flange thickness of 0.85 mm, and a central bore diameter of Ø1.15 with tolerances of +0.00/-0.02 mm. The drawing also indicates a maximum angle of 73° and a specific angle of 68.7°(D). A thread specification of M6.0X0.35P is shown at the base.

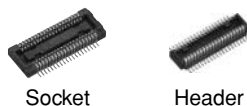
Panasonic
ideas for life

NARROW-PITCH CONNECTORS FOR BOARD-TO-BOARD AND BOARD-TO-FPC CONNECTION

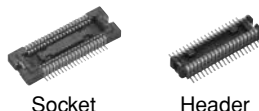
NARROW PITCH (0.4mm) CONNECTORS P4 SERIES



• Without retention fitting



• With retention fitting

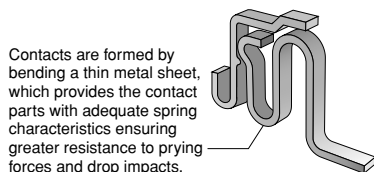


FEATURES

1. 0.4 mm pitch and support for mated heights of up to 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, and 4.0 mm.

2. Strong resistance to adverse environments! Utilizes **TOUGH CONTACT** construction for high contact reliability.

1) Contacts are highly resistant to shock caused by dropping and employ our original bellows contact construction.

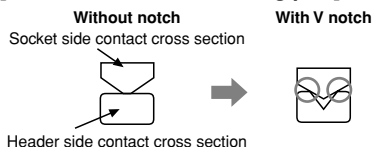


2) V notch construction used for excellent resistance against foreign matters.

● What is V notch construction?

By using the edge for the contacting part and increasing contact pressure per unit area, the effectiveness in removing flux and contaminants is increased compared to its predecessor. This is also effective in preventing the trapping of contaminants.

[Cross section of contacting part]

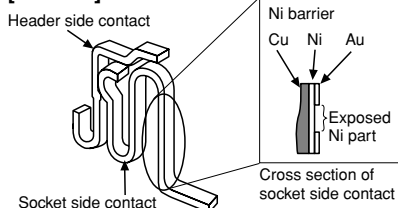


3) Use of Ni barrier construction is standard. Highly effective against solder creeping.

● What is Ni barrier construction?

By providing an exposed nickel part on the gold (Au) plated contact, solder creeping is prevented despite the ultra low profile.

[Contact]

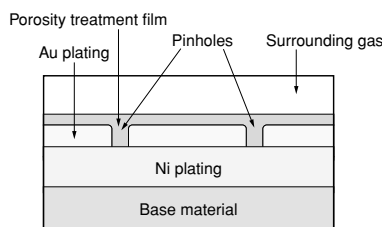


Note: Construction makes solder creeping difficult because header side is formed at the same time.

4) Porosity treatment applied for improved resistance against corrosion.

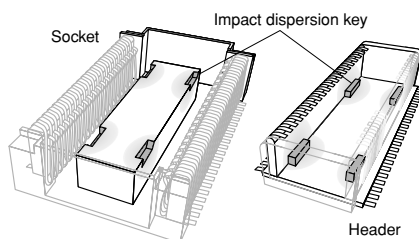
What is porosity treatment?

This treatment consists of coating the surface with a very thin film to seal pinholes in the gold plating. This porosity treatment technology ensures the same contact reliability for thin gold plating as that of thick gold plating.



- Improvement in insertion/removal durability
- Improvement in resistance to corrosion
- Improvement in contact reliability for digital signals

3. It is constructed with impact dispersion keys inside the body to disperse shocks when dropped.



A high level of shock resistance is ensured by dispersing impact over the four locations where the socket indentations and header protrusions are mated together.

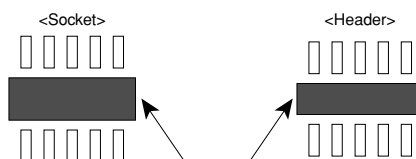
Note: The following numbers of contacts are not supported due to suction surface factors.

• Without retention fitting: 18 contacts or less

• With retention fitting: 22 contacts or less

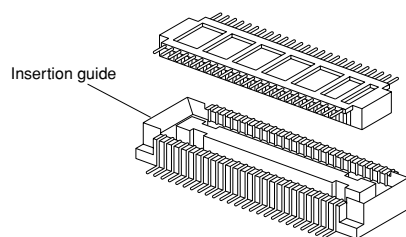
4. Construction makes designing devices easier.

1) The lower connector bottom surface construction prevents contact and shorts between the PCB and metal terminals. This enables freedom in pattern wiring, helping to make PCB's smaller.



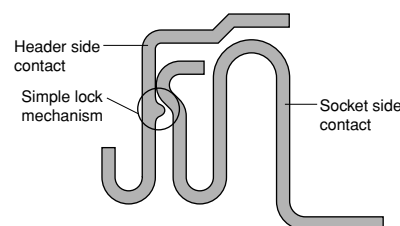
Connector bottom: Create any thru-hole and pattern wiring.

2) Guides are provided to take up any position shift and facilitate insertion.



3) The connector has a simple lock mechanism.

Superior mated operation with click feel to indicate that mated is complete.



5. Design makes efficient mounting.

Features a terminal flatness of 0.08 mm, construction resistant to creeping flux, and design that facilitates visual inspection of the soldered part.

6. Compliance with RoHS Directive

Environmentally friendly, the connectors comply with Europe's RoHS Directive. Cadmium, lead, mercury, hexavalent chromium, PBB and PBDE are not used.

7. 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”

Ideal for Board-to-FPC connections

Before mating

After mating

FPC Reinforcing plate
Narrow-pitch connectors P4 PCB

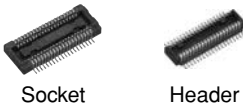
1.5mm

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

This enables the number of pins to be doubled while the size remains the same as that for existing FPC connectors. This, in turn, contributes to making products and equipment more compact.

TABLE OF PRODUCT TYPES

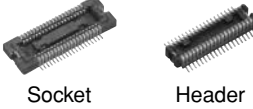
P4 (0.4 mm pitch): Without retention fitting



☆: Available for sale

Mated height		1.5mm	2.0mm	2.5mm	3.0mm	3.5mm	4.0mm
Number of contacts	14	☆	☆	☆			
	16	☆					
	20	☆	☆	☆			
	22	☆					
	24	☆	☆	☆			
	26	☆	☆				
	28	☆					
	30	☆	☆	☆			
	34	☆	☆				
	36	☆					
	40	☆	☆	☆			
	44	☆		☆			
	50	☆	☆	☆			
	54	☆					
	60	☆		☆			
	64	☆					
	70	☆	☆	☆			
	80	☆	☆				
	90	☆		☆			
	100	☆	☆	☆			

P4 (0.4 mm pitch): With retention fitting



☆: Available for sale

Mated height		1.5mm	2.0mm	2.5mm	3.0mm	3.5mm	4.0mm
Number of contacts	10	☆					
	12	☆					
	20			☆	☆	☆	
	22	☆					
	24		☆				
	28	☆					
	30	☆					
	32			☆			
	34	☆					☆
	40	☆		☆	☆		
	44	☆					
	46	☆					
	50	☆		☆	☆	☆	☆
	60	☆		☆	☆	☆	
	80	☆	☆	☆	☆	☆	☆
	90	☆		☆	☆		
	100	☆					

Note: Please contact us regarding numbers of contacts other than those given above.

AXK7, 8

ORDERING INFORMATION

	AXK	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7: Narrow Pitch Connector P4 (0.4 mm pitch) Socket								
8: Narrow Pitch Connector P4 (0.4 mm pitch) Header								
Number of contacts (2 digits)								
Mated height								
<Socket>								
1: For mated height 1.5 mm								
2: For mated height 2.0 mm								
3: For mated height 2.5 mm and 3.0 mm								
4: For mated height 3.5 mm								
5: For mated height 4.0 mm								
<Header>								
1: For mated height 1.5 mm, 2.0 mm and 2.5 mm								
2: For mated height 3.0 mm, 3.5 mm and 4.0 mm								
Functions								
1: With retention fitting, with positioning bosses								
2: With retention fitting, without positioning bosses								
3: Without retention fitting, with positioning bosses								
4: Without retention fitting, without positioning bosses								
Surface treatment (Contact portion / Terminal portion)								
<Socket>								
5: Ni plating on base, Au plating on surface								
7: Ni plating on base, Au plating on surface (for Ni barrier product available)								
<Header>								
5: Ni plating on base, Au plating on surface								
Other specifications								
<Header>								
Y: V notch type product								
W: V notch and post edge horseshoe bend type product		Note*						
Packing								
G: 3,000 pieces embossed tape and plastic reel × 2*								

Note:
The post edge horseshoe bend indicated by the "W" in the tenth digit of the header part number refers to a construction that makes it difficult for the header post edge to deform when the connector is inserted and removed at an angle.

* Only a socket of mated height 3.5 mm and 4.0 mm: 2,000 pieces embossed tape and plastic reel × 2.

PRODUCT TYPES

1. Without retention fitting **TOUGH CONTACT**

Mated height	Number of contacts	Part number			Packing	
		Socket	Header		Inner carton	Outer carton
		TOUGH CONTACT	TOUGH CONTACT	TOUGH CONTACT and Post edge horseshoe bend type (Recommendation)		
1.5 mm	14	AXK714147G	AXK814145YG	AXK814145WG	3,000 pieces	6,000 pieces
	16	AXK716147G	AXK816145YG	AXK816145WG		
	20	AXK720147G	AXK820145YG	AXK820145WG		
	22	AXK722147G	AXK822145YG	AXK822145WG		
	24	AXK724147G	AXK824145YG	AXK824145WG		
	26	AXK726147G	AXK826145YG	AXK826145WG		
	28	AXK728147G	AXK828145YG	AXK828145WG		
	30	AXK730147G	AXK830145YG	AXK830145WG		
	34	AXK734147G	AXK834145YG	AXK834145WG		
	36	AXK736147G	AXK836145YG	AXK836145WG		
	40	AXK740147G	AXK840145YG	AXK840145WG		
	44	AXK744147G	AXK844145YG	AXK844145WG		
	50	AXK750147G	AXK850145YG	AXK850145WG		
	54	AXK754147G	AXK854145YG	AXK854145WG		
	60	AXK760147G	AXK860145YG	AXK860145WG		
	64	AXK764147G	AXK864145YG	AXK864145WG		
	70	AXK770147G	AXK870145YG	AXK870145WG		
	80	AXK780147G	AXK880145YG	AXK880145WG		
	90	AXK790147G	AXK890145YG	AXK890145WG		
	100	AXK700147G	AXK800145YG	AXK800145WG		
2.0 mm	14	AXK714247G	AXK814145YG	AXK814145WG	3,000 pieces	6,000 pieces
	20	AXK720247G	AXK820145YG	AXK820145WG		
	24	AXK724247G	AXK824145YG	AXK824145WG		
	26	AXK726247G	AXK826145YG	AXK826145WG		
	30	AXK730247G	AXK830145YG	AXK830145WG		
	34	AXK734247G	AXK834145YG	AXK834145WG		
	40	AXK740247G	AXK840145YG	AXK840145WG		
	50	AXK750247G	AXK850145YG	AXK850145WG		
	70	AXK770247G	AXK870145YG	AXK870145WG		
	80	AXK780247G	AXK880145YG	AXK880145WG		
2.5 mm	14	AXK714347G	AXK814145YG	AXK814145WG	3,000 pieces	6,000 pieces
	20	AXK720347G	AXK820145YG	AXK820145WG		
	24	AXK724347G	AXK824145YG	AXK824145WG		
	30	AXK730347G	AXK830145YG	AXK830145WG		
	40	AXK740347G	AXK840145YG	AXK840145WG		
	44	AXK744347G	AXK844145YG	AXK844145WG		
	50	AXK750347G	AXK850145YG	AXK850145WG		
	60	AXK760347G	AXK860145YG	AXK860145WG		
	70	AXK770347G	AXK870145YG	AXK870145WG		
	90	AXK790347G	AXK890145YG	AXK890145WG		
	100	AXK700347G	AXK800145YG	AXK800145WG		

Notes: 1. Regarding ordering units; During production: Please make orders in 1-reel units.

Samples for mounting confirmation: Available in units of 50 pieces. Please consult us. (See "Regarding sample orders to confirm proper mounting" on page 13.)

Samples: Small lot orders are possible.

2. The standard type comes without positioning bosses. Connectors with positioning bosses are available on-demand production. For this type of connector, 8th digit of the part number changes from 4 to 3. e.g. Mated height 1.5 mm and 20 contacts for socket without retention fitting: AXK720137G

3. The 10th digit "Y" in the header part number indicates the connector has V notch. (For details, please refer to page 36.)

"W" indicates a product with V notch and post edge horseshoe bend. ("Post edge horseshoe bend" refers to a construction that makes it difficult for the header post edge to deform when the connector is inserted and removed at an angle.)

"Products with V notch" and "products with V notch and post edge horseshoe bend" are mating compatible.

4. Connectors of different mated height (3.0 mm, 3.5 mm and 4.0 mm) and different number of contacts are available on-demand production only. Please contact us for more details.

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.	Detection current: 1mA
	Insulation resistance	Min. 1,000M Ω (initial)	Using 250V DC megger (applied for 1 min.)
	Contact resistance	Max. 70m Ω	Measured based on the HP4338B measurement method of JIS C 5402
Mechanical characteristics	Composite insertion force	Max. 0.981N {100gf}/contacts \times contacts (initial)	
	Composite removal force	Min. 0.0588N {6gf}/contacts \times contacts (Mated height 1.5 mm, without removal and retention fitting) Min. 0.118N {12gf}/contacts \times contacts (Mated height 1.5 mm, except without removal and retention fitting)	
	Post holding force	Min. 0.981N {100gf}/contacts	Measures the maximum load in the post axial direction until removal
Environmental characteristics	Ambient temperature	-55°C to +85°C	No freezing at low temperatures
	Soldering heat resistance	Max. peak temperature of 245°C	Infrared reflow soldering
		300°C within 5 sec. 350°C within 3 sec.	Soldering iron
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100M Ω , contact resistance max. 70m Ω	Sequence 1. -55 \pm 3°C, 30 minutes 2. ~, Max. 5 minutes 3. 85 \pm 3°C, 30 minutes 4. ~, Max. 5 minutes
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100M Ω , contact resistance max. 70m Ω	Bath temperature 40 \pm 2°C, humidity 90 to 95% R.H.
	Saltwater spray resistance (header and socket mated)	24 hours, insulation resistance min. 100M Ω , contact resistance max. 70m Ω	Bath temperature 35 \pm 2°C, saltwater concentration 5 \pm 1%
Lifetime characteristics	H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. 70m Ω	Bath temperature 40 \pm 2°C, gas concentration 3 \pm 1 ppm, humidity 75 to 80% R.H.
	Insertion and removal life	50 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		Mated height 1.5mm, 20 contacts; Socket: 0.04g Header: 0.02g	

2. Material and surface treatment

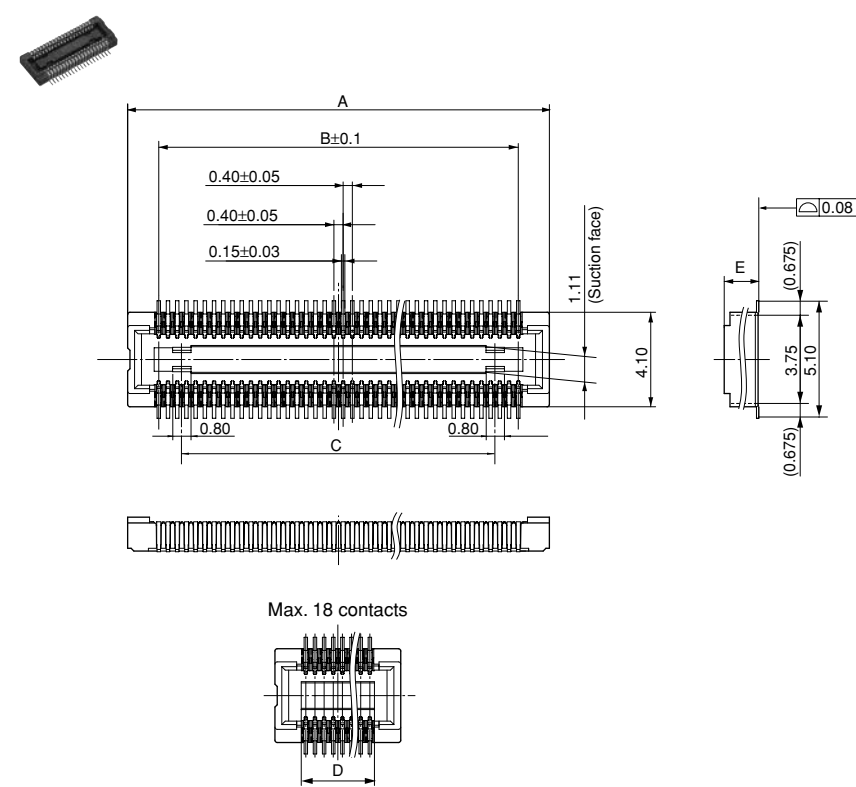
Part name	Material	Surface treatment
Molded portion	Heat-resistant resin (UL94V-0), Black	—
Contact and Post	Copper alloy	Contact portion: Ni plating on base, Au plating on surface Terminal portion: Ni plating on base, Au plating on surface (Except for thick of terminal) However, upper terminal of Ni barrier production: Exposed over Ni The area adjacent to the terminal of the sockets on models with Ni barrier is exposed to Ni on base.
Retention fitting portion	Copper alloy	Ni plating on base, Sn plating on surface (Except for front terminal)

AXK7, 8

DIMENSIONS (mm)

1. Without Retention Fitting

Socket (Mated height: 1.5 mm, 2.0 mm, and 2.5 mm)



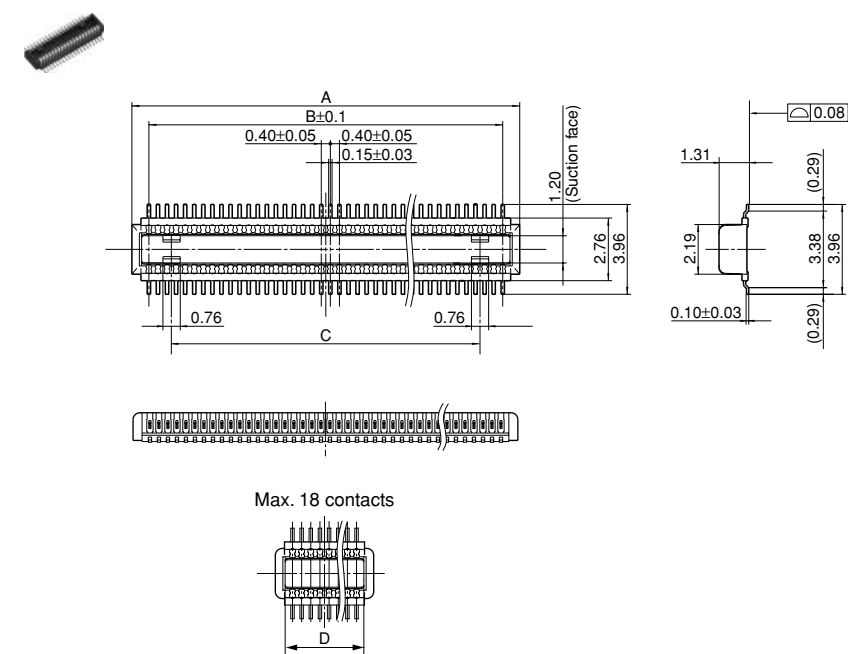
General tolerance: ±0.2

Dimension table (mm)

Number of contacts/ dimension	A	B	C	D
14	5.1	2.4	—	2.8
16	5.5	2.8	—	3.2
20	6.3	3.6	1.6	—
22	6.7	4.0	2.0	—
24	7.1	4.4	2.4	—
26	7.5	4.8	2.8	—
28	7.9	5.2	3.2	—
30	8.3	5.6	3.6	—
34	9.1	6.4	4.4	—
36	9.5	6.8	4.8	—
40	10.3	7.6	5.6	—
44	11.1	8.4	6.4	—
50	12.3	9.6	7.6	—
54	13.1	10.4	8.4	—
60	14.3	11.6	9.6	—
64	15.1	12.4	10.4	—
70	16.3	13.6	11.6	—
80	18.3	15.6	13.6	—
90	20.3	17.6	15.6	—
100	22.3	19.6	17.6	—

Mated height/dimension	E
1.5mm	1.50
2.0mm	1.92
2.5mm	2.42

Header (Mated height: 1.5 mm, 2.0 mm, and 2.5 mm “products with V notch”)

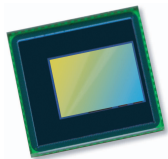


General tolerance: ±0.2

Dimension table (mm)

Number of contacts/ dimension	A	B	C	D
14	3.9	2.4	—	3.04
16	4.3	2.8	—	3.44
20	5.1	3.6	1.6	—
22	5.5	4.0	2.0	—
24	5.9	4.4	2.4	—
26	6.3	4.8	2.8	—
28	6.7	5.2	3.2	—
30	7.1	5.6	3.6	—
34	7.9	6.4	4.4	—
36	8.3	6.8	4.8	—
40	9.1	7.6	5.6	—
44	9.9	8.4	6.4	—
50	11.1	9.6	7.6	—
54	11.9	10.4	8.4	—
60	13.1	11.6	9.6	—
64	13.9	12.4	10.4	—
70	15.1	13.6	11.6	—
80	17.1	15.6	13.6	—
90	19.1	17.6	15.6	—
100	21.1	19.6	17.6	—

Note: “Products with V notch” and “products with V notch and post edge horseshoe bend” are mating compatible.



OV5645 5-megapixel product brief



available in
a lead-free
package

High Quality 5-Megapixel Photography and HD Video for Low-Cost Mobile Devices

OmniVision's OV5645 is a high performance, 5-megapixel system-on-chip (SOC) ideally suited for the cost-sensitive segment of the mobile handset market. The CameraChip™ sensor's single MIPI port replaces both a bandwidth-limited DVP interface and a costly embedded JPEG compressor, allowing the new OV5645 sensor to save significant silicon area and cost. An embedded autofocus control with voice coil motor driver offers further cost savings for the end user, making the OV5645 a highly attractive alternative to other 5-megapixel sensors currently on the market.

The OV5645 also features a new picture-in-picture (PIP) architecture that offers an easy-to-implement, low-cost dual camera system solution for mobile handsets and smartphones. The feature is based on a master/slave configuration where a front-facing camera (OV7965) can be connected through the OV5645 master camera, enabling a two-camera system with PIP functionality without the need for an additional MIPI interface into the baseband processor.

Built on OmniVision's 1.4-micron OmniBSI™ pixel architecture, the OV5645 offers high performance 5-megapixel photography and 720p HD video at 60 frames per second (FPS) and 1080p HD video at 30 FPS with complete user control over formatting and output data transfer. The sensor's 720p HD video is captured in full field-of-view with 2 x 2 binning, which doubles the sensitivity and improves the signal-to-noise ratio (SNR). A unique post-binning, re-sampling filter function removes zigzag artifacts around slant edges and minimizes spatial artifacts to deliver even sharper, crisper color images.

Find out more at www.ovt.com.

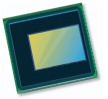
Applications

- Cellular Phones
- PC Multimedia
- Toys
- Digital Still Cameras

Product Features

- 1.4 μm x 1.4 μm pixel with OmniBSI™ technology for high performance (high sensitivity, low crosstalk, low noise, improved quantum efficiency)
- optical size of 1/4"
- automatic image control functions: automatic exposure control (AEC), automatic white balance (AWB), automatic band filter (ABF), automatic 50/60 Hz luminance detection, and automatic blacklevel calibration (ABLC)
- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling
- support for output formats: RAW RGB, RGB565/555/444, YUV422/420, YCbCr422
- support for video or snapshot operations
- support for internal and external frame synchronization for frame exposure mode
- support for LED and flash strobe mode
- support for horizontal and vertical sub-sampling, binning
- support for minimizing artifacts on binned image
- support for data compression output
- support for anti-shake
- standard serial SCCB interface
- dual lane MIPI output interface
- embedded 1.5V regulator for core power
- programmable I/O drive capability, I/O tri-state configurability
- support for black sun cancellation
- support for images sizes: 5 megapixel, and any arbitrary size scaling down from 5 megapixel
- support for auto focus control (AFC) with embedded AF VCM driver
- embedded microcontroller
- suitable for module size of 8.5 x 8.5 x <6mm with both CSP and RW packaging

OV5645



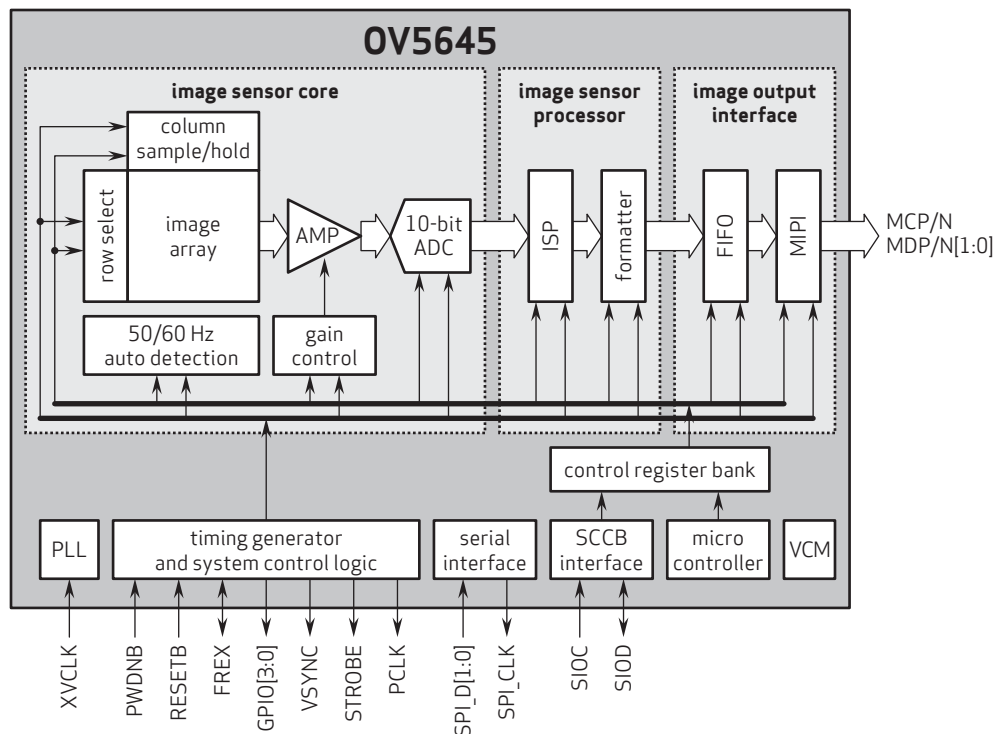
Ordering Information

- OV5645-A66A (color, lead-free, 66-pin CSP3)
- OV5645-G04A (color, chip probing, 200 μm backgrinding, reconstructed wafer)

Product Specifications

- active array size: 2592 x 1944
- power supply:
 - core: 1.5V \pm 5% (with embedded 1.5 regulator)
 - analog: 2.6 - 3.0V (2.8V typical)
 - I/O: 1.8V / 2.8V
- temperature range:
 - operating: -30°C to 70°C junction temperature
 - stable image: 0°C to 50°C junction temperature
- output formats: 8-/10-bit RGB RAW, RGB565/555/444, YUV422/420, YCbCr422 output
- lens size: 1/4"
- lens chief ray angle: 29.1°
- input clock frequency: 6 - 27 MHz
- max S/N ratio: 36 dB
- maximum image transfer rate:
 - QSGA (2592X1944): 15 fps
 - 1080p: 30 fps
 - 1280x960: 45 fps
 - 720p: 60 fps
- shutter: rolling shutter / frame exposure
- maximum exposure interval: 1964 x t_{row}
- pixel size: 1.4 μm x 1.4 μm
- image area: 3673.6 μm x 2738.4 μm
- package/die dimensions:
 - CSP3: 6200 μm x 4860 μm
 - COB: 6190 μm x 4850 μm

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

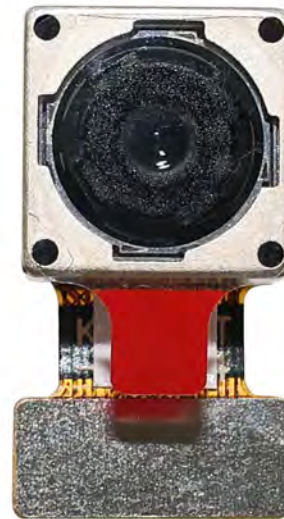


HAMPO Package Solutions

Hampo Camera Module



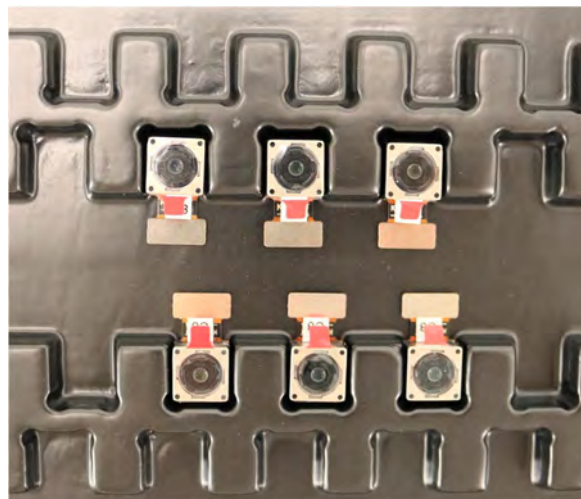
Complete with Lens Protection Film



Tray with Grid and Space



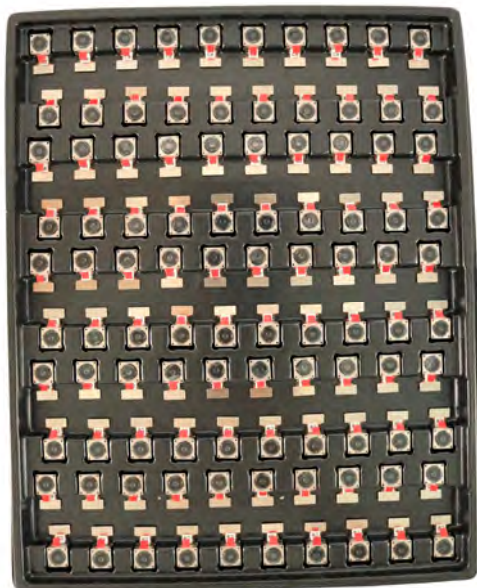
Place Cameras on the Tray



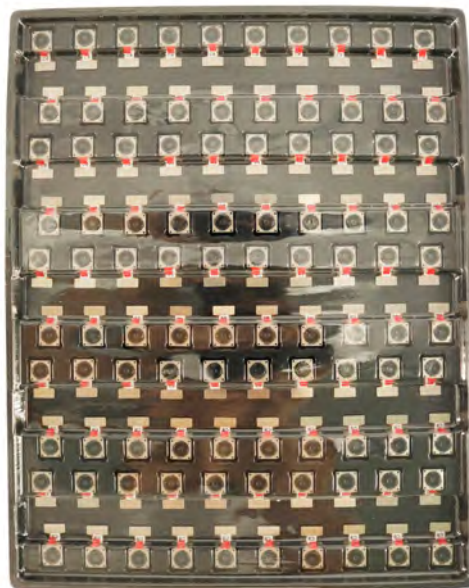


Camera Modules Package Solution

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





An open cardboard box with a white interior lining. The box is shown from a top-down perspective, with the lid flaps open and the white interior visible. The box is empty.

HAMPO

HAMPO Model No.
HAMPO M6A12 (M6886 V1 B)
WEIGH. 90P Infrared
Auto Focus, 70-8 Degree

DATE IN CHINA

Tray

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



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.



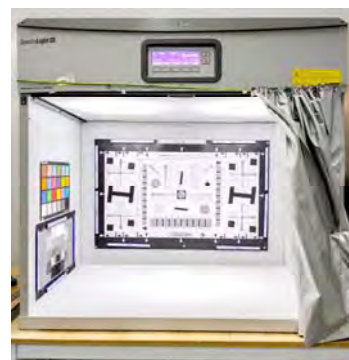


Hampo Strength

Powerful Factory



Professional Service



Promised Delivery

