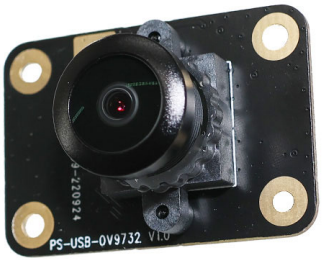
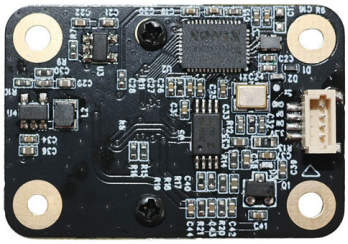
YDS-PS-USB-OV9732 V1.0

1MP OmniVision OV9732 M12 Fixed Focus USB 2.0 Camera Module





YDS-PS-USB-OV9732 V1.0 is a 1MP Fixed Focus USB 2.0 camera module based on 1/4” OV9732 image sensor. It delivers high-speed, high resolution ultra sharp image. The S-mount (M12) lens holder enables customers to choose different lens as per varies applications. This camera module is ideal solution for face recognition, identity detection, automotive, access control.

Key Features

- 1MP 720P resolution (1280 x 720) OmniVision OV9732 sensor
- High speed USB 2.0 Plug and Play
- MJPG and YUV2 output format
- Low power consumption
- Compact size
- UVC compliant to Windows, Linux, OS with UVC driver
- USB OTG (On-The-Go) support

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YDS-PS-USB-OV9732 V1.0

1MP OmniVision OV9732 M12 Fixed Focus USB 2.0 Camera Module

Camera Module No.	YDS-PS-USB-OV9732 V1.0
Resolution	1MP
Image Sensor	OV9732
Sensor Type	1/4"
Pixel Size	3.0 um x 3.0 um
EFL	
F.NO	
Pixel	1280 x 720
View Angle	M12 Lens
Lens Dimensions	
Module Type	Fixed Focus
Interface	USB 2.0
Output Format	MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	Optional
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	35.00 x 24.00 mm
System Compatibility	Windows XP (SP2, SP3), Vista, 7, 8, 10, 11 Android, Mac OS, Linux or OS with UVC Driver Raspberry Pi by USB Port
Software for USB Camera	AMCAP, Webcam Viewer, V4L2 Controls Contacam, VLC Player, MotionEye OS iSpy, ZoneMider, Yawcam
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +70°C
USB Cable	USB Cable

Wide Compatibility with Windows, Android, Mac OS, Linux, or Raspberry Pi

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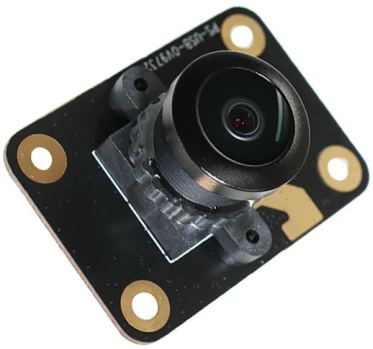
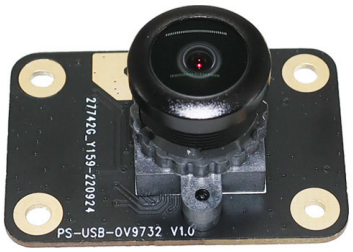
YDS-PS-USB-OV9732 V1.0

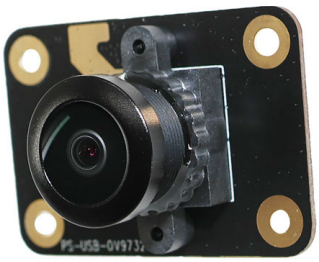
1MP OmniVision OV9732 M12 Fixed Focus USB 2.0 Camera Module



Top View



Side View



Bottom View

Mating Connector

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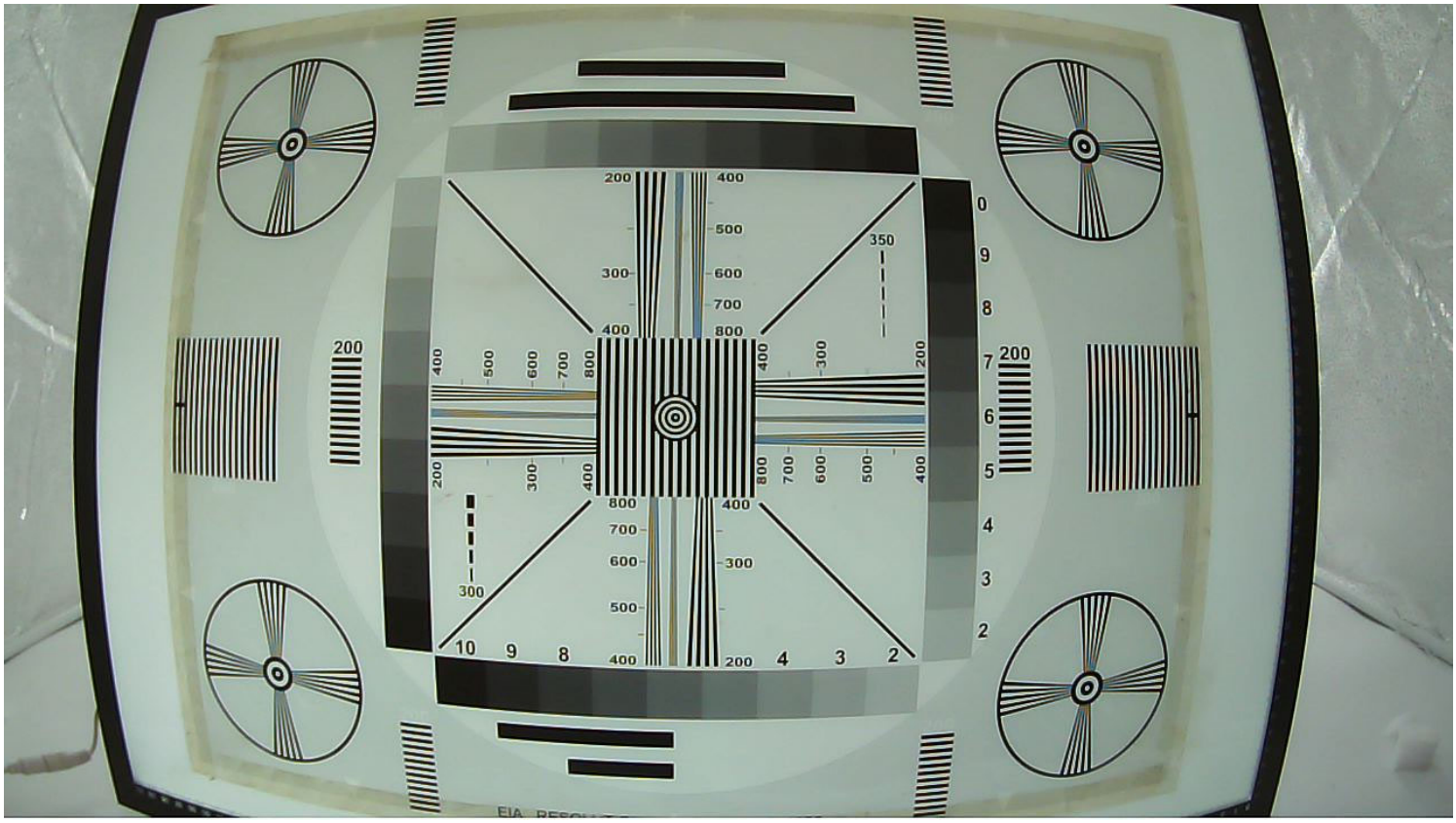

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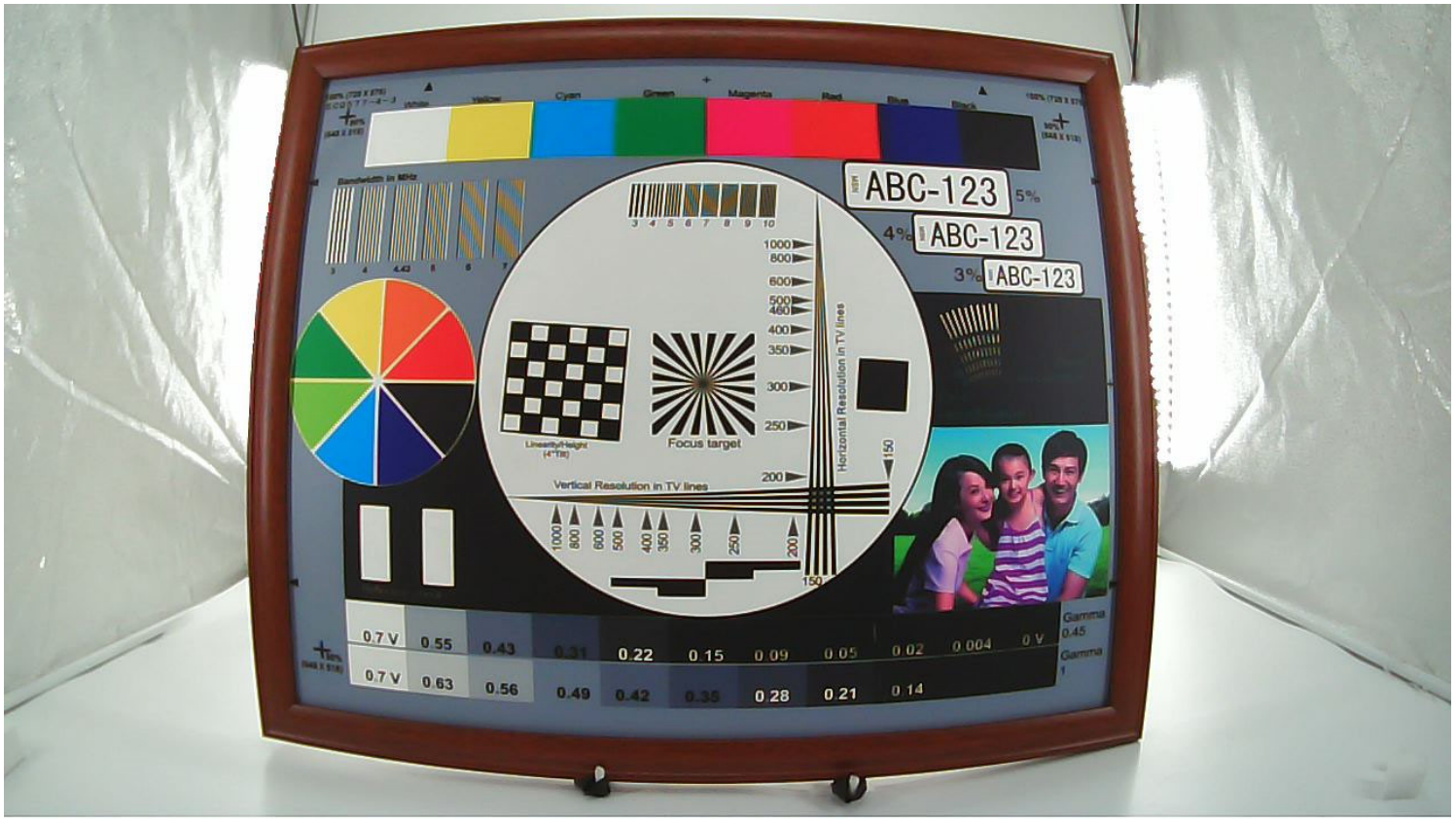

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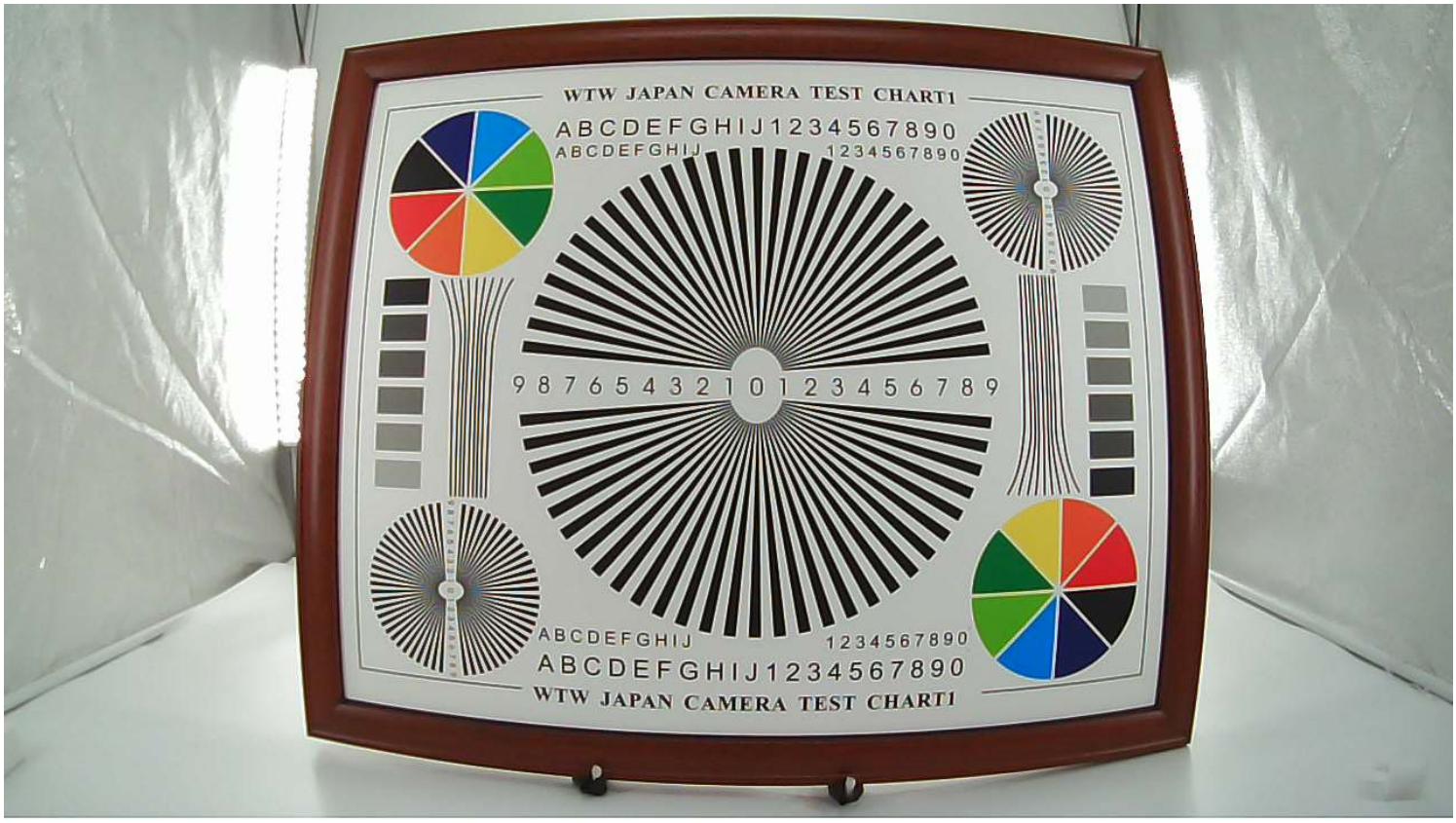

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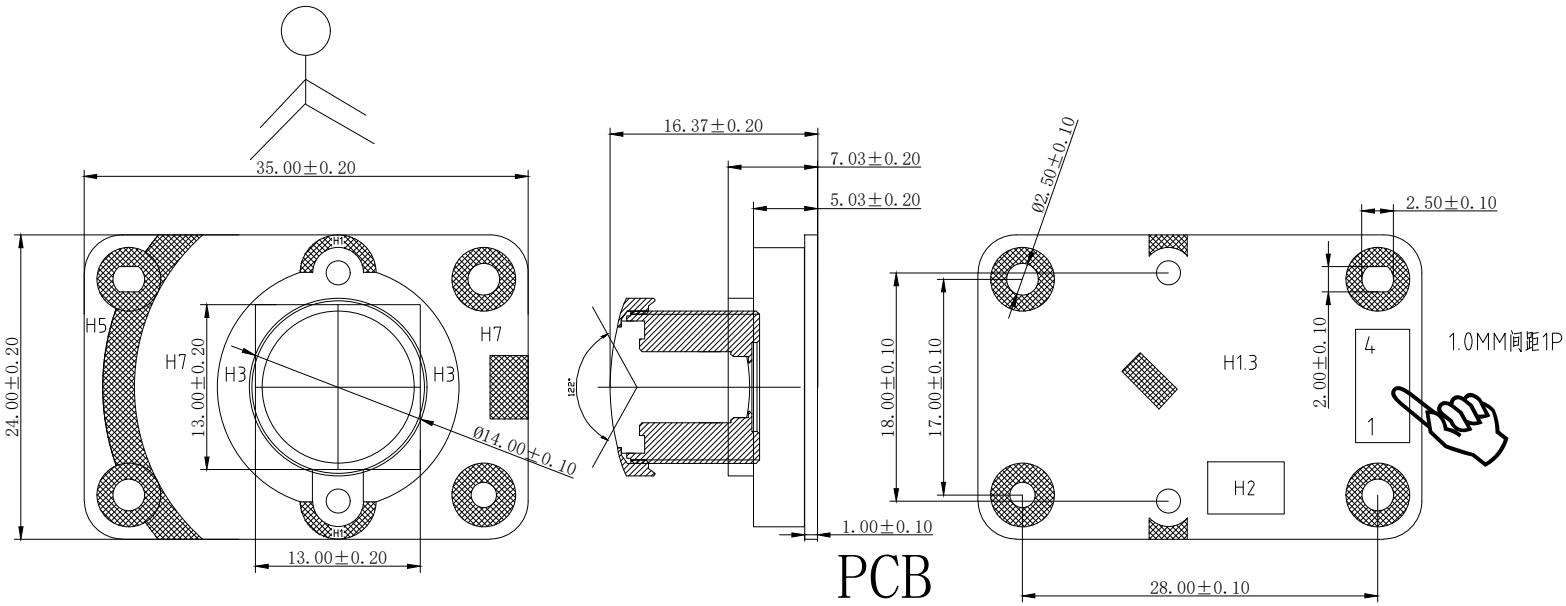
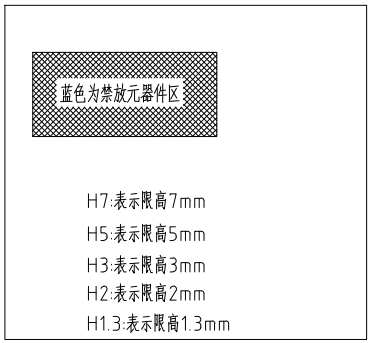
1	3.3V
2	DN
3	DP
4	GND



PCB

SENSOR:OV9732



有害物质管理标准

■符合RoHS规范中所制定之禁用与限用标准

□ _____有害物质管理标准

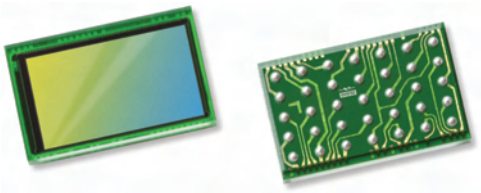
版本	标记		制图日期
V5	5		
V4	4		
V3	3		
V2	2		
V1	PD	初次作图	2021.1.6

一般公差General talerance | X.X ±0.2 X.XX ±0.15 X.XXX ±0.10 ANGULAR:±1°

角法 Projection | 3rd angle

项目名称 MODEL NO.		图号 DWG NO.	版次 REVISION	名称 TITLE	页次 SHEET
		TBD	A1	手机摄像模组	
丝印型号 PART NO.	PS-USB-OV9732 V1.0	制图 卢红伟	审核 庞建英	批准	单位 UNIT: MM; SIZE: A4

1 of 1



OV9732 720p HD product brief

Power-Efficient and Compact HD CameraChip™ Sensor for Battery-Powered Smart-Home and Security Applications

lead free

available in a lead-free package

OmniVision's OV9732 is a low-power and ultra-compact CameraChip™ sensor that brings 720p high definition (HD) video to mainstream security systems and wireless battery-powered smart-home cameras. Compared to the previous generation OV9712, the OV9732 is 35 percent smaller and delivers dramatically improved pixel performance.

The OV9732 CameraChip sensor utilizes OmniPixel3-HS™ high sensitivity 3.0 µm pixel technology to bring industry-leading scene reproduction to a wide range of security and lifestyle camera applications that operate in extremely high- and low-light conditions. The sensor's narrow 9-degree chief ray angle (CRA) supports consumer-grade optical lens systems and reduces image artifacts for enhanced performance.

When operating in low-power mode, the 1/4-inch OV9732 requires just 99 mW to capture 720p HD video at 30 frames per second.

Find out more at www.ovt.com.

OmniVision

OV9732

Applications

- IP Cameras
- Life Style Cameras
- Surveillance
- Motion Cameras

Product Features

- support for image sizes:
  - full size (1280x720)
  - VGA (640x480)
  - 2x2 RGB binning (640x360)
- support for output formats:
  10-bit RAW output
  with 1-lane MIPI and DVP
- on-chip phase lock loop (PLL)
- programmable controls for:
  - frame rate
  - mirror and flip
  - gain/exposure
  - windowing
- support for horizontal and vertical sub-sampling
- low power mode (LPM) function
- capable of maintaining register values at software power down
- standard SCCB interface
- GPIO tri-state configurability and programmable polarity
- FSIN
- image quality control:
  - defect pixel correction (DPC)
  - automatic black level calibration (ABLC)

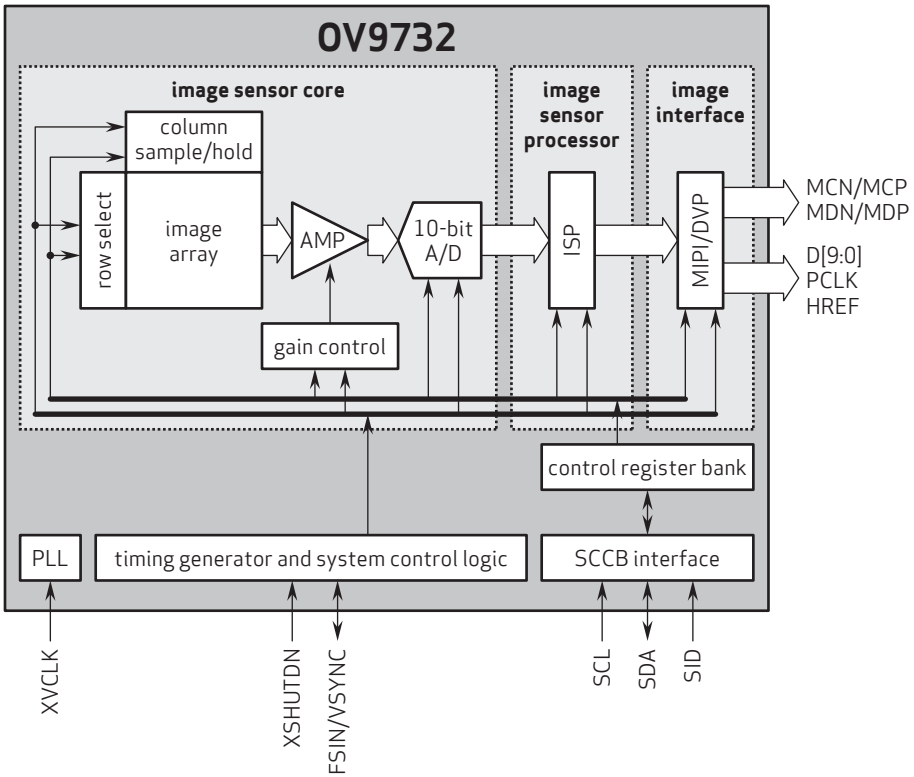
Ordering Information

- **OV09732-H35A**
  (color, lead-free, 35-pin CSP)

Product Specifications

- **active array size:** 1280 x 720
- **power supply:**
  - **core:** 1.7 - 1.9V (1.8V normal)
  - **analog:** 2.7 - 2.9V (2.8V normal)
  - **I/O:** 1.7 - 1.9V (1.8V normal)
- **power requirements:**
  - **active:** 99 mW
  - **standby:** 36 µW
- **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
- **lens size:** 1/4"
- **lens chief ray angle:** 9°
- **input clock frequency:** 6 - 27 MHz
- **scan mode:** progressive
- **maximum image transfer rate:** 30 fps
- **sensitivity:** 2.066 V/Lux-sec
- **shutter:** rolling shutter
- **max S/N ratio:** 39 dB
- **dynamic range:** 72 dB @ 8x gain
- **maximum exposure interval:** 798 x t_{ROW}
- **pixel size:** 3 µm x 3 µm
- **image area:** 3888 µm x 2208 µm
- **package dimensions:**
  4704 µm x 2994 µm

Functional Block Diagram



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Version 1.2, October, 2017

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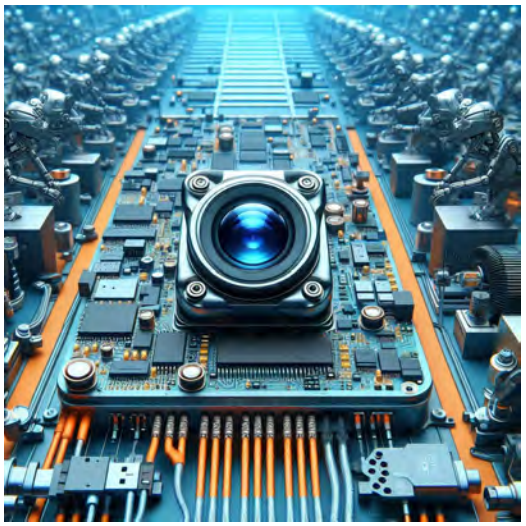
Cameras Applications

Automotive Driver Pilot

Live Streaming

Video Conference

Eye Tracker Biometric Detection



Machine Vision

Agricultural Monitor

Night Vision Security

Drone and Sports Eagle Eyes

Interactive Pet Camera

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Camera Module Pinout Definition Reference Chart

OmniVision Sony Samsung On-Semi Aptina Himax GalaxyCore PixArt SmartSens Sensors	
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

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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

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Camera Inspection Standard

Inspection Item			Inspection Method	Standard of Inspection
Category		Item		
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)
	Holder	Scratches	The Naked Eye	The Inside Crack Exposure is Not Allowed
		Gap	The Naked Eye	Meet the Height Standard
		Screw	The Naked Eye	Make Sure Screws Are Presented (If Any)
		Damage	The Naked Eye	The Inside Crack Exposure is Not Allowed
	Lens	Scratch	The Naked Eye	No Effect On Resolution Standard
		Contamination	The Naked Eye	No Effect On Resolution Standard
		Oil Film	The Naked Eye	No Effect On Resolution Standard
		Cover Tape	The Naked Eye	No Issue On Appearance.
Function	Image	No Communication	Test Board	Not Allowed
		Bright Pixel	Black Board	Not Allowed In the Image Center
		Dark Pixel	White board	Not Allowed In the Image Center
		Blurry	The Naked Eye	Not Allowed
		No Image	The Naked Eye	Not Allowed
		Vertical Line	The Naked Eye	Not Allowed
		Horizontal Line	The Naked Eye	Not Allowed
		Light Leakage	The Naked Eye	Not Allowed
		Blinking Image	The Naked Eye	Not Allowed
		Bruise	Inspection Jig	Not Allowed
		Resolution	Chart	Follows Outgoing Inspection Chart Standard
		Color	The Naked Eye	No Issue
		Noise	The Naked Eye	Not Allowed
		Corner Dark	The Naked Eye	Less Than 100px By 100px
		Color Resolution	The Naked Eye	No Issue
Dimension		Height	The Naked Eye	Follows Approval Data Sheet
		Width	The Naked Eye	Follows Approval Data Sheet
		Length	The Naked Eye	Follows Approval Data Sheet
		Overall	The Naked Eye	Follows Approval Data Sheet

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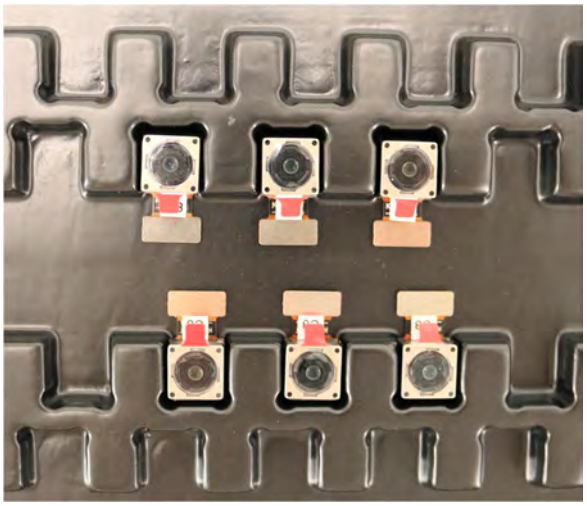
YDSCAM Package Solutions

YDS Camera Module

Complete with Lens Protection Film

Tray with Grid and Space

Place Cameras on the Tray



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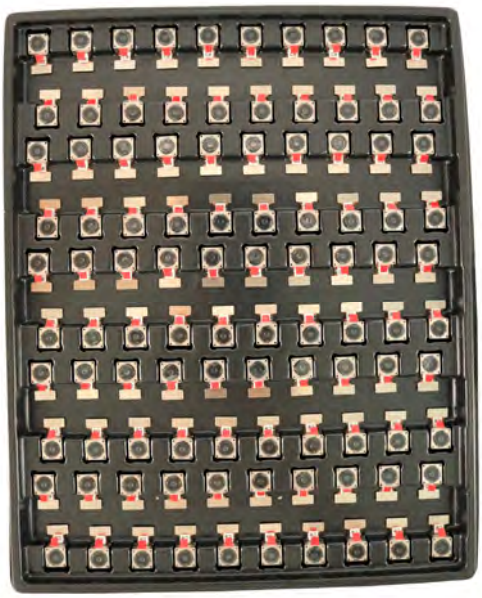
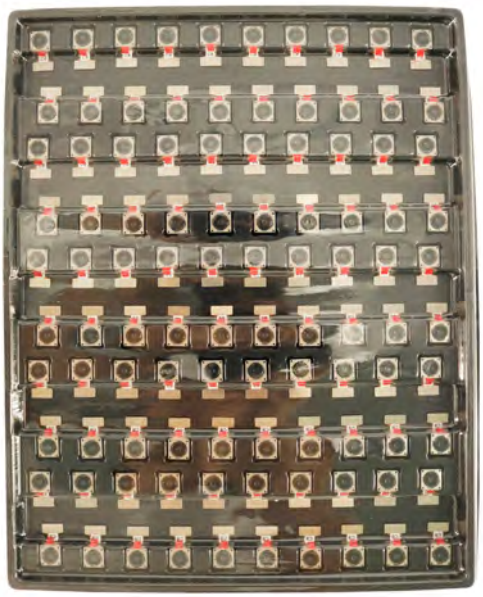
Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag

Vacuum the Anti-Static Bag

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Sealed Vacuum Anti-Static Bag with Labels

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

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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

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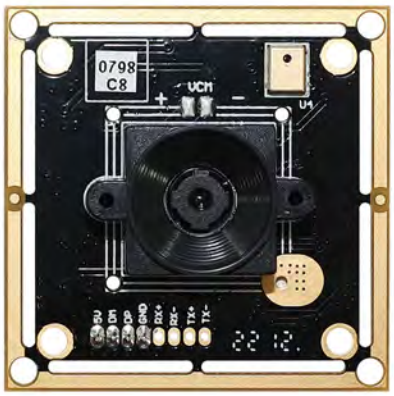
USB Camera Module



Complete with Lens Protection Film

Place Camera Sample into Anti-Static Bag

Place USB Cameras into Tray

Seal the Tray with Anti-Static Bag

Label the Carbon Shipping Box

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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

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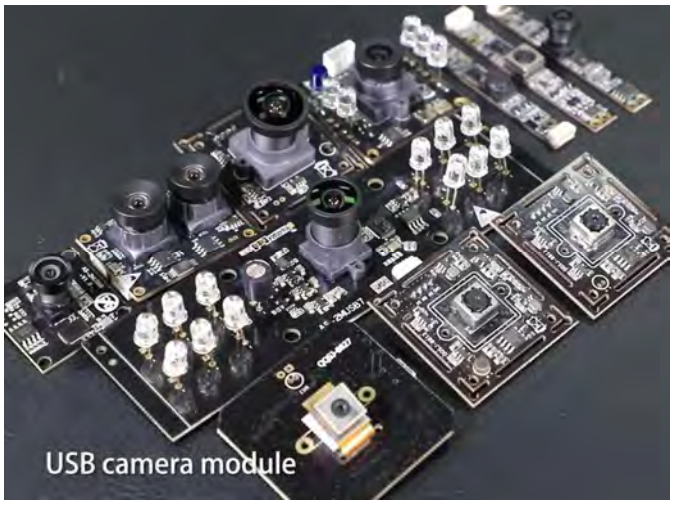
Company YDSCAM

YingDeShun Co. Ltd. (YDS) was established in 2017, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. YDS is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

YDS 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. YDS 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

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

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