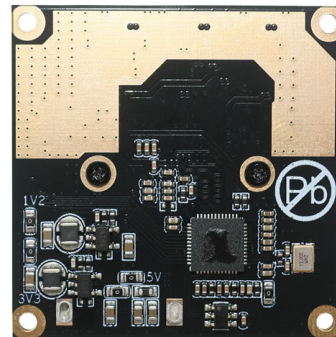
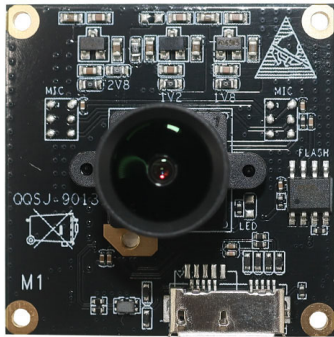


**YDS-USBH03-OG02B10 V1.0****2MP OmniVision OG02B10 Monochrome M12 Fixed Focus  
USB 2.0 Camera Module**

YDS-USBH03-OG02B10 V1.0 is a 2MP Fixed Focus USB 2.0 camera module based on 1/2.9" OG02B10 monochrome (black and white) 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

- 2MP resolution (1600 x 1200) OmniVision OG02B10 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



# YDS CAMERA MODULE

*your best camera partner*

## YDS-USBH03-OG02B10 V1.0

### 2MP OmniVision OG02B10 Monochrome M12 Fixed Focus USB 2.0 Camera Module

|                         |  |
|-------------------------|--|
| Camera Module No.       | YDS-USBH03-OG02B10 V1.0  |
| Resolution              | 2MP  |
| Image Sensor            | OG02B10 Monochrome   |
| Sensor Type             | 1/2.9"   |
| Pixel Size              | 3.0 um x 3.0 um  |
| EFL                     | 2.95 mm  |
| F.NO                    | 2.20   |
| Pixel                   | 1600 x 1300  |
| View Angle              | 88.0°(DFOV)  |
| Lens Dimensions         | 13.70 x 13.70 x 17.70 mm   |
| Module Type             | Fixed Focus  |
| Interface               | USB 2.0  |
| Output Format           | MJPEG / YUV2   |
| Auto Control            | Saturation, Contrast, Acutance<br>White Balance, Exposure  |
| Audio                   | Optional   |
| Input Voltage           | DC 5V  |
| Working Current         | Max 500mA  |
| PCB Size                | 38.00 x 38.00 mm   |
| System Compatibility    | Windows XP (SP2, SP3), Vista, 7, 8, 10, 11<br>Android, Mac OS, Linux or OS with UVC Driver<br>Raspberry Pi by USB Port |
| Software for USB Camera | AMCAP, Webcam Viewer, V4L2 Controls<br>Contacam, VLC Player, MotionEye OS<br>iSpy, ZoneMider, Yawcam                   |
| Lens Type               | 650nm IR Cut   |
| Operating Temperature   | -30°C to +85°C   |
| USB Cable               | USB Cable  |

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



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## YDS-USBH03-OG02B10 V1.0 2MP OmniVision OG02B10 Monochrome M12 Fixed Focus USB 2.0 Camera Module



Top View



Side View



Bottom View



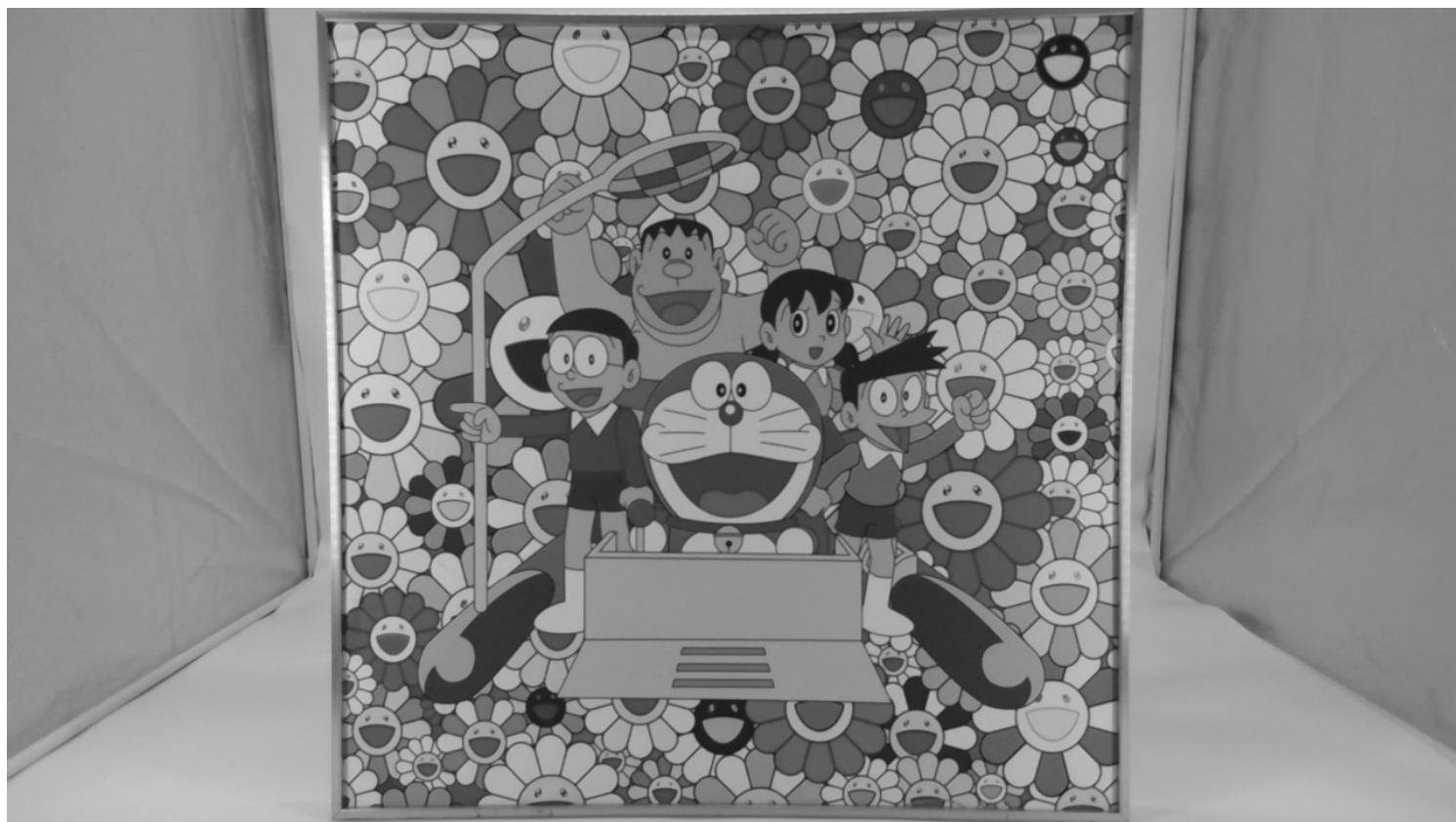
USB Cable

## YDS-USBH03-OG02B10 V1.0

### 2MP OmniVision OG02B10 Monochrome M12 Fixed Focus USB 2.0 Camera Module

| FORMAT | RESOLUTION        | FRAME RATE |
|--------|-------------------|------------|
|        |                   | USB 2.0    |
| MJPEG  | 640 x 480 (VGA)   | 60 FPS     |
|        | 1280 x 720 (720P) | 60 FPS     |
|        | 1600 x 1200 (2MP) | 60 FPS     |
| YUV2   | 640 x 480 (VGA)   | 30 FPS     |
|        | 1280 x 720 (720P) | 30 FPS     |
|        | 1600 x 1200 (2MP) | 30 FPS     |

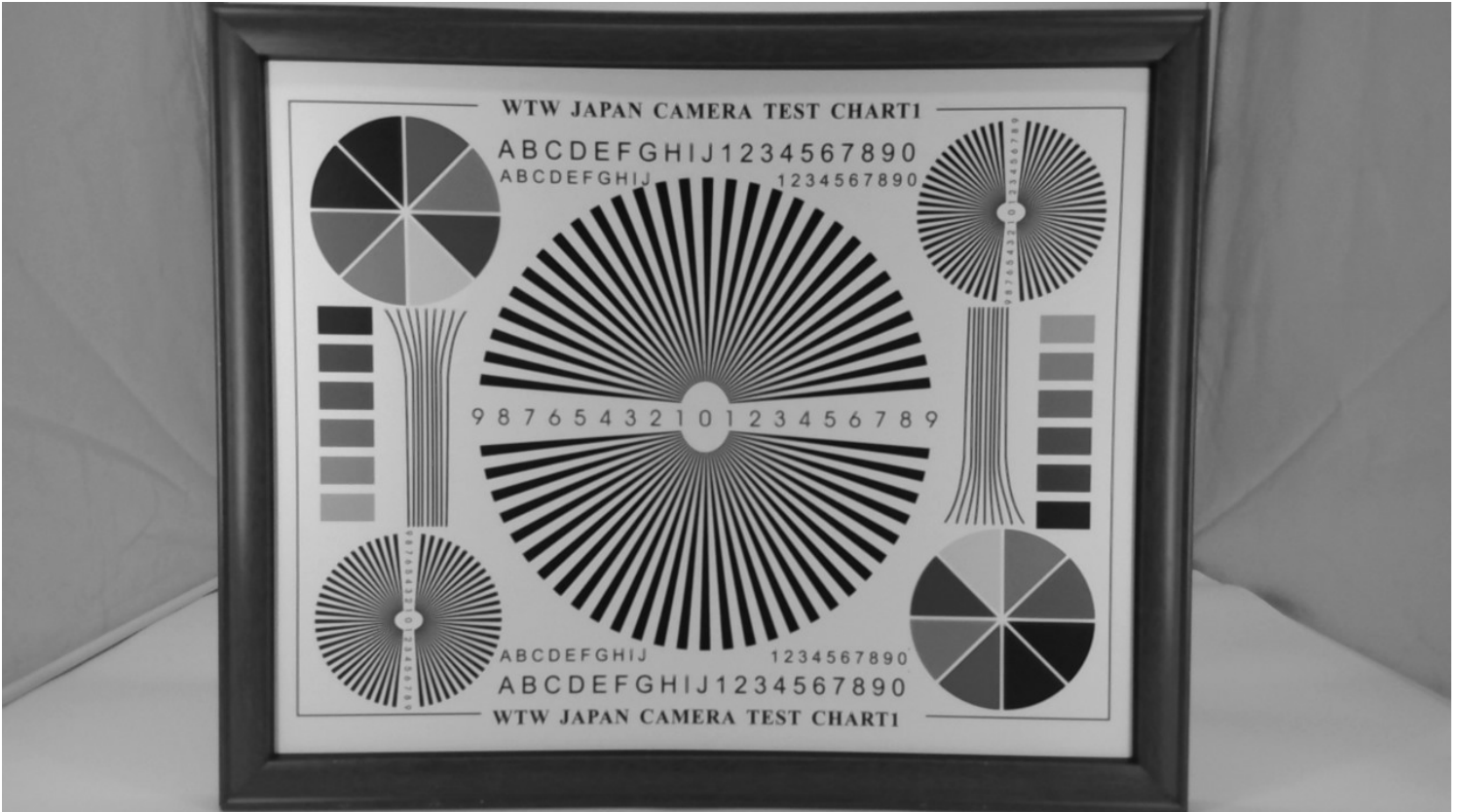
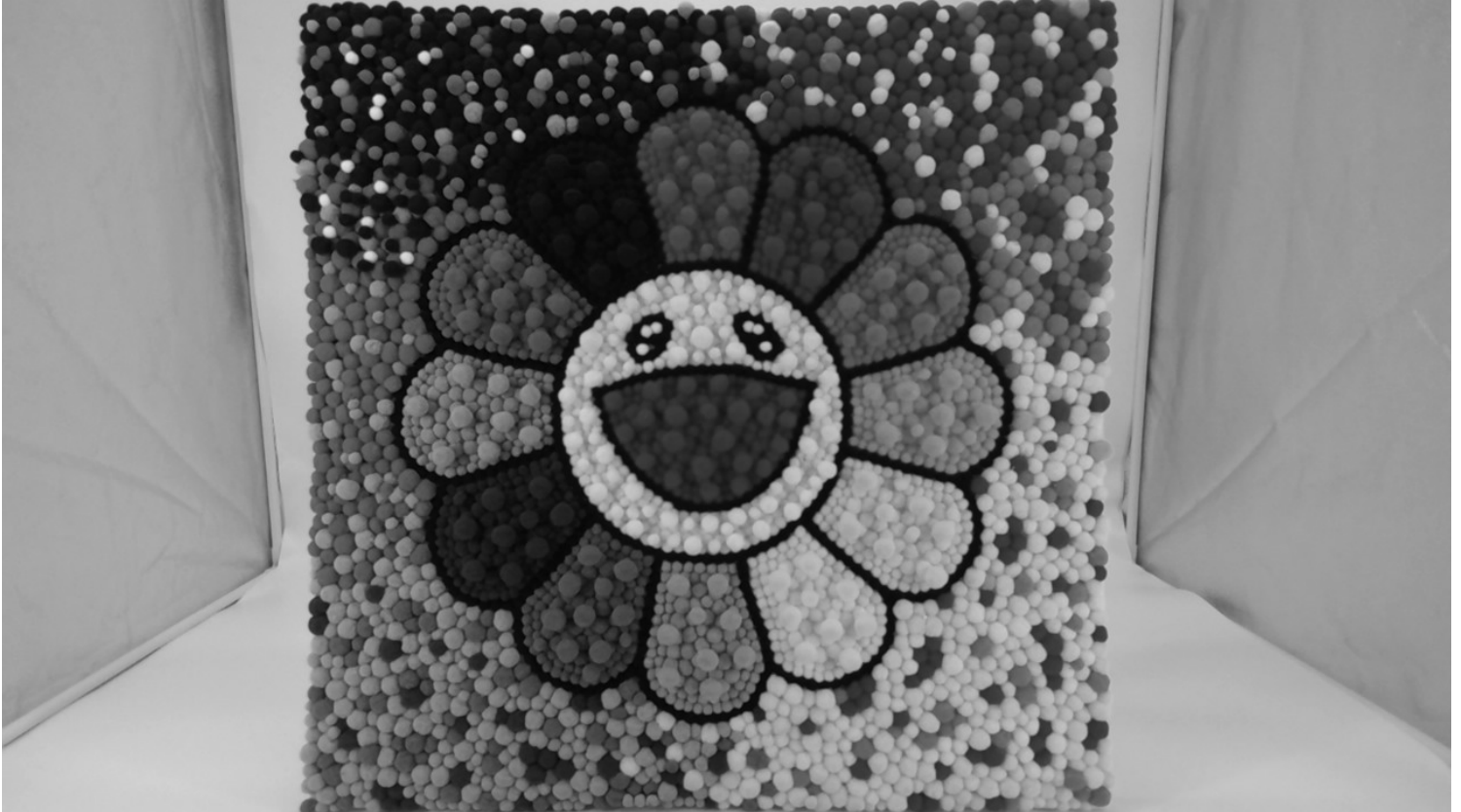






# YDS CAMERA MODULE

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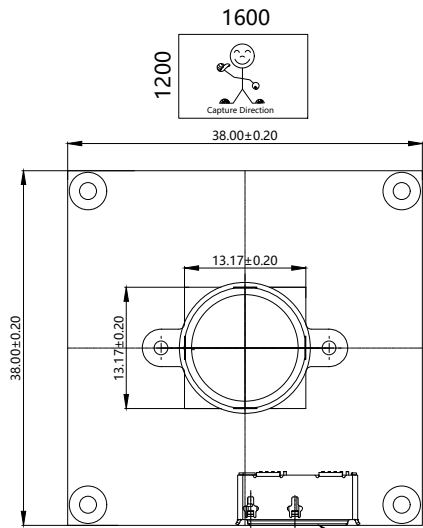
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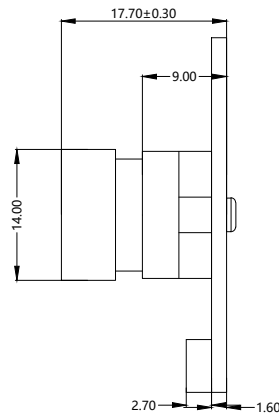
# RoHS

| PIN | SIGNAL     |
|-----|------------|
| 1   | VBUS       |
| 2   | D-         |
| 3   | D+         |
| 4   | ID         |
| 5   | GND        |
| 6   | MicB_SSTX- |
| 7   | MicB_SSTX+ |
| 8   | GND_DRAIN  |
| 9   | MicB_SSRX- |
| 10  | MicB_SSRX+ |

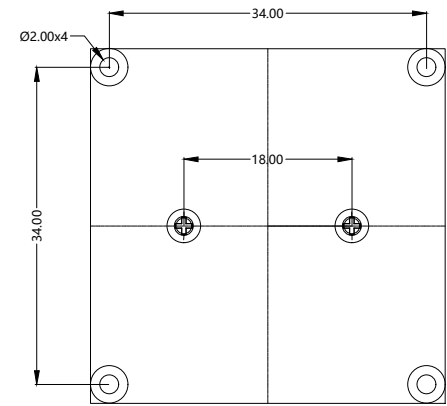
| Version | Information   | Date       |
|---------|---------------|------------|
| V1.0    | First Version | 10-20-2023 |



TOP VIEW



SIDE VIEW



BOTTOM VIEW

## Parameters:

### 1、 Sensor specification:

Image Sensor: OG02B10

Pixel: 3.0um\*3.0um

Lens Type: 1/2.9

Important Voltage Description:

USB 5V

### 2、 Lens specification:

FOV: 88°(D)

F/NO.: 2.2

TV distortion: /

Focal length: 2.9mm

Composition: /+IR FILTER

IR Cut Coating: 650nm±10nm@50%

Designed By

Kevin

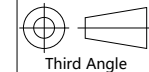
Model Name:

USBH03-OG02B10 V1.0

Checked By

Jacky

Projection Type:



Unit:  
mm

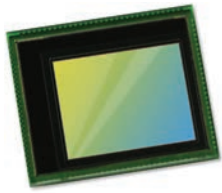
Scale:  
1:1

Material:

Sheet:  
1 of 1

Version:

Version:  
1/0



# OG02B1B<sub>2MP</sub> product brief



available in  
a lead-free  
package

## High-Resolution, Cost-Effective Global Shutter Image Sensors for Machine Vision Applications

OmniVision's OG02B1B (monochrome) and OG02B10 (color) are global shutter image sensors designed to cost-effectively enable a wide range of consumer and industrial machine vision applications such as AR/VR headsets and accessories, industrial automation, robotics, agricultural drones and 3D modeling. These sensors provide designers with best-in-class resolution and the option for full-color imaging, and both have a 15 degree chief ray angle (CRA) to support wide field-of-view lens designs. This combination of color imaging and CRA is excellent for applications such as agricultural drones that must capture high-resolution color images for crop and field monitoring.

Available in a 1/2.9 inch optical format, the OG02B1B and OG02B10 capture 2 megapixel or 1600 x 1300 resolution images and video at 60 frames per second (fps) using advanced 3 x 3 micron OmniPixel®3-GS pixel technology. This global shutter technology eliminates motion artifacts and blurring, and dramatically improves low-light sensitivity. Additionally, both sensors' excellent near infrared (NIR) sensitivity at 850 nm and 940 nm helps reduce device power consumption to extend battery life.

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





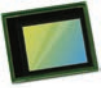
## Applications

- Augmented and Virtual Reality
- Drones
- 3D Imaging
- Machine Vision
- Industrial Bar Code Scanning
- Industrial Automation

## Product Features

- 3  $\mu\text{m}$  x 3  $\mu\text{m}$  pixel with OmniPixel<sup>3</sup>-GS technology
- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- support output formats: 8/10-bit RAW
- fast mode switching
- supports 2x2 monochrome binning
- two-lane MIPI serial output interface
- DVP parallel output interface
- supports horizontal and vertical 2:1 monochrome subsampling
- support for image sizes:
  - 1600 x 1300
  - 1280 x 720
  - 640 x 480
- embedded 128 bytes of one-time programmable (OTP) memory
- two on-chip phase lock loops (PLLs)
- LED PWM
- temperature sensor
- built-in strobe control

# OG02B1B



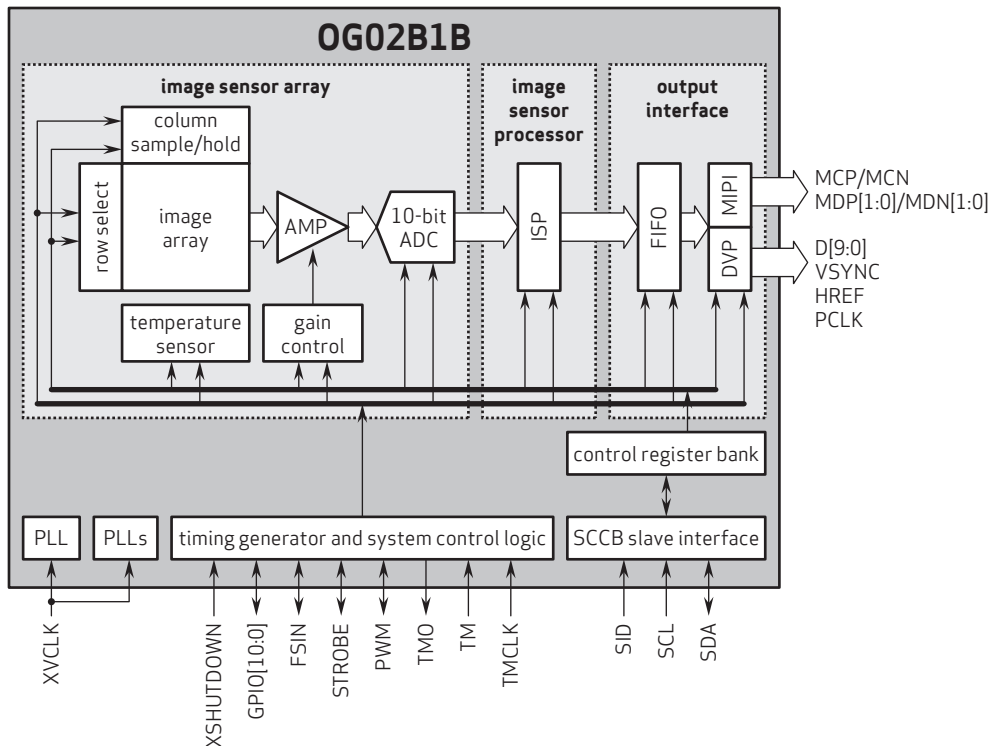
## Ordering Information

- **OG02B1B-G04A**  
(b&w, chip probing, 200  $\mu\text{m}$  backgrinding, reconstructed wafer with good die)

## Product Specifications

- **active array size:** 1600 x 1300
- **output interface:** 2-lane MIPI serial output and DVP parallel output
- **maximum image transfer rate:**
  - 1600 x 1300: 60 fps
- **output formats:** 10-bit RAW
- **power supply:**
  - analog: 2.8V (nominal)
  - core: 1.2V (nominal)
  - I/O: 1.8V (nominal)
- **lens size:** 1/2.9"
- **lens chief ray angle:** 15° linear
- **pixel size:** 3  $\mu\text{m}$  x 3  $\mu\text{m}$
- **power requirements:**
  - active: 190 mW
  - XSHUTDOWN: <25  $\mu\text{A}$
- **image area:** 4857.696  $\mu\text{m}$  x 3955.896  $\mu\text{m}$
- **temperature range:**
  - operating: -30°C to +85°C junction temperature

## Functional Block Diagram



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Santa Clara, CA 95054  
USA

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OmniVision

## 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



# YDS CAMERA MODULE

*your best camera partner*

## 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                     |         |        |       |            |        |           |         |
| FREQ                          |      | frame exposure / mechanical shutter                     |         |        |       |            |        |           |         |
| GPIO                          |      | general purpose inputs                                  |         |        |       |            |        |           |         |
| SLASEL                        |      | I2C slave address select                                |         |        |       |            |        |           |         |
| AFEN                          |      | CEN chip enable active high on VCM driver IC            |         |        |       |            |        |           |         |
| <b>MIPI Interface</b>         |      |   |         |        |       |            |        |           |         |
| 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                              |         |        |       |            |        |           |         |
| <b>DVP Parallel Interface</b> |      |   |         |        |       |            |        |           |         |
| 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<br>Low -20°C 0.5 Hours<br>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<br>60 Seconds<br>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<br>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             | 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 |  |                                 |

## YDSCAM Package Solutions

YDS Camera Module



Complete with Lens Protection Film



Tray with Grid and Space



Place Cameras on the Tray



## YDSCAM Package Solutions

Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag



Vacuum the Anti-Static Bag



## YDSCAM Package Solutions

### Sealed Vacuum Anti-Static Bag with Labels

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





## YDSCAM Package Solutions

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





## YDSCAM Package Solutions

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



## YDSCAM Package Solutions

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





# YDS CAMERA MODULE

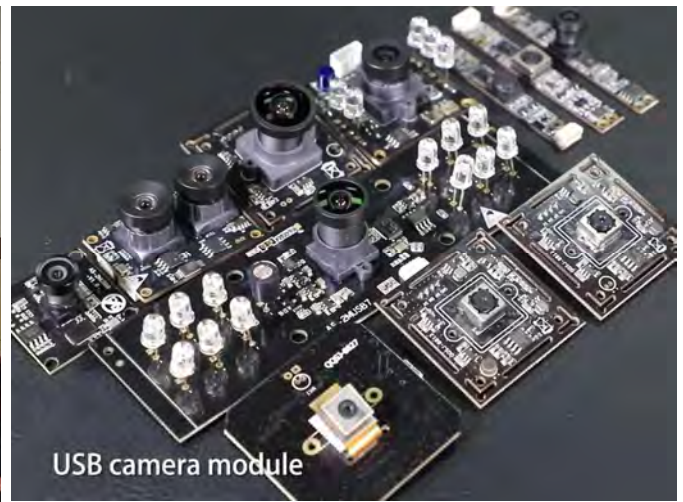
*your best camera partner*

## 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](http://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 subsequent events.



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# YDS CAMERA MODULE

*your best camera partner*

## YDS Strength

### Powerful Factory



### Professional Service



### Promised Delivery



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