

**YDS-OIS-USB5A-FF-IMX317 V2.0****8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module**

YDS-OIS-USB5A-FF-IMX317 V2.0 is an 8.51 MP Fixed Focus USB camera module based on 1/2.5" IMX317 image sensor. Micro Gimbal Stabilizer (MGS) enables the camera to take clear and sharp images in moving environment. It delivers high-speed, 4K resolution ultra sharp image. The camera has a dedicated, high-performance fixed focus function providing best-in-class image and video output. This camera module is ideal solution for drones, automotive, agriculture farming, medical equipment, and traffic monitoring.

### Key Features

- 4K resolution (3840 x 2160) Sony IMX317 sensor
- Micro Gimbal Stabilizer (MGS) on optical image stabilization (OIS) platform
- 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*

<b>Camera Module No.</b>	<b>YDS-OIS-USB5A-FF-IMX317 V2.0</b>
<b>Resolution</b>	8.51MP
<b>Image Sensor</b>	IMX317 w/ MGS OIS
<b>Sensor Type</b>	1/2.5"
<b>Pixel Size</b>	1.62 um x 1.62 um
<b>EFL</b>	15.00 mm
<b>F.NO</b>	5.60
<b>Stabilization Method</b>	Optical Image Stabilization (OIS)
<b>Stabilizer Type</b>	Micro Gimbal Stabilizer (MGS)
<b>Stabilizer Axis No.</b>	2 Axis (Pitch and Yaw)
<b>Stabilizer Angle</b>	Max. 3.0°
<b>Stabilizer Power</b>	180 mW
<b>Pixel</b>	3840 x 2160
<b>View Angle</b>	27.1°(DFOV) 23.6°(HFOV) 13.5°(VFOV)
<b>Lens Dimensions</b>	19.00 x 19.00 x 25.20 mm
<b>Module Type</b>	Fixed Focus
<b>Auto Focus VCM Driver IC</b>	None
<b>Interface</b>	USB 2.0
<b>Output Format</b>	MJPG
<b>Auto Control</b>	Saturation, Contrast, Acutance White Balance, Exposure
<b>Audio</b>	None
<b>Input Voltage</b>	DC 5V
<b>Working Current</b>	Max 500mA
<b>System Compatibility</b>	Windows XP (SP2, SP3), Vista, 7, 8, 10, 11 Android, Mac OS, Linux or OS with UVC Driver Raspberry Pi by USB Port
<b>Software for USB Camera</b>	AMCAP, Webcam Viewer, V4L2 Controls Contacam, VLC Player, MotionEye OS iSpy, ZoneMider, Yawcam
<b>Lens Type</b>	650nm IR Cut
<b>Operating Temperature</b>	-10°C to +70°C
<b>USB Cable</b>	USB Cable



Raspberry Pi

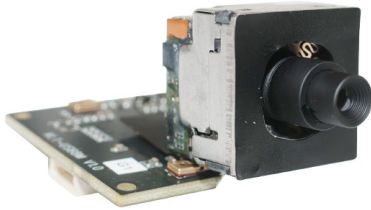
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## YDS-OIS-USB5A-FF-IMX317 V2.0

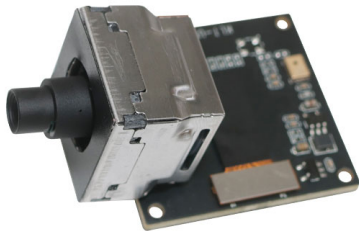
8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module



Top View



Side View



Bottom View



Mating Connector



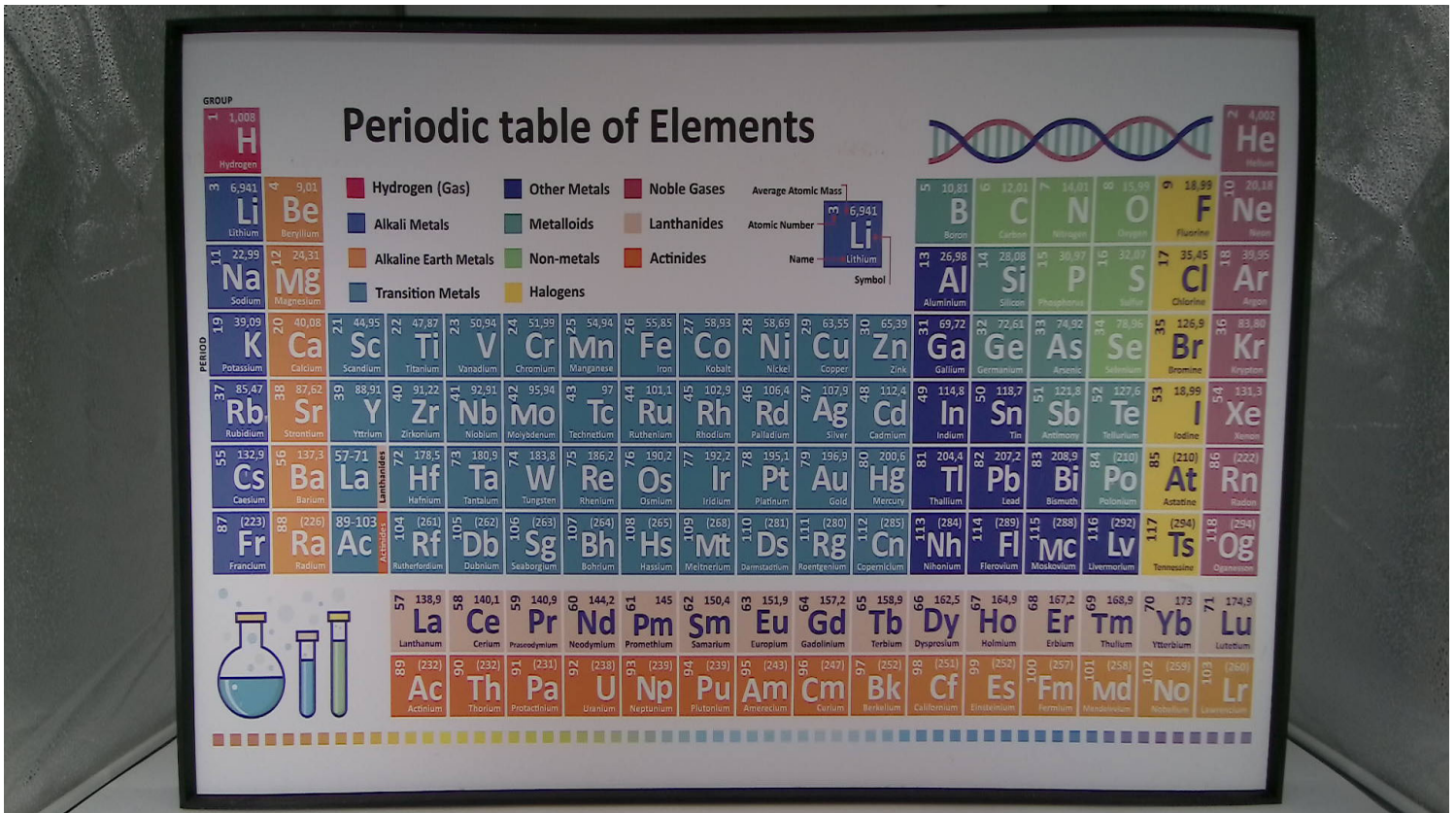
# YDS CAMERA MODULE

your best camera partner

## YDS-OIS-USB5A-FF-IMX317 V2.0

### 8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	640 x 480 (VGA)	20 FPS
	1280 x 720 (720P)	20 FPS
	1920 x 1080 (1080P)	20 FPS
	2592 x 1944 (5MP)	20 FPS
	3840 x (4K)	20 FPS
YUV2	640 x 480 (VGA)	20 FPS
	1280 x 720 (720P)	10 FPS
	1920 x 1080 (1080P)	2 FPS
	2592 x 1944 (5MP)	1 FPS

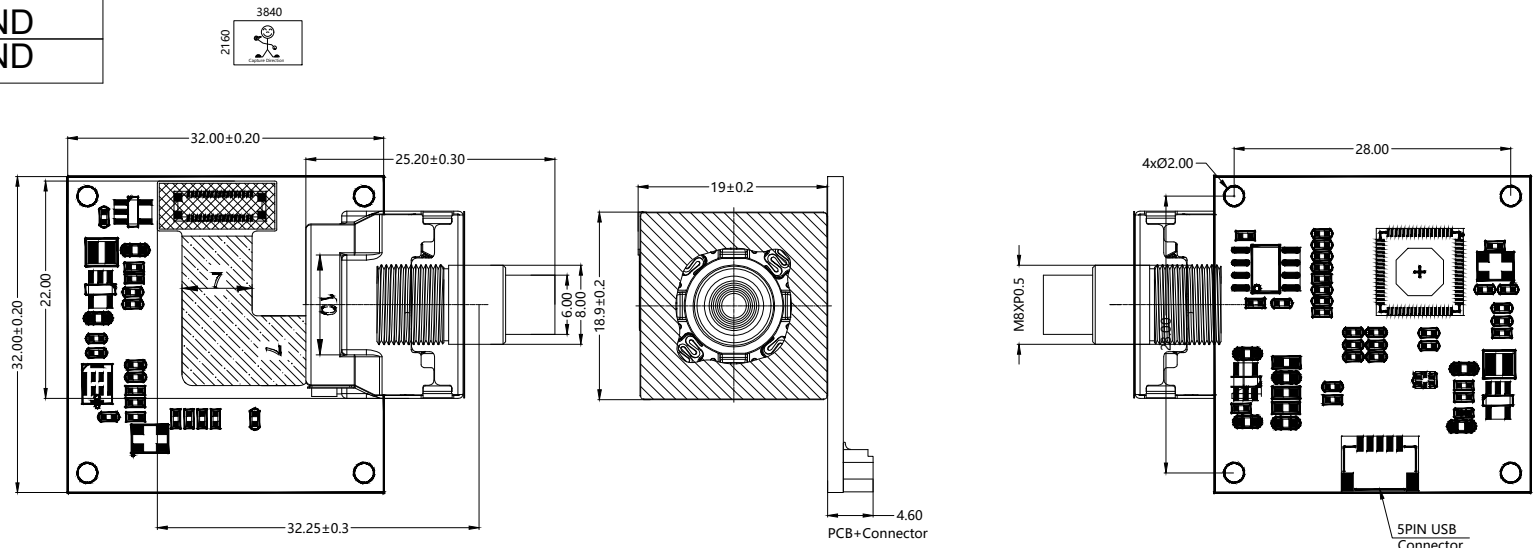


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PIN NO	SIGNAL
PIN1	USB 5V
02	D-
03	D+
04	DGND
05	DGND

Version	Information
V1.0	First Version
V2.0	Change lens



TOP VIEW

SIDE VIEW

BOTTOM VIEW

NOTE:  
1.The device slave address:0x20;

Parameters:  
1、 Sensor specification:  
Image Sensor: IMX317  
Pixel: 1.62um\*1.62um  
Lens Type: 1/2.5  
Important Voltage Description:  
USB 5V (external power supply);

2、 Lens specification:  
FOV: 27.1°(D);23.6°(H);13.5°(V);  
F/NO.: 5.6  
OPT distortion: <-0.5%  
Focal length: 15mm  
Composition: 4G+IR FILTER  
IR Cut Coating: 650nm±10nm@50%

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Designed By	Kevin	Model Name:	YDS-OIS-USB5A-FF-IMX317 V2.0		
Checked By	Jacky	Projection Type:	Unit:	Date:	
			mm	2/6/2026	
		Scale:	Sheet:	Version:	
		1:1	1 of 1	1/0	

## [Product Information]

# IMX317CQC

Ver.1.0

Diagonal 7.20 mm (Type 1/2.5) CMOS Image Sensor with Square Pixel for Color Cameras

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### Description

The IMX317CQC is a diagonal 7.20 mm (Type 1/2.5) CMOS image sensor with a color square pixel array and approximately 8.51 M effective pixels. 12-bit digital output makes it possible to output the signals of approximately 8.51 M effective pixels with high definition for shooting still pictures. It also operates with three power supply voltages: analog 2.8 V, digital 1.2 V, and 1.8 V for I/O interface and achieves low power consumption. Furthermore, it realizes 12-bit digital output for shooting high-speed and high-definition moving pictures by horizontal and vertical addition and subsampling. Realizing high-sensitivity, low dark current, this sensor also has an electronic shutter function with variable storage time.

In addition, this product is designed for use in consumer use digital still camera and consumer use camcorder. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of the product. Therefore, don't use this for applications other than consumer use digital still camera and consumer use camcorder.

In addition, individual specification change cannot be supported because this is a standard product.

Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

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### Features

- ◆ CMOS active pixel type pixels
- ◆ Input clock frequency 6 to 27 MHz (CSI-2), 12/24/36/72 MHz (Sub-LVDS)
- ◆ Both MIPI Specifications (CSI-2 high-speed serial interface) and Sub-LVDS supported
- ◆ All-pixel scan mode
  - Various readout modes (\*)
- ◆ High-sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Vertical and horizontal arbitrary cropping function
- ◆ Variable-speed shutter function (minimum unit: 1 horizontal period)
- ◆ Low power consumption
- ◆ Digital Overlap High Dynamic Range (DOL-HDR) function
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ CDS/PGA on chip: Gain +27 dB (step pitch 0.1 dB)
- ◆ 10-bit/12-bit A/D conversion on chip
- ◆ R, G, B primary color mosaic filters on chip
- ◆ All-pixel simultaneous reset supported
- ◆ 92-pin high-precision ceramic package

\* Please refer to the datasheet for binning/subsampling details of readout modes.

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**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size Diagonal 7.20 mm (Type 1/2.5)
- ◆ Total number of pixels 3864 (H) × 2218 (V) approx. 8.57 M pixels
- ◆ Number of effective pixels 3864 (H) × 2202 (V) approx. 8.51 M pixels
- ◆ Number of active pixels 3864 (H) × 2196 (V) approx. 8.49 M pixels diagonal 7.20 mm
- ◆ Number of recommended recording pixels 3840 (H) × 2160 (V) 8.29 M pixels aspect ratio 16:9
- ◆ Chip size 8.365 mm (H) × 6.615 mm (V) (include scribe area)
- ◆ Unit cell size 1.62 μm (H) × 1.62 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, Rear 0 pixel  
Vertical (V) direction: Front 16 pixels, Rear 0 pixel
- ◆ Package 92 pin LGA

**Image Sensor Characteristics**

(Tj = 60 °C)

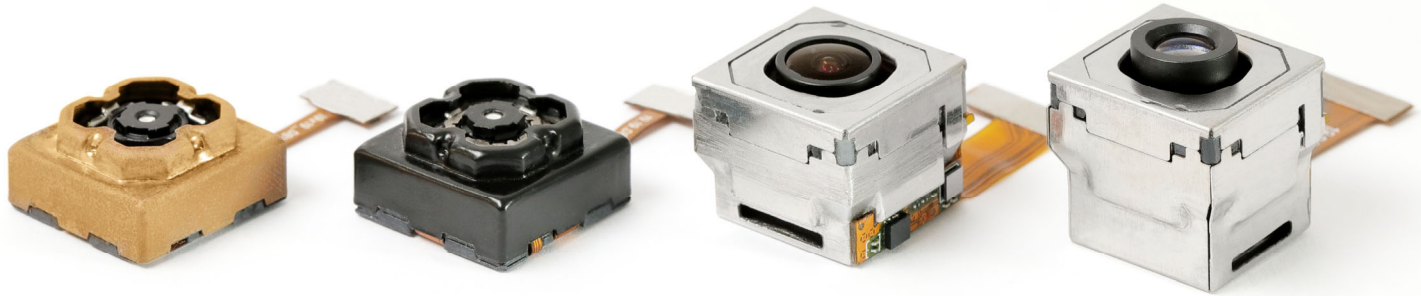
Item		Value	Remarks
Sensitivity (F5.6)	Typ.	1145 digit	1/30 s integration
Saturation signal	Min.	3050 digit	

**Basic Drive Mode**

Drive mode	Number of recording pixels	Max frame rate [frame/s]		Output data bit length [bit]
		CSI-2	Sub-LVDS	
Readout mode 0	3840 (H) × 2160 (V) approx. 8.29 M pixels	32.81	32.73	12
Readout mode 1	3840 (H) × 2160 (V) approx. 8.29 M pixels	62.52	62.06	10
Readout mode 2	1920 (H) × 1080 (V) approx. 2.07 M pixels	65.82	65.61	12
Readout mode 3	1920 (H) × 1080 (V) approx. 2.07 M pixels	124.80	124.40	10
Readout mode 4	1920 (H) × 1080 (V) approx. 2.07 M pixels	124.80	124.40	10
Readout mode 5	1280 (H) × 720 (V) approx. 0.92 M pixels	185.73	184.86	10
Readout mode 6	1280 (H) × 540 (V) approx. 0.69 M pixels	249.26	247.70	10

## Micro Gimbal Stabilizer (MGS) OIS Camera Modules

Micro Gimbal Stabilizer (MGS) is the patented mechanical optical image stabilizer (OIS) for camera modules. The MGS technology is tilting the image sensor and lens together, enabling anti-shaking performance for moving devices to take a sharp and clear image, even in the low light environment.

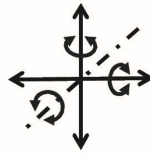


### Features

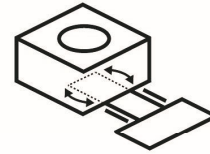
**2-Axis Compensation**  
**Small, Light Weight**  
**18.80x18.80x15.80mm**



Smallest  
Gimbal



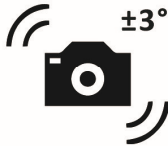
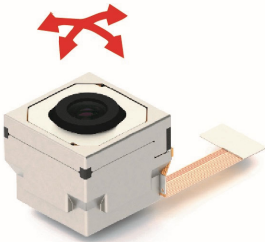
Multi-Axis  
Compensation



Embedded  
Moving FPC



One-stop  
Solution



Stabilizer



Max. View Angle



Integrated  
Design



Patents

### Applications



**5G Smart  
Helmet**



**Sport  
Camera**



**Drones**



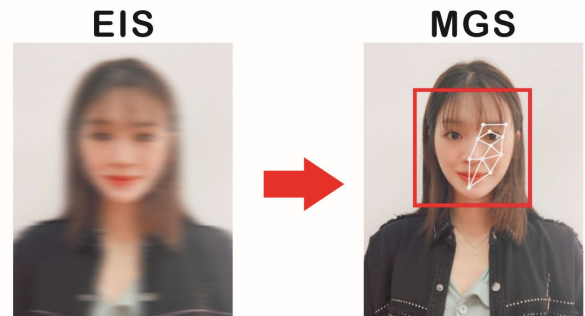
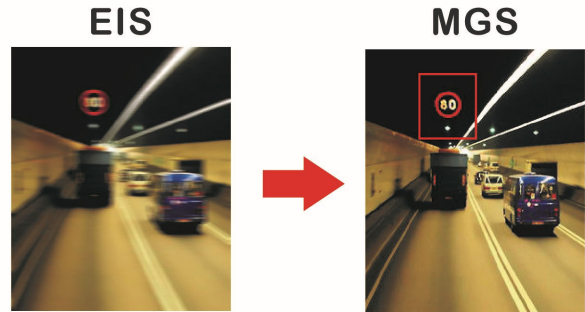
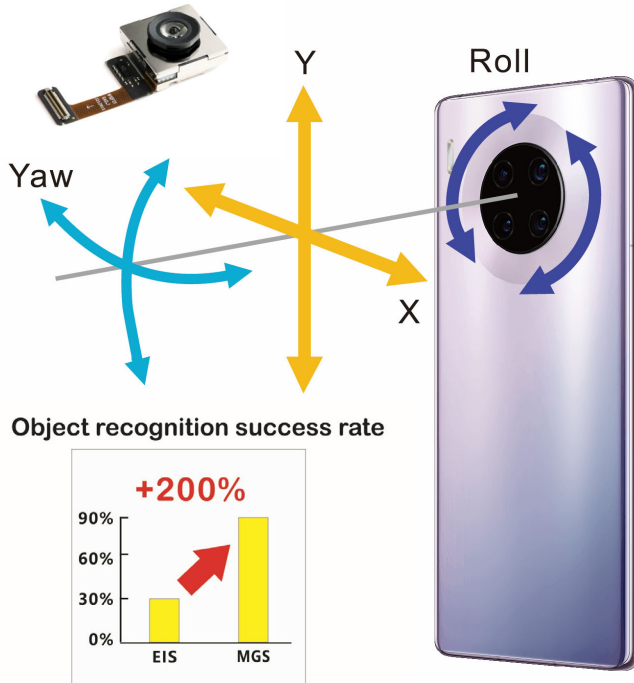
**Robots**



**Wearable  
Cameras**

## Micro Gimbal Stabilizer (MGS) for Mobile Phones

Micro Gimbal Stabilizer (MGS) is fitting in the compact size, enabling the smartphones and tablet PC to take clear images in the moving environment.



MGS camera significantly reduces blurry in low light environment, and supports dynamic face and object recognition with 2 times faster rate.

## Cameras Applications



Automotive Driver Pilot



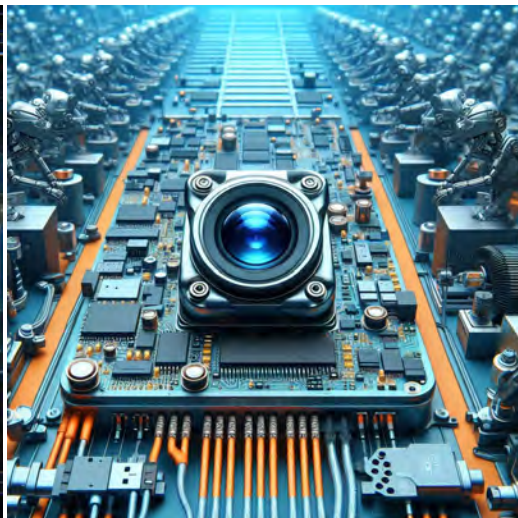
Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



# YDS CAMERA MODULE

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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
<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 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

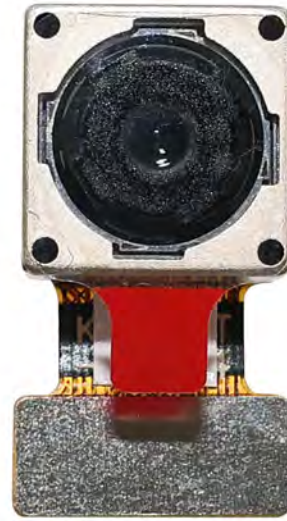
Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches	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



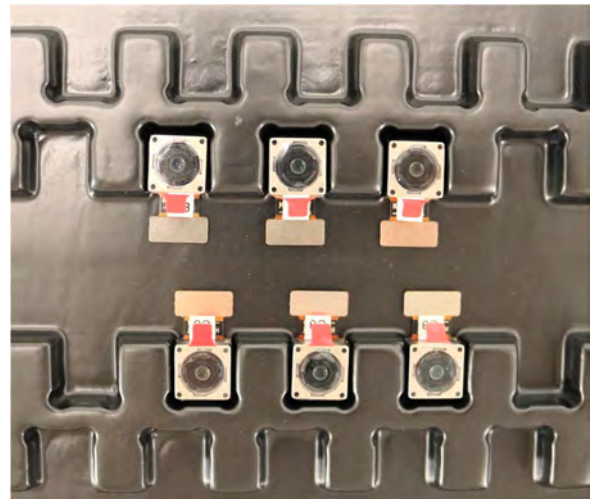
Complete with Lens Protection Film



Tray with Grid and Space

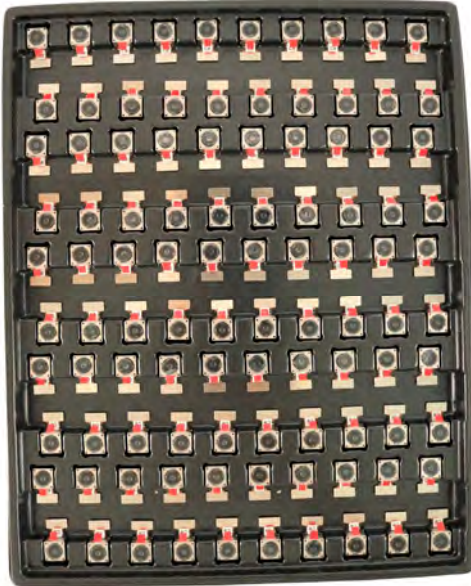


Place Cameras on the Tray

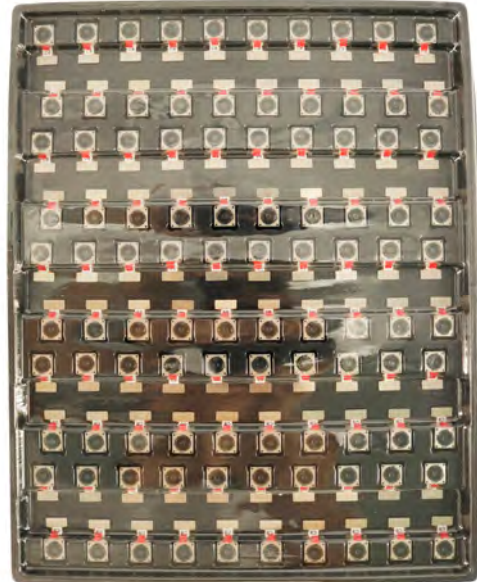


## YDSCAM Package Solutions

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

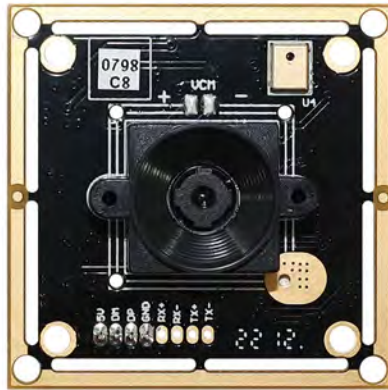




## YDSCAM Package Solutions

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

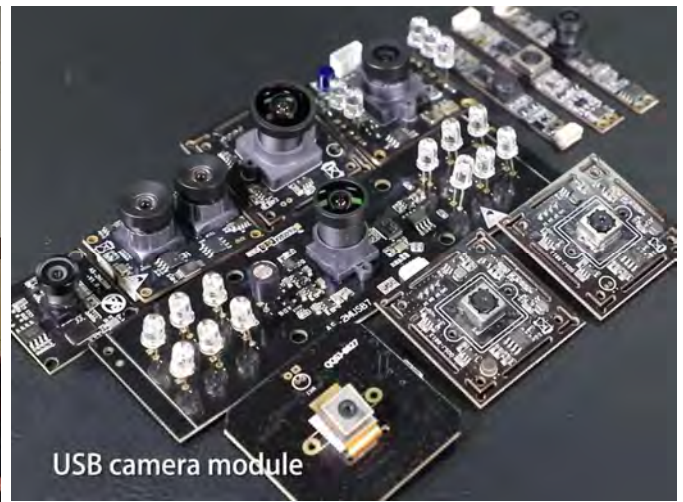
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## Company YDSCAM

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](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 Strength

### Powerful Factory



### Professional Service



### Promised Delivery



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