

YDS-IRSW-OS05A20 V4.2

5MP OmniVision OS05A20 IR Switch MIPI Interface Fixed Focus Camera Module

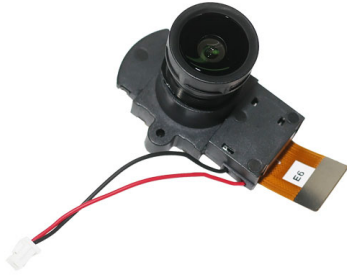


Camera Module No.	YDS-IRSW-OS05A20 V4.2
Resolution	5MP
Image Sensor	OS05A20
Sensor Type	1/2.7"
Pixel Size	2.0 um x 2.0 um
EFL	4.15 mm
F.NO	1.60
Pixel	2688 x 1944
View Angle	106.0°(DFOV) 90.6°(HFOV) 46.4°(VFOV)
Lens Dimensions	20.00 x 14.00 x 23.05 mm
Module Size	43.00 x 24.50 mm
Module Type	Fixed Focus
IR Switch Input Voltage	3.3V - 5.5V
Lens Filter IR Frequency	645nm +/- 15nm
Lens Filter AR Frequency	700nm - 1,000nm
Operation (IR Day Time)	Red Line: Negative Black Line: Positive
Operation (AR Night Time)	Red Line: Positive Black Line: Negative
IR Switch Connector	962-10231-030005 (2 Pin)
Interface	MIPI
Operating Temperature	-30°C to +85°C
Mating Connector	WP7A-S026VA1

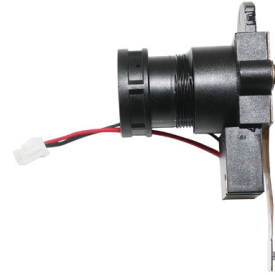


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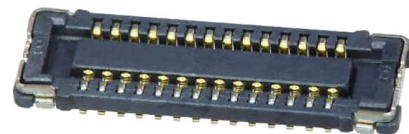
Top View



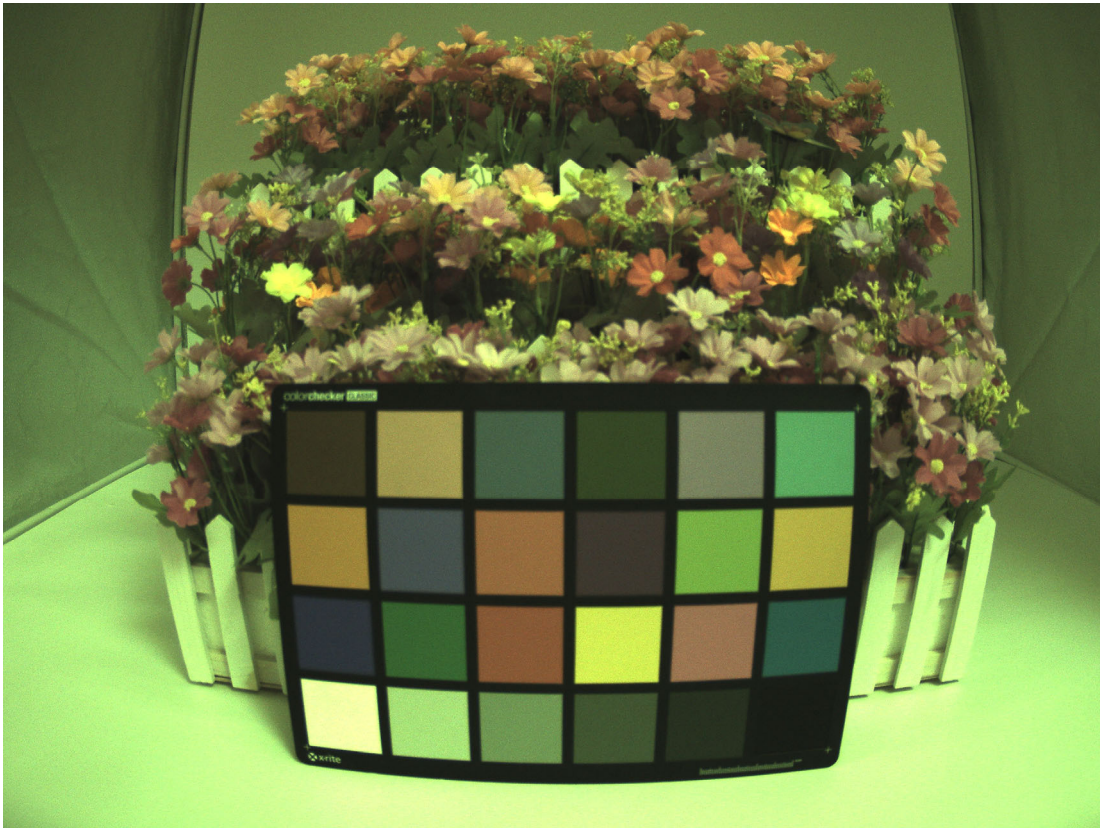
Side View



Bottom View



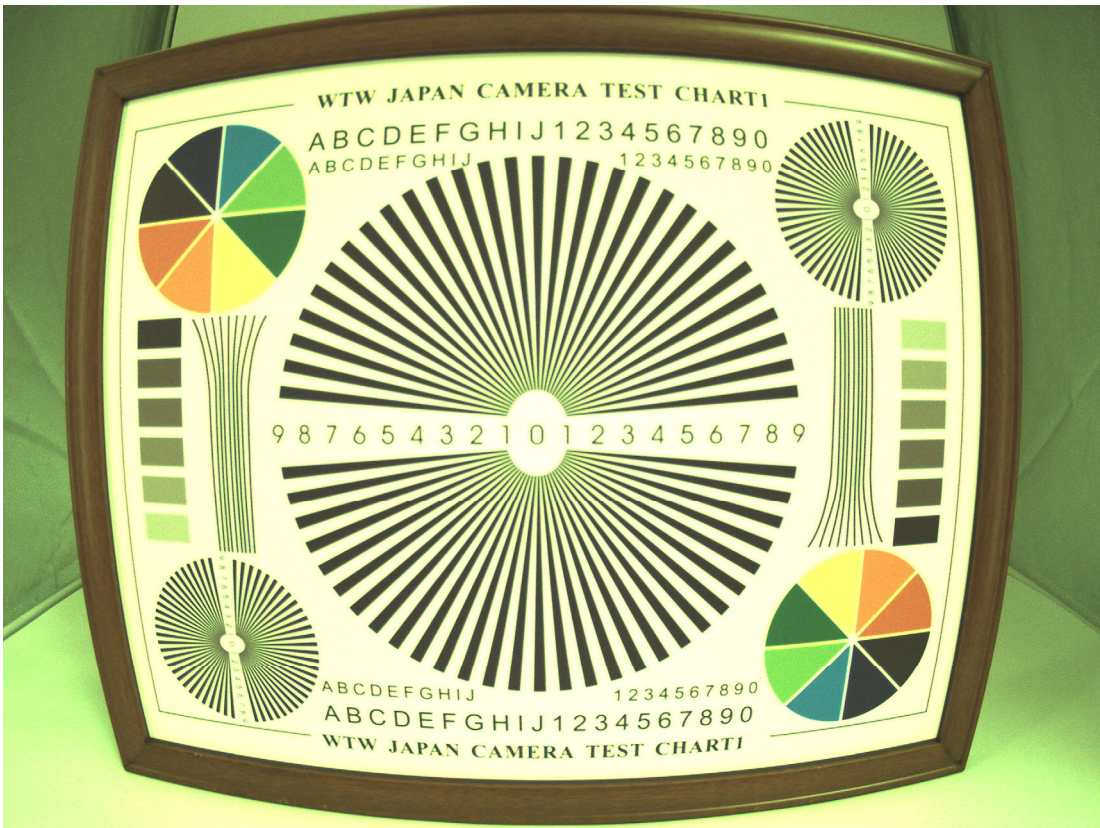
Mating Connector





YDS CAMERA MODULE

your best camera partner

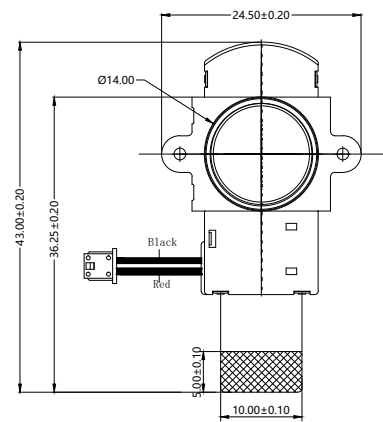


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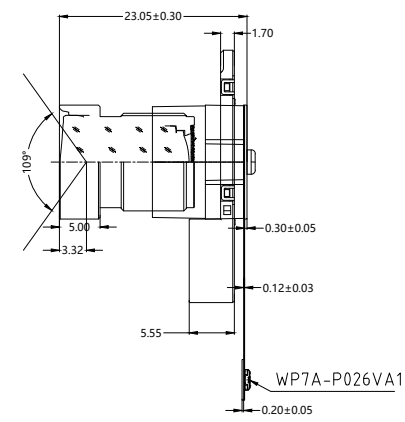
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RoHS	
PIN	SIGNAL
1	AGND
2	DGND
3	AVDD 2.8V
4	MDN3
5	DVDD 1.2V
6	MDP3
7	DOVDD 1.8V
8	DGND
9	PWDN
10	MDN2
11	RST
12	MDP2
13	SCL
14	DGND
15	SDA
16	MDN1
17	MCLK
18	MDP1
19	DGND
20	DGND
21	MCP
22	MDN0
23	MCN
24	MDP0
25	DGND
26	DGND

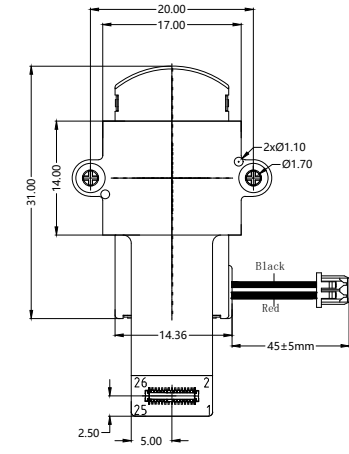
Version	Information
V1.0	First Version
V2.0	Connector changed
V3.0	Change lens and IR CUT
V4.0	Change Pin assignment
V4.2	Change lens



TOP VIEW



SIDE VIEW



BOTTOM VIEW

NOTE:
1.The device slave address:0x6C(w);0x6D(r)

Parameter:
1、Sensor specification:
Image Sensor: OS05A20
Pixel: 2um*2um
Lens Type: 1/2.7
Important Voltage Description:
DVDD1.2V (external power supply);

2、Lens specification:
FOV: 109°(D);90.6°(H);46.4°(V);
F/NO.: 1.6
TV distortion: < -13.94%
Focal length: 4.15mm
Composition: 1G4P+IR CUT

Designed By	Kevin	Model Name:	IRSW-OS05A20 V4.2		
Checked By	Jacky	Projection Type:	Unit: mm	Date: 5/20/2024	
		Third Angle	Scale: 1:1	Sheet: 1 of 1	Version: 1/0



OS05A20 5-megapixel product brief



available in
a lead-free
package

New OS05A20 Uses Nyxel® Technology to Bring Superior Image Quality to Video Surveillance Cameras Day or Night

The 5-megapixel OS05A20 is the world's first image sensor to implement Nyxel® technology, OmniVision's breakthrough near-infrared (NIR) technology that allows image sensors to see better and farther under low- and no-light conditions. By using Nyxel® technology and a 2 x 2 micron pixel, the OS05A20 PureCel® image sensor has the unique ability to capture high-quality, high-resolution day or night, making it ideally suited for professional surveillance systems.

Nyxel® technology combines thick-silicon pixel architectures with extended deep trench isolation (DTI) to improve quantum efficiency (QE) up to 3x for 850 nm sensitivity and up to 5x for 940 nm sensitivity, while

maintaining all other image-quality metrics. These improvements deliver unrivaled image quality, extended image-detection range and a reduced light-source requirement, leading to lower power consumption.

Available in a 1/2.7-inch optical format, the OS05A20 is capable of capturing full-resolution 2688 x 1944 video at 60 frames per second (fps), 1080p full high definition (HD) video at 120 fps, and 720p HD video at 180 fps. The sensor comes in a chip scale package (CSP).

Find out more at www.ovt.com.



Applications

- Security Cameras
- High Resolution Consumer Cameras
- Action Cameras

Product Features

- 2 μm x 2 μm pixel
- optical size of 1/2.7"
- QE enhancement in 850 nm and 940 nm
- programmable controls for:
 - frame rate
 - mirror and flip
 - cropping
 - windowing
- supports output formats:
 - 12-/10-bit RAW RGB
- supports images sizes:
 - 2688 x 1944
 - 1080p (1920x1080)
 - 720p (1280x720)
- supports 2x2 binning
- standard serial SCCB interface
- 12/10-bit ADC
- up to 4-lane MIPI/LVDS serial output interface (supports maximum speed up to 1500 Mbps/lane)
- 2-exposure staggered HDR support
- programmable I/O drive capability
- light sensing mode (LSM)
- PLL with SCC support
- support for frame sync

OS05A20



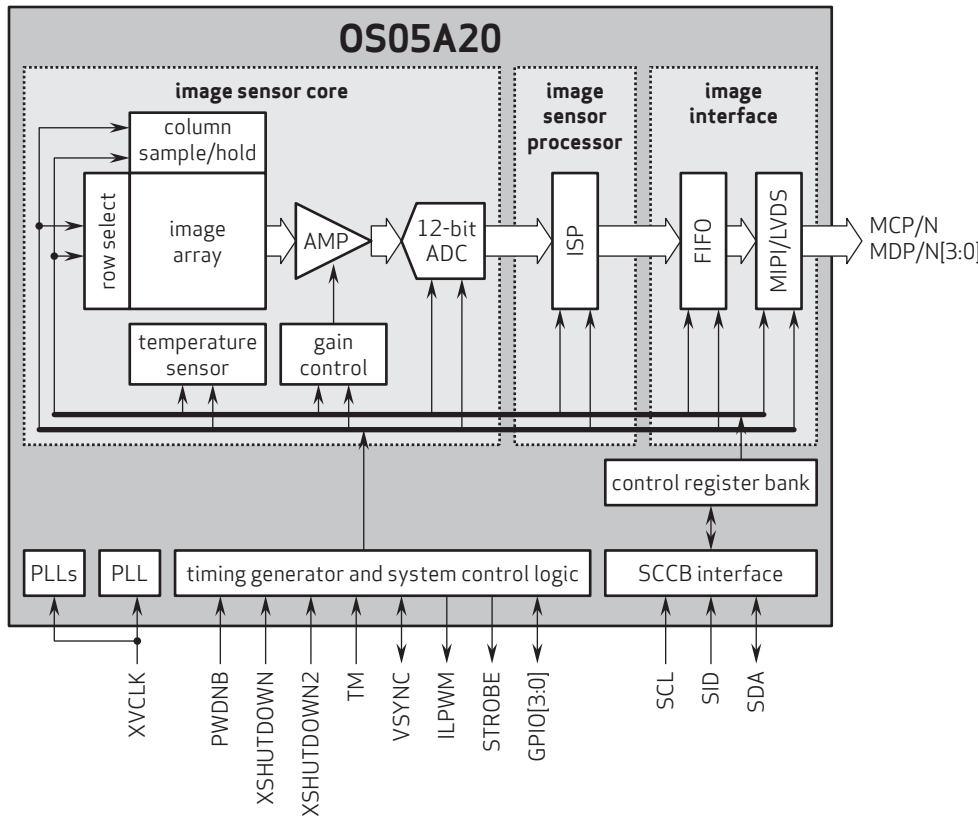
Ordering Information

- OS05A20-H73A-1B (color, lead-free) 73-pin CSP
- OS05A20-H73A-1C (color, lead-free) 73-pin CSP

Technical Specifications

- active array size: 2688 x 1944
- maximum image transfer rate:
 - 2688 x 1944: 60 fps
 - 2688 x 1520: 60 fps
- power supply:
 - core: 1.2V
 - analog: 2.8V
 - I/O: 1.8V
- power requirements:
 - active: 210 mW
 - standby: 2 mA
 - XSHUTDOWN: 2 μA
- temperature range:
 - operating: -30°C to +85°C junction temperature
 - stable image: 0°C to +60°C junction temperature
- output formats: 10/12-bit RGB RAW
- lens size: 1/2.7"
- lens chief ray angle: 11° linear
- scan mode: progressive
- pixel size: 2.0 μm x 2.0 μm
- image area: 5434.56 μm x 3948.05 μm

Functional Block Diagram



4275 Burton Drive
Santa Clara, CA 95054
USA

Tel: + 1 408 567 3000
Fax: + 1 408 567 3001
www.ovt.com

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OmniVision

NEW



0.4mm Pitch, Stacking Type
Board-to-Board (FPC) Connector

CONNECTOR

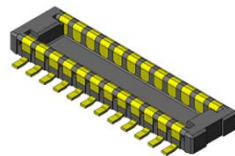
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September 2017

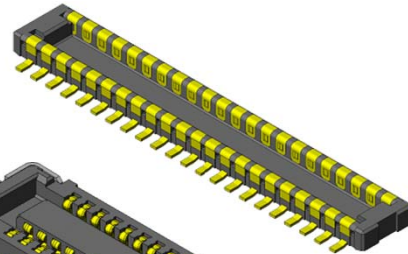
WP7 Series

RoHS Compliant

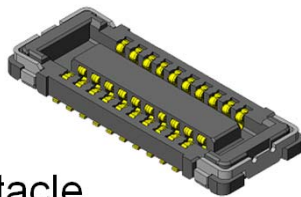
Plug



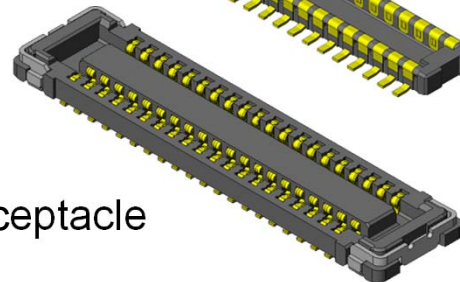
Plug



Receptacle



Receptacle



The WP7 Series is a low-profile board-to-board (FPC) connector with 0.4mm pitch spacing that is ideal for high-density mounting in slim information communication devices like mobile phones, smartphones, LCD, and notebook PC.

To satisfy different product function requirements, a low pin count type and a high pin count type (WP7A / WP7B) are available with the same mounting pattern.

Features

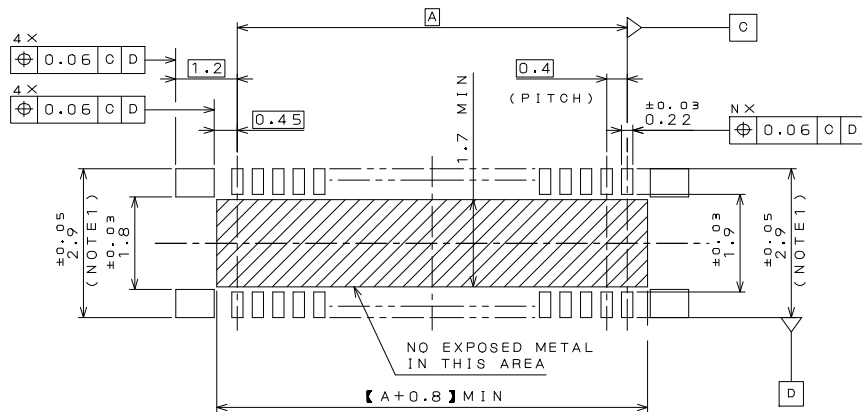
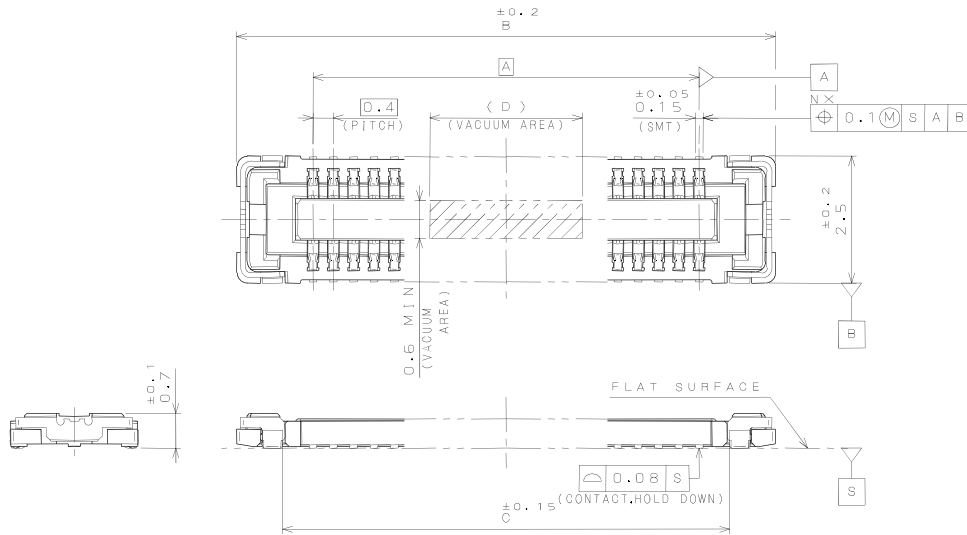
- 0.4mm pitch, 2 rows, 0.7mm stacking height.
- Contact structure ensures high wear-resistance and high contact reliability.
- Secure hold-downs prevent insulator breakage and peeling from FPC.
- 2-point contact design to resist twisting stress.
- Pb-free (Ni barrier on contact prevents solder wicking.)
- Receptacle contacts adopt an optimal configuration according to the pin counts.
High removal force WP7A (low pin count: 10-32 pos.)
Low insertion force WP7B (high pin count 34-70 pos.)
- Signal contact supports 10 Gbps transmission rate.
- Supports MIPI, USB3.1 Gen2, and PCIe Gen3 transmission.

General Specifications

- | | |
|---|---|
| <ul style="list-style-type: none"> ■(WP7A) No. of Contacts:
10, 16, 20, 22, 24, 26,
28, 30, 32 pos. ■(WP7B) No. of Contacts:
34, 40, 50, 60, 70 pos. ■Pitch: 0.4mm, 2 rows ■Operating Temperature:
-40 Deg. C to +85 Deg. C ■Contact Resistance:
70mΩ max. (initial) ■Life Time: 30 mating cycles | <ul style="list-style-type: none"> ■Rated Current: AC, DC 0.3A each per terminal ■Rated Voltage: AC, DC 50V ■Insulation Resistance: 100MΩ min. (initial) ■Dielectric Withstanding Voltage:
AC250Vr.m.s for 1 minute ■(WP7A) total insertion force:
1.50N x n max. (n: No. of pos.) ■(WP7A) total removal force:
0.15N x n min. (n: No. of pos.) ■(WP7B) total insertion force:
1.00N x n max. (n: No. of pos.) ■(WP7B) total removal force:
0.10N x n min. (n: No. of pos.) |
|---|---|

Part Number	WP7A-S***VA1
SJ Drawing	SJ111877

WP7A Receptacle



APPLICABLE P.C.B. DIMENSION (REF.)
適合基板寸法 (参考)

DIMENSIONS 寸法 NUMBER OF CONTACT 芯数	DIMENSIONS			
	A	B	C	D
10	1.6	4.6	2.8	2.0
16	2.8	5.8	4.0	2.0
20	3.6	6.6	4.8	2.0
22	4.0	7.0	5.2	2.0
24	4.4	7.4	5.6	2.0
26	4.8	7.8	6.0	5.0
28	5.2	8.2	6.4	5.0
30	5.6	8.6	6.8	5.0
32	6.0	9.0	7.2	5.0

Note 1) Dimension 3.5 ± 0.05 is recommended in case repair is needed.

Cameras Applications



Automotive Driver Pilot



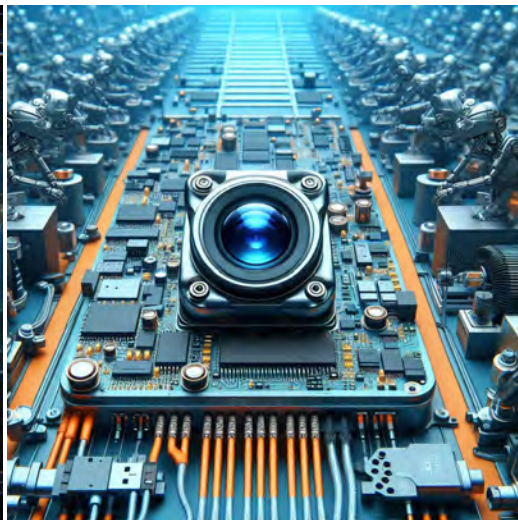
Live Streaming



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							
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



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

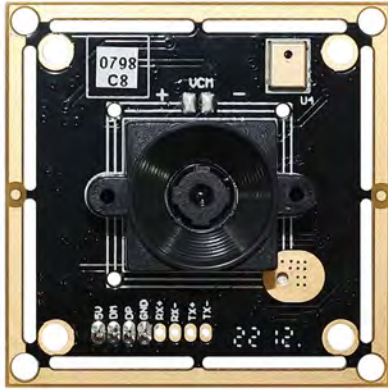




YDSCAM Package Solutions

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

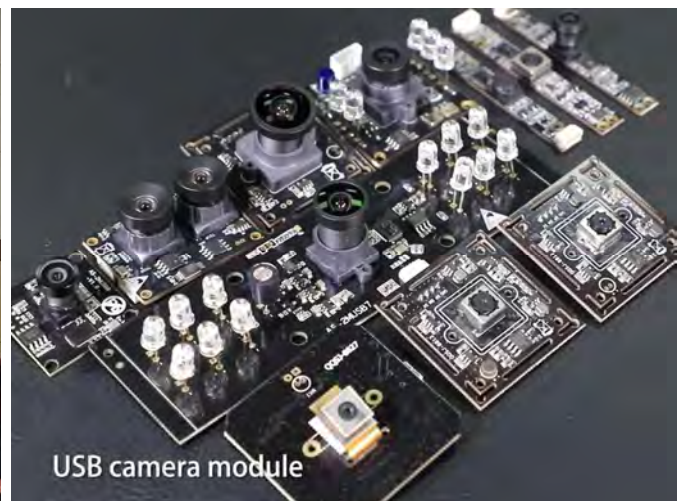
your best camera partner

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. 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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