

YDS-OIS-OFA68-IMX386 V1.0

12MP Sony IMX386 OIS MGS MIPI Interface Fixed Focus Camera Module



Specifications

Camera Module No.	YDS-OIS-OFA68-IMX386 V1.0
Resolution	12MP
Image Sensor	IMX386 w/ MGS OIS
Sensor Type	1/2.86"
Pixel Size	1.25 um x 1.25 um
EFL	2.31 mm
F.NO	2.20
Stabilization Method	Optical Image Stabilization (OIS)
Stabilizer Type	Micro Gimbal Stabilizer (MGS)
Stabilizer Axis No.	2 Axis (Pitch and Yaw)
Stabilizer Angle	Max. 3.0°
Stabilizer Power	180 mW
Pixel	4208 x 3120
View Angle	123.0°(DFOV) 100.7.0°(HFOV) 81.0°(VFOV)
Lens Dimensions	15.40 x 15.40 x 6.82 mm
Module Size	41.75 x 19.15 mm
Module Type	Fixed Focus
Interface	MIPI
Lens Type	650nm IR Cut
Operating Temperature	-20°C to +70°C
Mating Connector	OK-14F030-04



YDS-OIS-OFA68-IMX386 V1.0

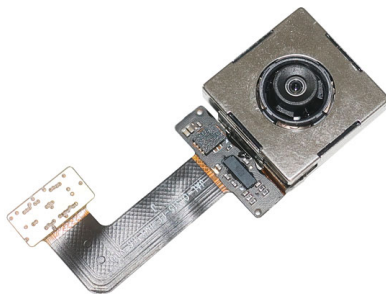
12MP Sony IMX386 OIS MGS MIPI Interface Fixed Focus Camera Module



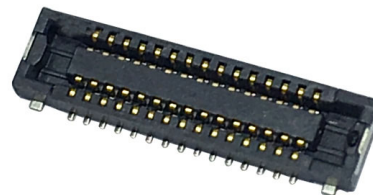
Top View



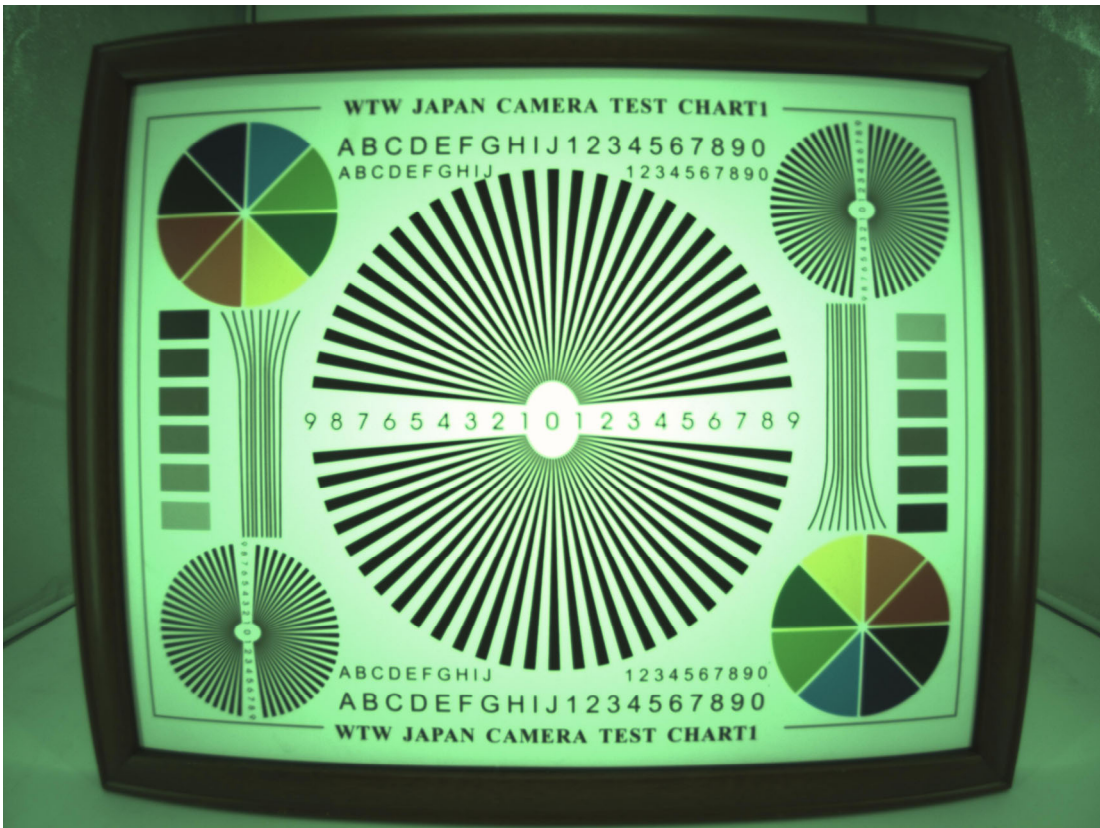
Side View



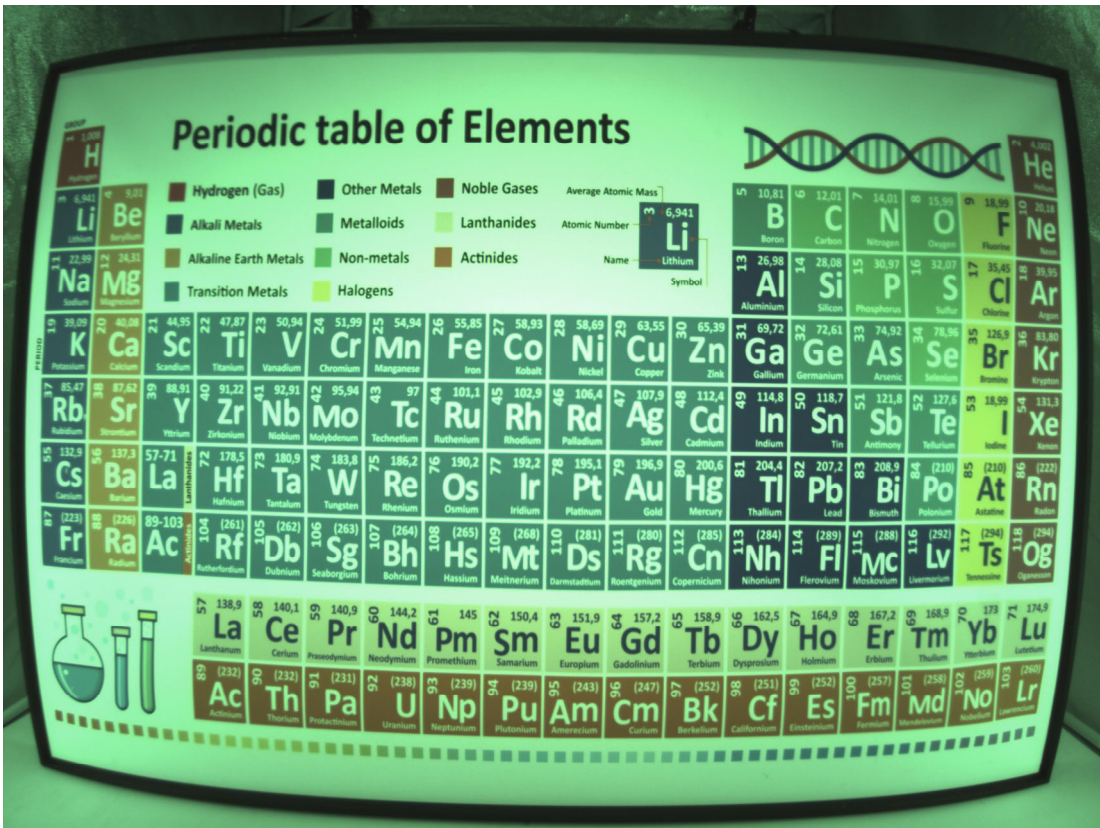
Bottom View



Mating Connector

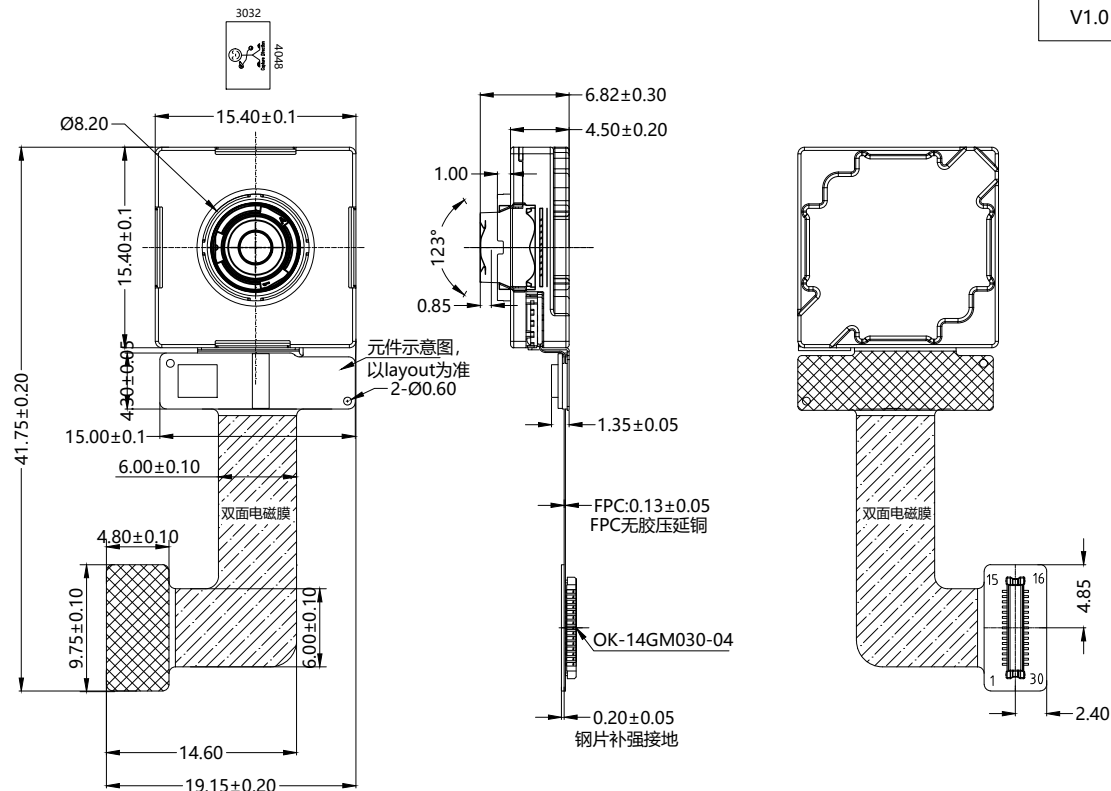






RoHS	
PIN	SIGNAL
1	MCLK
2	XVS
3	MDN4
4	MDP4
5	MDN2
6	MDP2
7	DGND
8	MCN
9	MCP
10	MDN1
11	MDP1
12	DGND
13	MDN3
14	MDP3
15	SWCLK(SSB1)
16	SWDIO(GPIO1)
17	VCM 2.8V
18	VCM 2.8V
19	VCM-GND
20	VCM-GND
21	DVDD 1.1V
22	DVDD 1.1V
23	RESET
24	DOVDD 1.8V
25	SDA
26	SCL
27	DRV-AGND
28	DRV-AVDD 2.9V
29	AGND
30	AVDD 2.8V

Version	Information
V1.0	First Version



TOP VIEW

SIDE VIEW

BOTTOM VIEW

NOTE:

- The device slave address: $0x34(W); 0x35(R)$;
- Driver I2C ID: $0x52(W); 0x53(R)$;

Parameters:

1、 Sensor specification:

Image Sensor: IMX386

Pixel: $1.25\mu m \times 1.25\mu m$

Lens Type: 1/2.86

Important Voltage Description:

DVDD1.1V (external power supply);

2、 Lens specification:

FOV: $123^\circ(D); 100.7^\circ(H); 81^\circ(V)$;

F/NO.: 2.2

TV distortion: $< 10.7\%$

Focal length: 2.31mm

Composition: 6P+IR FILTER

IR Cut Coating: $650nm \pm 10nm @ 50\%$

www.YDSCAM.com

Designed By

Kevin

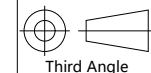
Model Name:

YDS-OIS-OFA68-IMX386 V1.0

Checked By

Jacky

Projection Type:



Unit:

mm

Date:

10/14/2024

Scale:

1:1

Sheet:

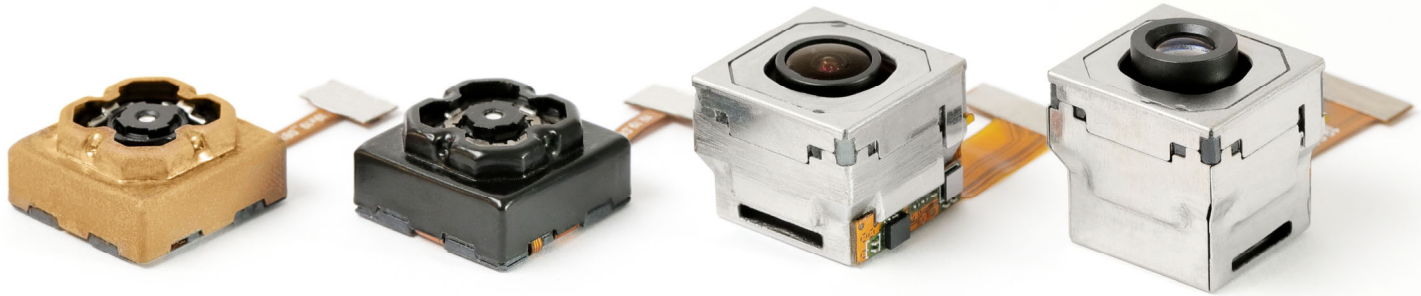
1 of 1

Version:

1/0

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.

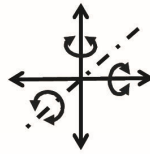


Features

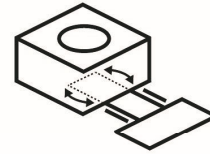
2-Axis Compensation
Small, Light Weight
18.80x18.80x15.80mm



Smallest
Gimbal



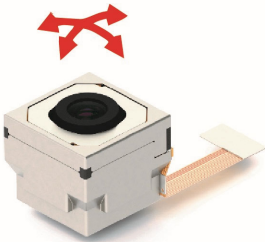
Multi-Axis
Compensation



Embedded
Moving FPC



One-stop
Solution



Stabilizer



Max. View Angle



Integrated
Design



Patents

Applications



**5G Smart
Helmet**



**Sport
Camera**



Drones



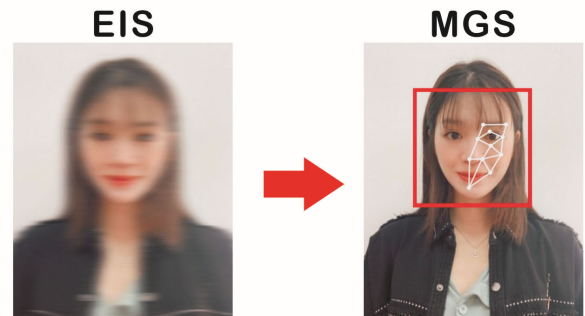
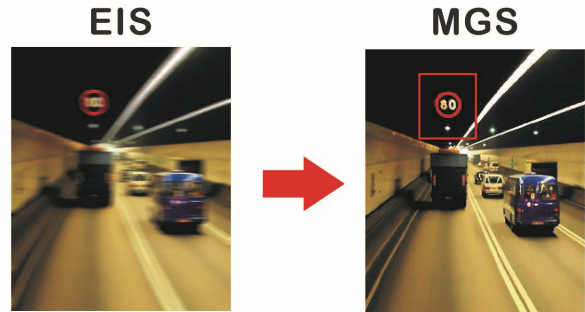
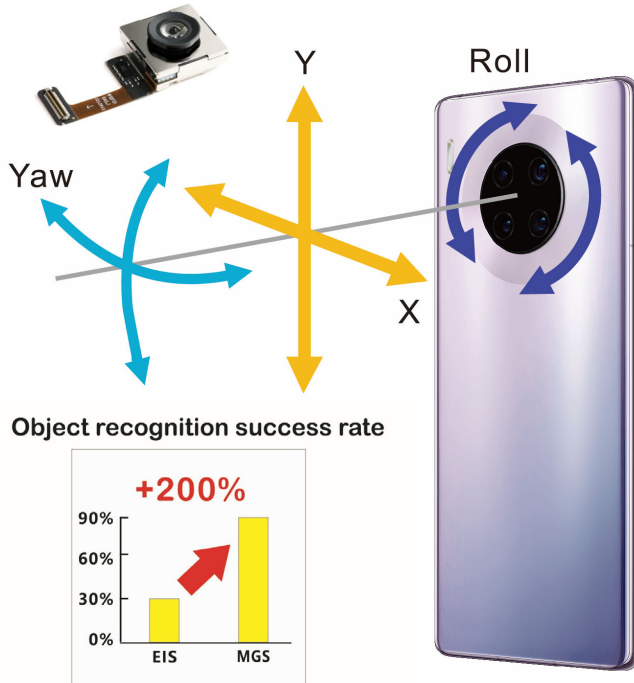
Robots



**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.



Diagonal 6.294 mm (Type 1/2.86) 12Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

IMX386-0APH5-C

General description and application

IMX386 is a diagonal 6.294 mm (Type 1/2.86) 12 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor RS™ technology to achieve high speed image capturing by column parallel A/D converter circuits and high sensitivity and low noise image (comparing with conventional CMOS image sensor) through the backside illuminated imaging pixel structure. R, G, and B pigment primary color mosaic filter is employed. By introducing spatially varying exposure technology, high dynamic range still pictures and movies are achievable. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.7 V, digital 1.1 V and 1.8 V for input/output interface and achieves low power consumption.

In addition, this product is designed for use in cellular phone and tablet pc. When using this for another application, Sony does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than cellular phone and tablet pc. Consult your Sony sales representative if you have any questions.

Functions and Features

- ◆ Back-illuminated and stacked CMOS image sensor Exmor RS
- ◆ Phase Detection Auto Focus (PDAF)
- ◆ High Density Phase Detection Pixels
- ◆ High Signal to Noise Ratio and High Dynamic Range by 1.25μm x 1.25μm unit cell size
- ◆ High Frame Rate 30fps@Full resolution / 60fps@4K2K / 120fps@1080p
- ◆ New synchronization operation for dual camera system
- ◆ Built-in 2D Dynamic Defect Pixel Correction
- ◆ 4-ch Lens Shading Correction (LSC)
- ◆ Built-in temperature sensor
- ◆ Output video format of RAW10
- ◆ Pixel binning readout and V sub-sampling function
- ◆ Two PLLs for independent clock generation for pixel control and data output interface
- ◆ CSI-2 serial data output (MIPI 2lane/4lane, Max. 1.6Gbps/lane, D-PHY spec. ver. 1.2 compliant)
- ◆ 2-wire serial communication
- ◆ 6.6K bit of OTP ROM for user

Exmor RS

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Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size : Diagonal 6.294 mm (Type 1/2.86)
- ◆ Total number of pixels : 4048 (H) × 3096 (V) approx. 12.53 M pixels
- ◆ Number of effective pixels : 4048 (H) × 3032 (V) approx. 12.27 M pixels
- ◆ Number of active pixels : 4032 (H) × 3016 (V) approx. 12.16 M pixels
- ◆ Chip size : 6.240 mm (H) × 4.672 mm (V)
- ◆ Unit cell size : 1.25 μm (H) × 1.25 μm (V)
- ◆ Substrate material : Silicon

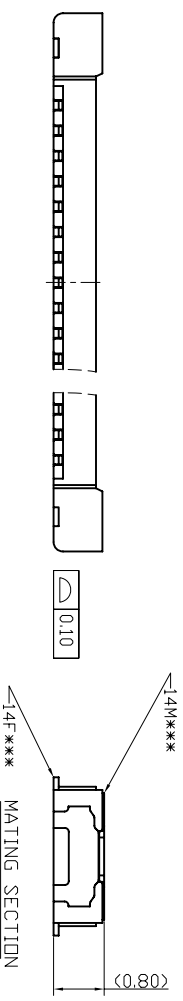
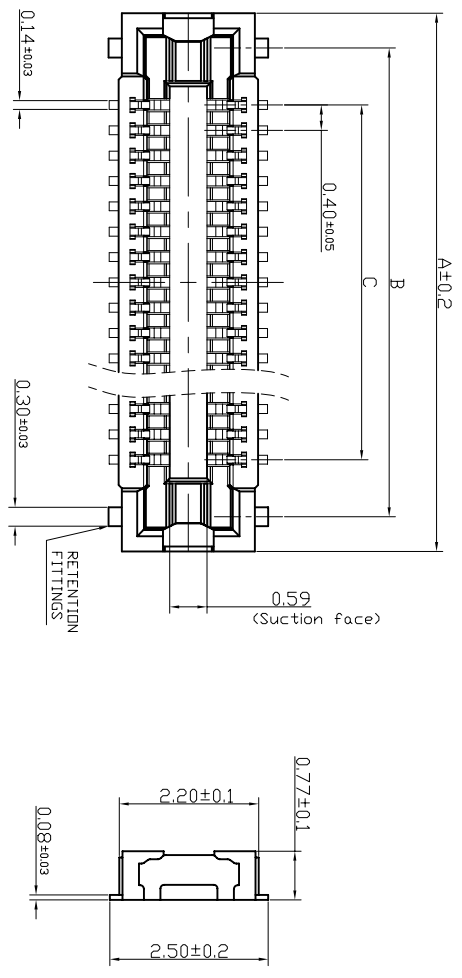
Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	notes
Supply voltage (analog)	VANA	-0.3 to +3.3	V	refer to VSS level
Supply voltage (digital)	VDIG	-0.3 to +1.8	V	
Supply voltage (interface)	VIF	-0.3 to +3.3	V	
Input voltage (digital)	VI	-0.3 to +3.3	V	
Output voltage (digital)	VO	-0.3 to +3.3	V	
Guaranteed Operating temperature	TOPR	-20 to +70	°C	
Guaranteed storage temperature	TSTG	-30 to +80	°C	
Guaranteed performance temperature	TSPEC	-20 to +60	°C	

Recommended Operating Voltage

Item	Symbol	Ratings	Unit	notes
Supply voltage (analog)	VANA	2.7 +0.2/-0.1	V	refer to VSS level
Supply voltage (digital)	VDIG	1.1 ± 0.1	V	
Supply voltage (interface)	VIF	1.8 ± 0.1	V	

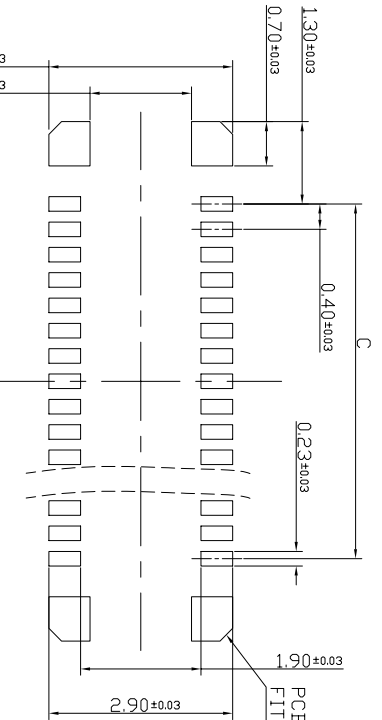
REV	ECN NO	DRA	APPD	DATE
A	FIRST RELEASE	George Gao	Huinan Zhou	2013.09.18
B	SECOND VERSIONS	George Gao	Huinan Zhou	2015.10.22



- Specifications:
- Material:
 - Molded portion: LCP resin (UL94 V-0)
 - Contact and Post: Copper alloy.
 - Surface treatment:
 - Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) ; Exposed nickel portions.
 - Metal clips: Base: Ni plating Surface: Au flash plating (except the terminal tips) Or: Base: Ni plating Surface: Sn flash plating (except the terminal tips)
 - Characteristics:
 - Rated voltage: 60V AC/DC
 - Rated current: 0.3A/contact (Max. 5A at total contact)
 - Insulation resistance: Min. 1000MΩ (initial)
 - Breakdown voltage: 150V AC for 1 min.
 - Saltwater spray resistance (header and socket mated): 24 hours, insulation resistance min.100MΩ, contact resistance max. 90mΩ
 - Contact resistance: Max. 90mΩ
 - Ambient temperature: -55℃~+85℃
 - Storage temperature: -55℃~+85℃ (product only); -40℃~+50℃ (emboss packing)
 - Composite insertion force: Max. 0.981N/contacts X contacts (initial)
 - Composite removal force: Min. 0.165N/contacts X contacts
 - Post holding force: Min. 0.49N/contacts
 - Insertion and removal life: 50 times

TABLE:

70	16.50	15.40	13.60
50	12.50	11.40	9.60
40	10.50	9.40	7.60
34	9.30	8.20	6.40
30	8.50	7.40	5.60
24	7.30	6.20	4.40
16	5.70	4.60	2.80
12	4.90	3.80	2.00
10	4.50	3.40	1.60
NUMBER DF CONTACTS	A	B	C



OK-14F***-04

SOCKET
PITCH=0.4MM
NUMBER DF CONTACTS



DIMENSION IN MM		TOLERANCE UNLESS OTHERWISE SPECIFIED	
. ±0.20	. ±2°	. ±0.10	. 0 ±1°
.00 ±0.05	.00 ±0.5°	.000 ±0.03	.000 ±0.3°

APPRO:	TITLE:	0.4MM BTB (MATING HEIGHT 0.8H)	
CHKD:	DWG NO.:	OK-14F***-04	
DRAW:	PROJ:	QTY	SIZE
George Gao	2015.10.22	--	A4
		SHEET	SCALE
		1/1	1:1
		REV	B

RECOMMENDED PCB LAYOUT

REV	ECN NO	DRA	APPD	DATE
A	FIRST RELEASE	George Gao	Hunan Zhou	2013.09.12

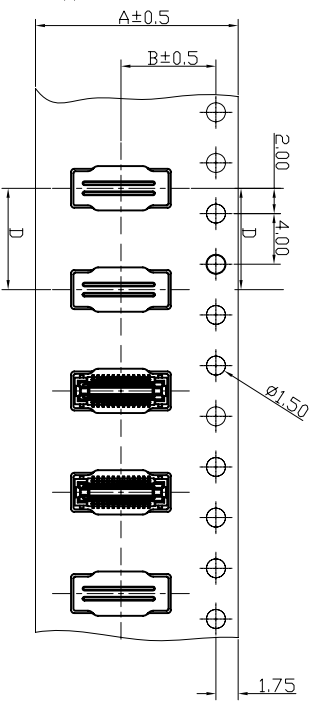
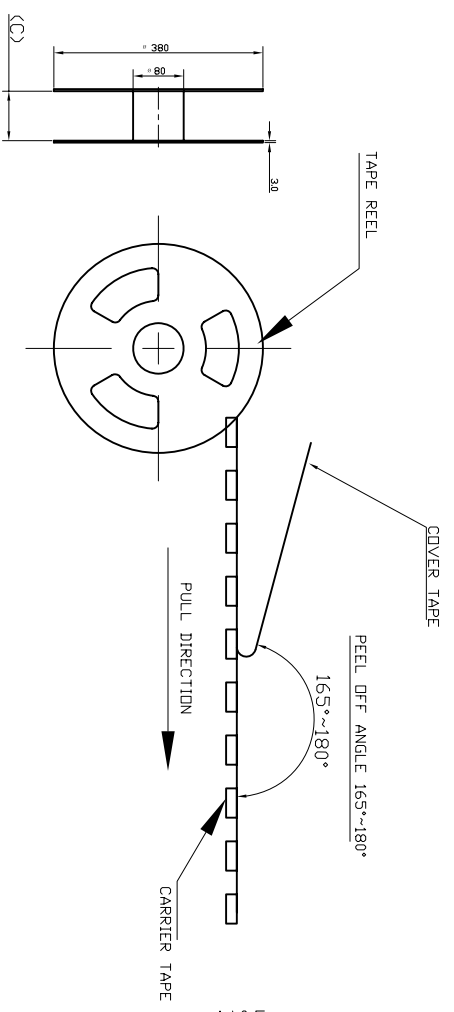


TABLE:

70	24.00	11.50	25.4	8.00	10000
50	24.00	11.50	25.4	8.00	10000
40	16.00	7.50	17.4	8.00	10000
34	16.00	7.50	17.4	8.00	10000
30	16.00	7.50	17.4	8.00	10000
24	16.00	7.50	17.4	8.00	10000
16	16.00	7.50	17.4	8.00	10000
12	16.00	7.50	17.4	8.00	10000
10	16.00	7.50	17.4	8.00	10000

DIMENTION IN mm		TOLERANCE UNLESS OTHERWISE SPECIFIED	
. ± 0.20	. ± 2°	. ± 0.10	. ± 1°
.0 ± 0.10	.0 ± 1°	.00 ± 0.05	.00 ± 0.5°
.000 ± 0.03	.000 ± 0.3°		
APPR:	TITLE:	0.4MM BTB (MATING HEIGHT 0.8H)	
CHKD:	DWG NO.:	OK-14F***-04	
DRA:	PROJ:	QTY	SCALE
George Gao	2013.09.18	--	A4
		SHEET	SCALE
		1/1	1:1
		REV	A

Cameras Applications



Automotive Driver Pilot



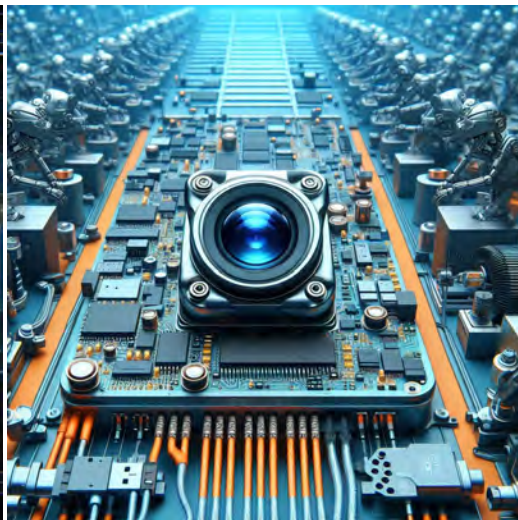
Live Streaming



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						
VSYN	XVS	FSYN	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	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

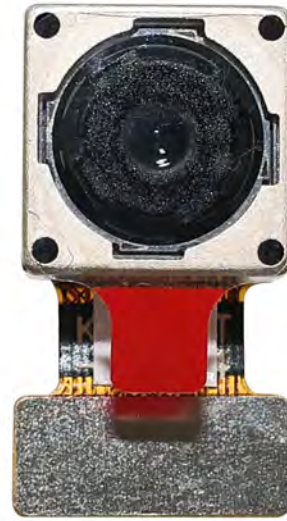
Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches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



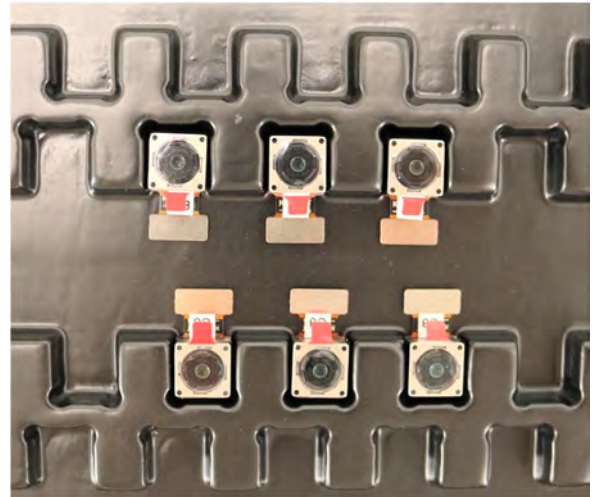
Complete with Lens Protection Film



Tray with Grid and Space

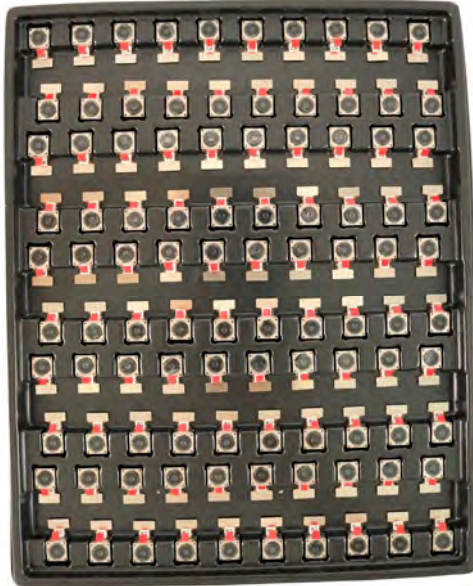


Place Cameras on the Tray

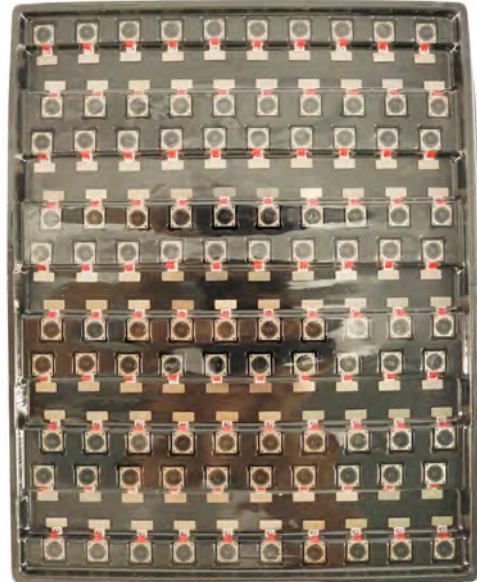


YDSCAM Package Solutions

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

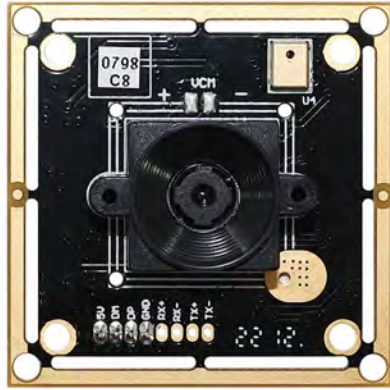




YDSCAM Package Solutions

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

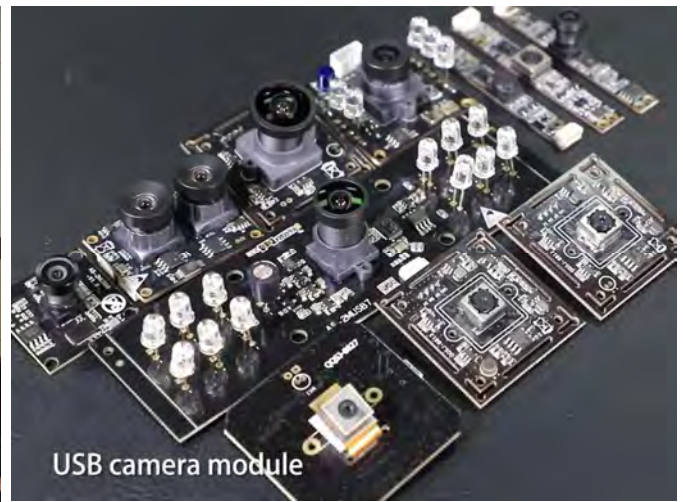
your best camera partner

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.



www.YDSCAM.com sales@ydscam.com Phone (WeChat, QQ): (+86) 177 2732 6718

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YDS CAMERA MODULE

your best camera partner

YDS Strength

Powerful Factory



Professional Service



Promised Delivery



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