

your best camera partner

YDS-J1MF-IMX214 V1.0 13MP Sony IMX214 MIPI Interface Fixed Focus Camera Module





Front View Back View

Specifications

Camera Module No.	YDS-J1MF-IMX214 V1.0	
Resolution	13MP	
Image Sensor	IMX214	
Sensor Type	1/3.06"	
Pixel Size	1.12 um x 1.12 um	
EFL	3.85 mm	
F.NO	2.20	
Pixel	4224 x 3136	
View Angle	74.4°(DFOV) 62.7°(HFOV) 48.7°(VFOV)	
Lens Dimensions	8.50 x 8.50 x 5.45 mm	
Module Size	20.85 x 8.50 mm	
Module Type	Fixed Focus	
Interface	MIPI	
Auto Focus VCM Driver IC	None	
Lens Model	YDS-LENS-50013A1	
Lens Type	650nm IR Cut	
Operating Temperature	-20°C to +70°C	
Mating Connector	BBR43-30KB533	



your best camera partner

YDS-J1MF-IMX214 V1.0 13MP Sony IMX214 MIPI Interface Fixed Focus Camera Module







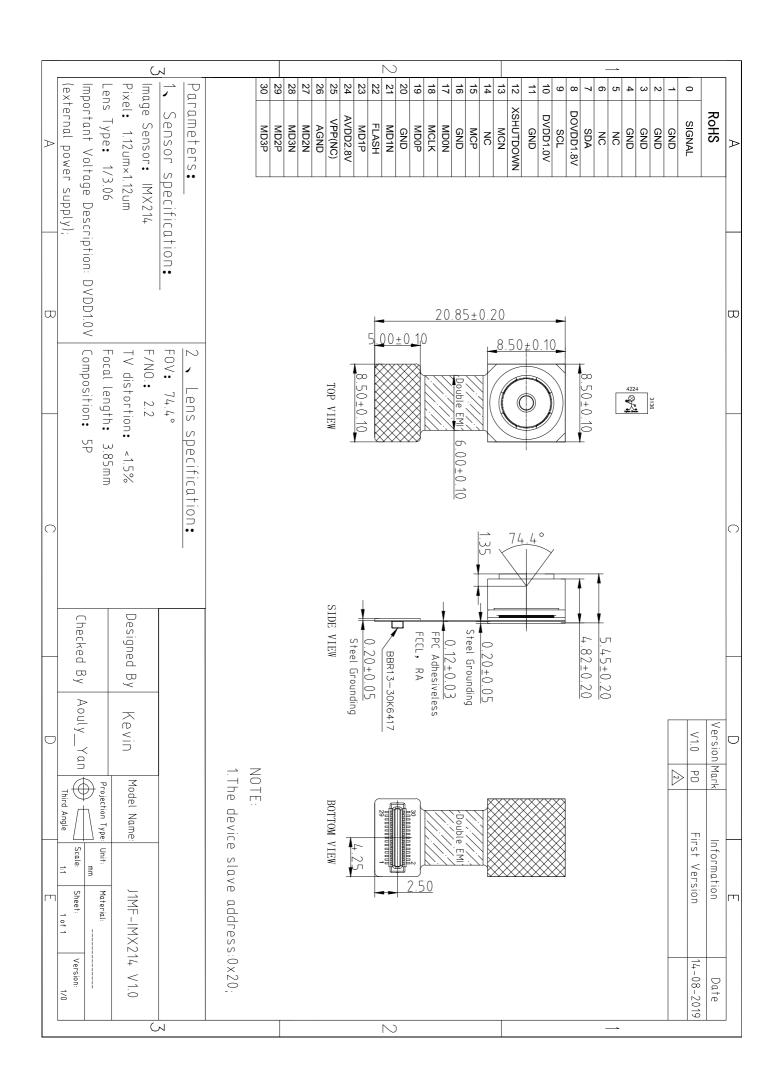
Side View



Bottom View

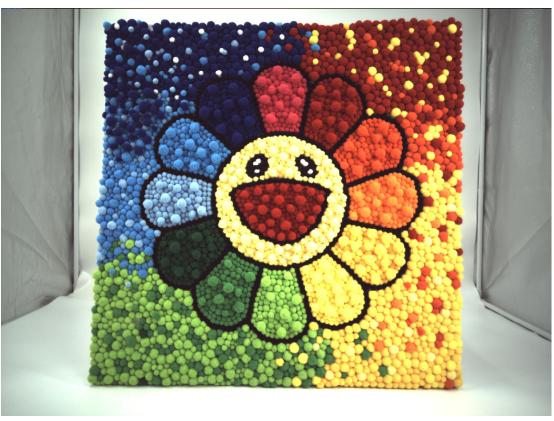


Mating Connector

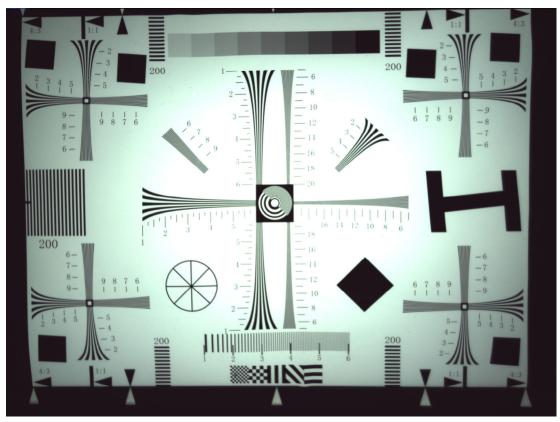


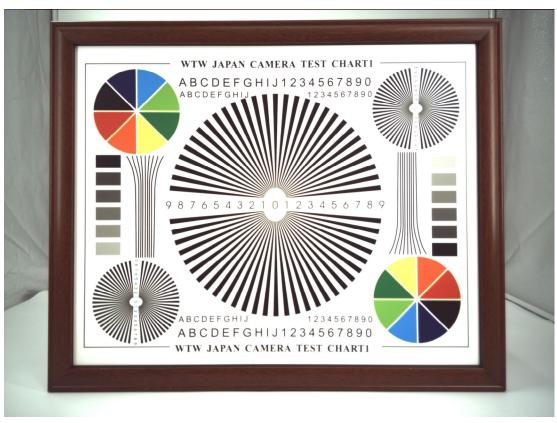
Real Test Images J1MF-IMX214 V1.0





Real Test Images J1MF-IMX214 V1.0





SONY

[Product Brief]

Ver.1.0

IMX214

Diagonal 5.867mm (Type 1/3.06) 13M Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX214 is a diagonal 5.867mm(Type 1/3.06) 13M 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 spacially 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 1.0V and 1.8 V for input/output interface and achieves low power consumption. IMX214 is designed for use in cellular phones or tablet devices*.

Functions and Features

- ◆ Back illuminated and stacked CMOS image sensor Exmor RS
- ◆ Single Frame High Dynamic Range (HDR) with equivalent full pixels.
- High signal to noise ratio (SNR).
- ◆ Full resolution @30fps (Nornmal / HDR).4K2K @30fps (Normal / HDR)1080p @60fps (Normal / HDR)
- ◆ Output video format of RAW10/8, COMP8/6
- ◆ Pixel binning readout and H/V sub sampling function
- ◆ Advanced Noise Reduction (Chroma noise reduction and luminance noise reduction)
- Independent flipping and mirroring.
- ◆ CSI 2 serial data output (MIPI 2lane/4lane, Max. 1.2Gbps/lane, DPHY spec. ver. 1.1 compliant)
- ◆ 2wire serial communication
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- Advanced Noise Reduction.
- ◆ Dynamic Defect Pixel Correction.
- Zero shutter lag.
- Power on reset function
- Dual sensor synchronization operation.
- ◆8K bit of OTP ROM for users.
- Built in temperature sensor

NOTE)

1. When using this product 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 PCs. Consult your Sony sales representative if you have any questions.

SONY IMX214

Device Structure

◆ CMOS image sensor

♦ Image size : Diagonal 5.867mm (Type 1/3.06)

◆ Total number of pixels
 ♦ Number of effective pixels
 ♦ Number of active pixels
 14224 (H) ×3200(V) approx. 13.51M pixels
 14224 (H) ×3136 (V)approx. 13.25 M pixels
 14208 (H) ×3120 (V) approx. 13.13 M pixels

♦ Chip size : 6.100mm (H) × 4.524mm (V) ♦ Unit cell size : 1.12 μm (H) × 1.12 μm (V)

◆ Substrate material : Silicon

Functional Description

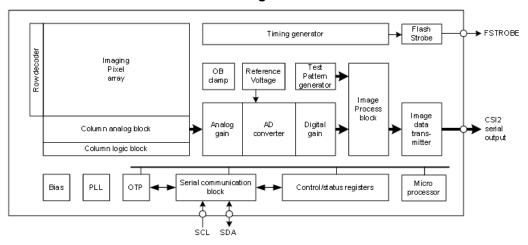
System Outline

IMX214 is a CMOS active pixel type image sensor which adopts the Exmor RS [™] technology to achieve high sensitivity, low noise and high speed image capturing. It is embedded with backside illuminated imaging pixel, low noise analog amplifier,

column parallel A/D converters which enables high speed capturing, digital amplifier, image binning circuit, timing control circuit for imaging size and frame rate, CSI2 image data high speed serial interface, PLL oscillator, and serial communication interface to control these functions.

Several additional image processing functions and peripheral circuits are also included for easy system optimization by the users. A one time programmable memory is embedded in the chip for storing the user data. It has 8 K-bit for users, 10 K-bit as a whole.

Block Diagram



Exmor RS

* Exmor RS is a trademark of Sony Corporation. The Exmor RS is a Sony's CMOS image sensor with high-resolution, high-performance and compact size by replacing a supporting substrate in Exmor RTM which changed fundamental structure of ExmorTM pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

Sony reserves the right to change products and specifications without prior notice.

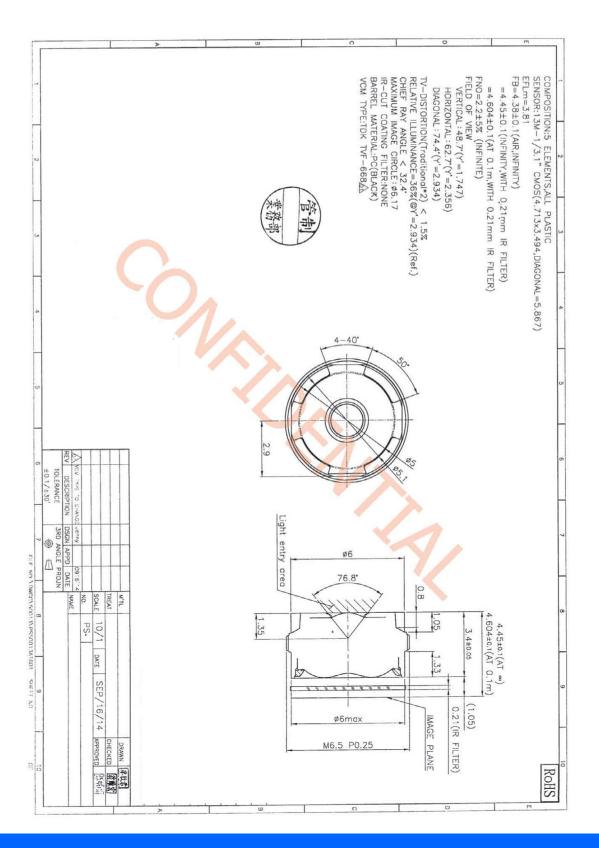
This information does not convey any license by any implication or otherwise under any patents or other right.

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.



your best camera partner

YDS-LENS-50013A1



Ш

П

U

 \mathbf{C}

W

 \triangleright

SONY

[Product Brief]

Ver.1.0

IMX214

Diagonal 5.867mm (Type 1/3.06) 13M Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX214 is a diagonal 5.867mm(Type 1/3.06) 13M 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 spacially 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 1.0V and 1.8 V for input/output interface and achieves low power consumption. IMX214 is designed for use in cellular phones or tablet devices*.

Functions and Features

- ◆ Back illuminated and stacked CMOS image sensor Exmor RS
- ◆ Single Frame High Dynamic Range (HDR) with equivalent full pixels.
- High signal to noise ratio (SNR).
- ◆ Full resolution @30fps (Nornmal / HDR).4K2K @30fps (Normal / HDR)1080p @60fps (Normal / HDR)
- ◆ Output video format of RAW10/8, COMP8/6
- ◆ Pixel binning readout and H/V sub sampling function
- ◆ Advanced Noise Reduction (Chroma noise reduction and luminance noise reduction)
- Independent flipping and mirroring.
- ◆ CSI 2 serial data output (MIPI 2lane/4lane, Max. 1.2Gbps/lane, DPHY spec. ver. 1.1 compliant)
- ◆ 2wire serial communication
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- Advanced Noise Reduction.
- ◆ Dynamic Defect Pixel Correction.
- Zero shutter lag.
- Power on reset function
- Dual sensor synchronization operation.
- ◆8K bit of OTP ROM for users.
- Built in temperature sensor

NOTE)

1. When using this product 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 PCs. Consult your Sony sales representative if you have any questions.

SONY IMX214

Device Structure

◆ CMOS image sensor

♦ Image size : Diagonal 5.867mm (Type 1/3.06)

◆ Total number of pixels
 ♦ Number of effective pixels
 ♦ Number of active pixels
 14224 (H) ×3200(V) approx. 13.51M pixels
 14224 (H) ×3136 (V)approx. 13.25 M pixels
 14208 (H) ×3120 (V) approx. 13.13 M pixels

♦ Chip size : 6.100mm (H) × 4.524mm (V) ♦ Unit cell size : 1.12 μm (H) × 1.12 μm (V)

◆ Substrate material : Silicon

Functional Description

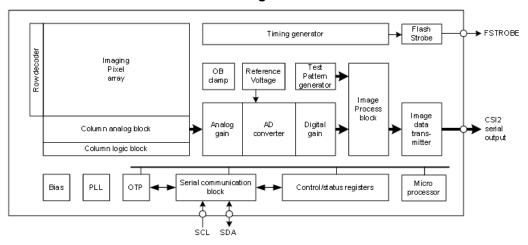
System Outline

IMX214 is a CMOS active pixel type image sensor which adopts the Exmor RS [™] technology to achieve high sensitivity, low noise and high speed image capturing. It is embedded with backside illuminated imaging pixel, low noise analog amplifier,

column parallel A/D converters which enables high speed capturing, digital amplifier, image binning circuit, timing control circuit for imaging size and frame rate, CSI2 image data high speed serial interface, PLL oscillator, and serial communication interface to control these functions.

Several additional image processing functions and peripheral circuits are also included for easy system optimization by the users. A one time programmable memory is embedded in the chip for storing the user data. It has 8 K-bit for users, 10 K-bit as a whole.

Block Diagram



Exmor RS

* Exmor RS is a trademark of Sony Corporation. The Exmor RS is a Sony's CMOS image sensor with high-resolution, high-performance and compact size by replacing a supporting substrate in Exmor RTM which changed fundamental structure of ExmorTM pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

Sony reserves the right to change products and specifications without prior notice.

This information does not convey any license by any implication or otherwise under any patents or other right.

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.



your best camera partner

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



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				
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	3				
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 D00 Y0	DVP data output port 0				
D1 D01 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 D06 Y6	DVP data output port 6				
D7 D07 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 D011 Y11	DVP data output port 11				
ווו ווטס ווס	DVI data output port 11				



your best camera partner

Camera Reliability Test

Reliability Inspection Item		Tanking Makhad	A Criteria		
Category		Item	Testing Method	Acceptance Criteria	
Environmental	Storage	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation	
	Temperature	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

your best camera partner

Inspection Item					
Category		Item	Inspection Method	Standard of Inspection	
	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)	
		Scratches	The Naked Eye	The Inside Crack Exposure is Not Allowed	
	Holder -	Gap	The Naked Eye	Meet the Height Standard	
Appearance		Screw	The Naked Eye	Make Sure Screws Are Presented (If Any)	
		Damage	The Naked Eye	The Inside Crack Exposure is Not Allowed	
		Scratch	The Naked Eye	No Effect On Resolution Standard	
	Lens -	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.	
	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	
Function		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	
		Height	The Naked Eye	Follows Approval Data Sheet	
Dimension		Width	The Naked Eye	Follows Approval Data Sheet	
		Length	The Naked Eye	Follows Approval Data Sheet	
		Overall	The Naked Eye	Follows Approval Data Sheet	



your best camera partner

YDSCAM Package Solutions

YDS Camera Module



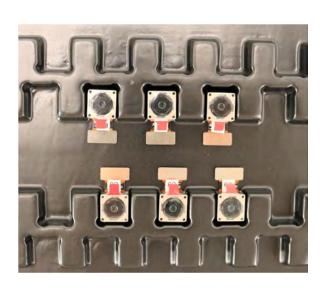
Tray with Grid and Space



Complete with Lens Protection Film



Place Cameras on the Tray





your best camera partner

YDSCAM Package Solutions

Full Tray of Cameras



Place Tray into Anti-Static Bag



Cover Tray with Lid



Vacuum the Anti-Static Bag





your best camera partner

YDSCAM Package Solutions

Sealed Vacuum Anti-Static Bag with Labels

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





your best camera partner

YDSCAM Package Solutions

Place Foam Sheets Between Tray Bags



Place Foam Sheets and Trays into Box



Seal the Carbon Box



Foam Sheets are Larger Than Trays



Foam Sheets are Tightly Fitting in Box



Label the Carbon Shipping Box





your best camera partner

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







your best camera partner

YDSCAM Package Solutions

Place Camera Sample into Anti-Static Bag





Label the Sample Bags





Place Samples into the Carbon Box



Place Connectors into Anti-Static Bag





Place Connectors into Reel



Place Connectors into the Carbon Box





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 subsequential events.















your best camera partner

YDS Strength

Powerful Factory





Professional Service







Promised Delivery











