

YDS-MFA52-IMX577 V1.0

12.3MP Sony IMX577 MIPI Interface M12 Fixed Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	YDS-MFA52-IMX577 V1.0
Resolution	12.3MP
Image Sensor	IMX577
Sensor Type	1/2.3"
Pixel Size	1.55 um x 1.55 um
EFL	3.00 mm
F.NO	2.80
Pixel	4056 x 3040
View Angle	166.0°(DFOV) 120.0°(HFOV) 89.0°(VFOV)
Lens Dimensions	17.20 x 17.20 x 22.40 mm
Module Size	42.09 x 24.20 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Type	650nm IR Cut
Operating Temperature	-10°C to +70°C
Mating Connector	AXE530124

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YDS-MFA52-IMX577 V1.0

12.3MP Sony IMX577 MIPI Interface M12 Fixed Focus Camera Module



Top View



Side View

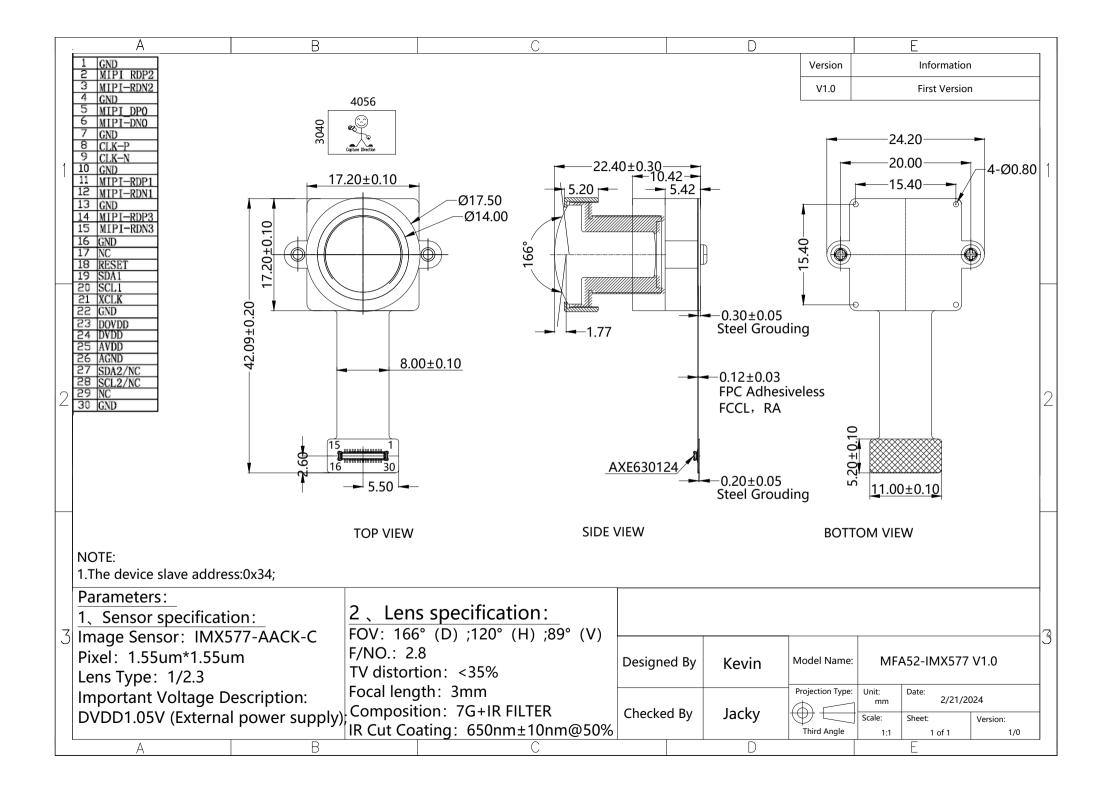




Bottom View

Mating Connector

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SONY

[Product Information]

Ver.1.0

IMX577-AACK

Diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX577-AACK is a diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Sony's Stacked CMOS Image Sensor 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. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.8 V, digital 1.05 V and 1.8 V for input/output interface and achieves low power consumption.

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

Features

- Back-illuminated and stacked CMOS image sensor
- ◆ Digital Overlap High Dynamic Range (DOL-HDR) mode with raw data output.
- High signal to noise ratio (SNR).
- ♦ Full resolution @60 frame/s (Normal), 4K2K @60 frame/s (Normal), 1080p @240 frame/s Full resolution @40 frame/s (12 bit Normal), Full resolution @30 frame/s (DOL-HDR, 2 frame)
- ♦ Output video format of RAW12/10/8, COMP8.
- ◆ Power Save Mode with MIPI ULPS operation
- Pixel binning readout and V sub-sampling function.
- Independent flipping and mirroring.
- Input clock frequency 6 to 27 MHz
- CSI-2 serial data output (MIPI 2lane/4lane, Max. 2.1 Gbps/lane, D-PHY spec. ver. 1.2 compliant)
- ◆ 2-wire serial communication.
- Two PLLs for independent clock generation for pixel control and data output interface.
- Defect Pixel Correction (DPC)
- Ambient Light Sensor (ALS)
- Fast mode transition. (on the fly)
- Dual sensor synchronization operation (Multi camera compatible)
- ♦ 7 k bit of OTP ROM for users.
- ◆ Built-in temperature sensor
- ◆ 10-bit/12-bit A/D conversion on chip
- Horizontal Low Power Analog Cropping
- Window Scanning mode
- 92-pin high-precision ceramic package

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Device Structure

- ♦ CMOS image sensor
- ♦ Image size
- ◆ Total number of pixels
- ◆ Number of effective pixels
- Number of active pixels
- Chip size
- ♦ Unit cell size
- Package

Diagonal 7.857 mm (Type 1/2.3) 4072 (H) × 3176 (V) approx. 12.93 M pixels 4072 (H) × 3064 (V) approx. 12.47 M pixels 4056 (H) × 3040 (V) approx. 12.33 M pixels 7.564 mm (H) × 5.476 mm (V) 1.55 µm (H) × 1.55 µm (V) 92 pin LGA

Image Sensor Characteristics

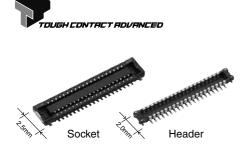
(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F2.8)	Min.	250 LSB	1/120 s integration
Saturation signal	Min.	1023 LSB	

Basic Drive Mode

Drive mode	Number of active pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
Full (4:3)	4056 (H) × 3040 (V)	60	CSI-2	10
(Normal)	approx. 12.33 M pixels	43	CSI-2	12
Full (4:3) (DOL-HDR)	4056 (H) × 3040 (V) approx. 12.33 M pixels	DOL 2 frame : 30 DOL 3 frame : 15	CSI-2	10
Full (16:9) 4K2K (Normal)	4056 (H) × 2288 (V) approx. 9.28 M pixels	79	CSI-2	10
Full (16:9) 4K2K (DOL-HDR)	4056 (H) × 2288 (V) approx. 9.28 M pixels	DOL 2 frame : 39 DOL 3 frame : 19	CSI-2	10
Full (4:3) Binning (Normal)	2028 (H) × 1520 (V) approx. 3.08 M pixels	178	CSI-2	10
Full (16:9) Binning 1080P (Normal)	2028 (H) × 1112 (V) approx. 2.26 M pixels	241	CSI-2	10
Full (16:9) Binning 720P (Normal)	1352 (H) × 740 (V) approx. 1.00 M pixels	241	CSI-2	10
Full (16:9) Scaling 1080P (Normal)	2028 (H) × 1144 (V) approx. 2.32 M pixels	79	CSI-2	10
Full (16:9) Scaling 720P (Normal)	1352 (H) × 762 (V) approx. 1.03 M pixels	79	CSI-2	10





RoHS compliant

For board-to-FPC

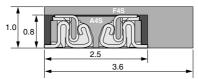
Narrow pitch connectors (0.4mm pitch)

FEATURES

1. 2.5 mm wide slim two-piece style connectors

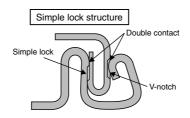
Compact and slim structure contributes overall miniaturization of product design. <Compared to F4S series (40 pin

- contacts, when mated)>
- Width: 30% down
- Footprint: 30% down



2. "**TDUGH CONTACT FOURNEED**" ensures high resistance to various environments in lieu of slim and low profile body

3. Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.



The connector gives the tactile feedback when inserted, allowing reliable mating.

4. Mated heights of 0.8 and 1.0 mm are available for the same foot pattern.5. Connectors for inspection available

A4S Series

APPLICATIONS

Recommended for board-to-FPC connections of mobile equipment, such as cellular phones, smart phones, laptops, and portable music players

ORDERING INFORMATION

		2 4
5: Narrow Pitch Connector A4S (0.4 mm pitch) Socket 6: Narrow Pitch Connector A4S (0.4 mm pitch) Header		
Number of pins (2 digits)		
Mated height <socket> 1: For mated height 0.8/1.0 mm <header> 1: For mated height 0.8 mm 2: For mated height 1.0 mm</header></socket>		
Functions 2: Without positioning bosses		
Surface treatment (Contact portion / Terminal portion) <socket> 4: Ni plating on base, Au plating on surface (for Ni barrie <header> 4: Ni plating on base, Au plating on surface</header></socket>	er available)	

AXE5, 6

PRODUCT TYPES

lated height	Number of pins	Part	number	Pack	ng
vialeu neigini		Socket	Header	Inner carton (1-reel)	Outer carton
	10	AXE510124	AXE610124		
	12	AXE512124	AXE612124		
	14	AXE514124	AXE614124		
	16	AXE516124	AXE616124		
	18	AXE518124	AXE618124		
	20	AXE520124	AXE620124		
	22	AXE522124	AXE622124		
	24	AXE524124	AXE624124		
	26	AXE526124	AXE626124		
	28	AXE528124	AXE628124		
	30	AXE530124	AXE630124		
0.0mm	32	AXE532124	AXE632124		
0.8mm	34	AXE534124	AXE634124		
	36	AXE536124	AXE636124		
	38	AXE538124	AXE638124		
	40	AXE540124	AXE640124		
	44	AXE544124	AXE644124		
	50	AXE550124	AXE650124	5,000 pieces	10,000 pieces
	54	AXE554124	AXE654124		
	56	AXE556124	AXE656124		
	60	AXE560124	AXE660124		
	64	AXE564124	AXE664124		
	70	AXE570124	AXE670124		
	80	AXE580124	AXE680124		
	10	AXE510124	AXE610224		
	12	AXE512124	AXE612224		
	14	AXE514124	AXE614224		
	20	AXE520124	AXE620224		
	24	AXE524124	AXE624224		
	26	AXE526124	AXE626224		
	30	AXE530124	AXE630224		
1.0mm	32	AXE532124	AXE632224		
	40	AXE540124	AXE640224		
	44	AXE544124	AXE644224		
	50	AXE550124	AXE650224		
	54	AXE554124	AXE654224		
	60	AXE560124	AXE660224		
	70	AXE570124	AXE670224		
-	80	AXE580124	AXE680224	-	

Notes: 1. Order unit:

For volume production: 1-inner carton (1-reel) units

Samples for mounting check: 50-connector units. Please contact our sales office.
Samples: Small lot orders are possible. Please contact our sales office.
The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our sales office.
Please contact us for connectors having a number of pins other than those listed above.

AXE5, 6 SPECIFICATIONS

Characteristics

Item		Specifications	Conditions
	Rated current	0.3A/pin contact (Max. 5 A at total pin contacts)	
	Rated voltage	60V AC/DC	
Electrical characteristics	Breakdown voltage	150V AC for 1 min.	No short-circuiting or damage at a detection current of 1 m/ when the specified voltage is applied for one minute.
onaraotonotioo	Insulation resistance	Min. 1,000M Ω (initial)	Using 250V DC megger (applied for 1 min.)
	Contact resistance	Max. 90mΩ	Based on the contact resistance measurement method specified by JIS C 5402.
	Composite insertion force	Max. 1.200N/pin contacts × pin contacts (initial)	
Mechanical	Composite removal force	Min. 0.165N/pin contacts × pin contacts	
characteristics	Contact holding force (Socket contact)	Min. 0.20N/pin contacts	Measuring the maximum force. As the contact is axially pull out.
	Ambient temperature	–55°C to +85°C	No freezing at low temperatures. No dew condensation.
	Soldering heat resistance	Peak temperature: 260°C or less (on the surface of the PC board around the connector terminals)	Infrared reflow soldering
	-	300°C within 5 sec. 350°C within 3 sec.	Soldering iron
	Storage temperature	-55°C to +85°C (product only) -40°C to +50°C (emboss packing)	No freezing at low temperatures. No dew condensation.
Environmental characteristics	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100M Ω , contact resistance max. 90m Ω	Sequence 155. ⁰ / ₉ °C, 30 minutes 2. ~, Max. 5 minutes 3. 85 ⁺⁰ / ₉ °C, 30 minutes 4. ~, Max. 5 minutes
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100M Ω , contact resistance max. 90m Ω	Bath temperature 40±2°C, humidity 90 to 95% R.H.
	Saltwater spray resistance (header and socket mated)	24 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Bath temperature 35±2°C, saltwater concentration 5±1%
	H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. $90m\Omega$	Bath temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.
Lifetime characteristics Insertion and removal life		30 times	Repeated insertion and removal speed of max. 200 times/ hours
Jnit weight		20 pin contact type: Socket: 0.02 g Header: 0.01 g	

Material and surface treatment

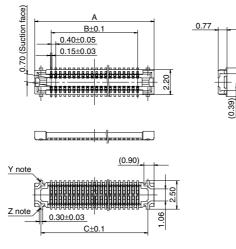
Part name	Material	Surface treatment	
Molded portion	LCP resin (UL94V-0)	_	
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have nickel barriers (exposed nickel portions). Soldering terminals: Sockets: Base: Ni plating Surface: Pd+Au flash plating (except the terminal tips) Headers: Base: Ni plating Surface: Au plating (except the terminal tips)	

DIMENSIONS (Unit: mm) The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e

Socket (Mated height: 0.8 mm/1.0 mm)







General tolerance: ±0.2

Terminal coplanarity

(Contact and soldering terminals)

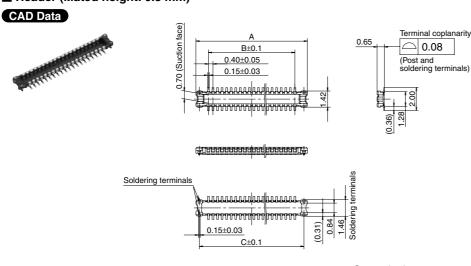
0.08

1.72

Dimension table (mm)				
Number of pins/ dimension	А		С	
10	4.5	1.6	3.4	
12	4.9	2.0	3.8	
14	5.3	2.4	4.2	
16	5.7	2.8	4.6	
18	6.1	3.2	5.0	
20	6.5	3.6	5.4	
22	6.9	4.0	5.8	
24	7.3	4.4	6.2	
26	7.7	4.8	6.6	
28	8.1	5.2	7.0	
30	8.5	5.6	7.4	
32	8.9	6.0	7.8	
34	9.3	6.4	8.2	
36	9.7	6.8	8.6	
38	10.1	7.2	9.0	
40	10.5	7.6	9.4	
44	11.3	8.4	10.2	
50	12.5	9.6	11.4	
54	13.3	10.4	12.2	
56	13.7	10.8	12.6	
60	14.5	11.6	13.4	
64	15.3	12.4	14.2	
70	16.5	13.6	15.4	
80	18.5	15.6	17.4	

■ Header (Mated height: 0.8 mm)

Note: Since the soldering terminals has a single-piece construction, sections Y and Z are electrically connected.



General tolerance: ±0.2

A 10 3.8 1.6 3.2 12 4.2 2.0 3.6 14 4.6 2.4 4.0 16 5.0 2.8 4.4 18 5.4 3.2 4.8 20 5.8 3.6 5.2 5.6 62 40 22 24 6.6 4.4 6.0 26 7.0 4.8 6.4 28 7.4 5.2 6.8 7.8 7.2 30 56 32 8.2 7.6 6.0 34 8.6 6.4 8.0 36 9.0 6.8 8.4 38 9.4 7.2 8.8 40 9.8 9.2 7.6 44 10.6 8.4 10.0 50 11.8 9.6 11.2 54 12.6 10.4 12.0 56 13.0 12.4 10.8

13.8

14.6

15.8

17.8

11.6

12.4

13.6

15.6

13.2

14.0

15.2

17.2

Dimension table (mm)

60

64

70

80

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Cameras Applications

Y



Automotive Driver Pilot





Video Conference



Live Streaming

Eye Tracker Biometric Detection

Machine Vision

Agricultural Monitor



Night Vision Security

Drone and Sports Eagle Eyes



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Camera Module Pinout Definition Reference Chart

OmniVision Sony Samsung On-Semi Ap	tina 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	
MDN0 DN0 MD0N DATA_N DM01N	MIPI 1st data lane negative output
MDP0 DP0 MD0P DATA P DM01P	MIPI 1st data lane positive output
MDN1 DN1 MD1N DATA2 N DMO2N	MIPI 2nd data lane negative output
MDP1 DP1 MD1P DATA2 P DM02P	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	DV/P data output port 0
D1 D01 Y1	DVP data output port 0
D1 D01 Y1 D2 D02 Y2	DVP data output port 1 DVP data output port 2
D3 D03 Y3	
	DVP data output port 3
D4 D04 Y4 D5 D05 Y5	DVP data output port 4
	DVP data output port 5
D6 D06 Y6	DVP data output port 6
D7 D07 Y7	DVP data output port 7
D8 D08 Y8	DVP data output port 8
D9 D09 Y9	DVP data output port 9
D10 D010 Y10	DVP data output port 10
D11 D011 Y11	DVP data output port 11

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Camera Reliability Test

Reliability Inspection Item		Testing Mathed	Acceptones Criteria		
Category		Item	Testing Method	Acceptance Criteria	
	Storage	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation	
	Temperature	Low -20°C 96 Hours	Temperature Chamber	No Abnormal Situation	
	Operation	High 60°C 24 Hours	Temperature Chamber	No Abnormal Situation	
Environmental	Temperature	Low -20°C 24 Hours	Temperature Chamber	No Abnormal Situation	
Environmentai	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	
	Drop Test	Without Package 60cm	10 Times on Wood Floor	Electrically Functional	
	(Free Falling)	With Package 60cm	10 Times on Wood Floor	Electrically Functional	
	Vibration Test	50Hz X-Axis 2mm 30min	Vibration Table	Electrically Functional	
Physical		50Hz Y-Axis 2mm 30min	Vibration Table	Electrically Functional	
Filysical		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	
		Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional	
	ESD Test	Air Discharge 4 KV	ESD Testing Machine	Electrically Functional	
Electrical	Aging Test	Aging Test On/Off 30 Seconds Cycling in 24 Hours		Electrically Functional	
	USB Connector	On/Off 250 Times	Plug and Unplug	Electrically Functional	



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Camera Inspection Standard

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Inspection Item		n Item	Inspection Method	Standard of Inspection
Categ	gory	Item	пересноп менной	Standard of Inspection
FPC		Color	The Naked Eye	Major Difference is Not Allowed.
	FPC/ PCB	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	HOIDEI	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
	Long	Contamination	The Naked Eye	No Effect On Resolution Standard
	Lens	Oil Film	The Naked Eye	No Effect On Resolution Standard
		Cover Tape	The Naked Eye	No Issue On Appearance.
		No Communication	Test Board	Not Allowed
	Image	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
Dimen	sion	Width	The Naked Eye	Follows Approval Data Sheet
Dimen	131011	Length	The Naked Eye	Follows Approval Data Sheet
		Overall	The Naked Eye	Follows Approval Data Sheet

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YDSCAM Package Solutions

YDS Camera Module



Tray with Grid and Space

Complete with Lens Protection Film



Place Cameras on the Tray





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YDSCAM Package Solutions

Full Tray of Cameras

DS



Place Tray into Anti-Static Bag

Cover Tray with Lid



Vacuum the Anti-Static Bag



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YDSCAM Package Solutions

Sealed Vacuum Anti-Static Bag with Labels

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



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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



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YDSCAM Package Solutions

USB Camera Module







Place Camera Sample into Anti-Static Bag

Place USB Cameras into Tray







Seal the Tray with Anti-Static Bag



Label the Carbon Shipping Box



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Complete with Lens Protection Film



YDSCAM Package Solutions

Place Camera Sample into Anti-Static Bag





Label the Sample Bags

Place Connectors into Anti-Static Bag



Place Connectors into Reel



Place Samples into the Carbon Box





Place Connectors into the Carbon Box



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YDS

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 <u>www.YDSCAM.com</u>. 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.



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YDS Strength

Y

Powerful Factory



Professional Service



Promised Delivery



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