

YDS-USB3A-AF-IMX258BW V1.0**13MP Sony IMX258 Monochrome Auto Focus USB 2.0 Camera Module**

YDS-USB3A-AF-IMX258BW V1.0 is a 13MP Auto Focus USB camera module based on 1/3.06" IMX258 monochrome (black & white) image sensor. Auto Focus captures images clearly at different distances. It delivers high-speed, 4K resolution ultra sharp image.

The camera has a dedicated, high-performance auto 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 (4224 x 3192) Sony IMX258 monochrome (B&W) sensor
- High speed USB 2.0 Plug and Play
- MJPG 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

YDS-USB3A-AF-IMX258BW V1.0

13MP Sony IMX258 Monochrome Auto Focus USB 2.0 Camera Module

Camera Module No.	YDS-USB3A-AF-IMX258BW V1.0
Resolution	13MP
Image Sensor	IMX258 Monochrome (Black & White)
Sensor Type	1/3.06"
Pixel Size	1.12 um x 1.12 um
EFL	3.81 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 5.40 mm
Module Type	Auto Focus
Lens Model	YDS-LENS-50013A1
Interface	USB 2.0
Output Format	MJPEG
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	None
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	38mm x 38mm / 32mm x 32mm
System Compatibility	Windows XP (SP2, SP3), Vista, 7, 8, 10, 11 Android, Mac OS, Linux or OS with UVC Driver Raspberry Pi by USB Port
Software for USB Camera	AMCAP, Webcam Viewer, V4L2 Controls Contacam, VLC Player, MotionEye OS iSpy, ZoneMider, Yawcam
Lens Type	No IR Filter Lens
Operating Temperature	-20°C to +70°C
USB Cable	YDS-Cable-U006

Wide Compatibility with Windows, Android, Mac OS, Linux, or Raspberry Pi



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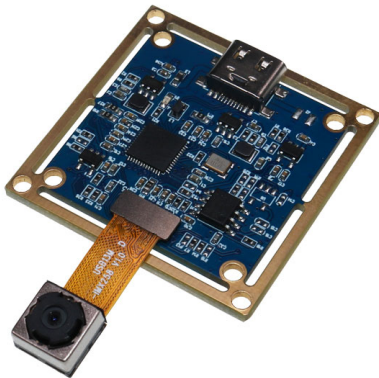
13MP Sony IMX258 Monochrome Auto Focus USB 2.0 Camera Module



Top View



Side View



Bottom View



Mating Connector



YDS-USB3A-AF-IMX258BW V1.0

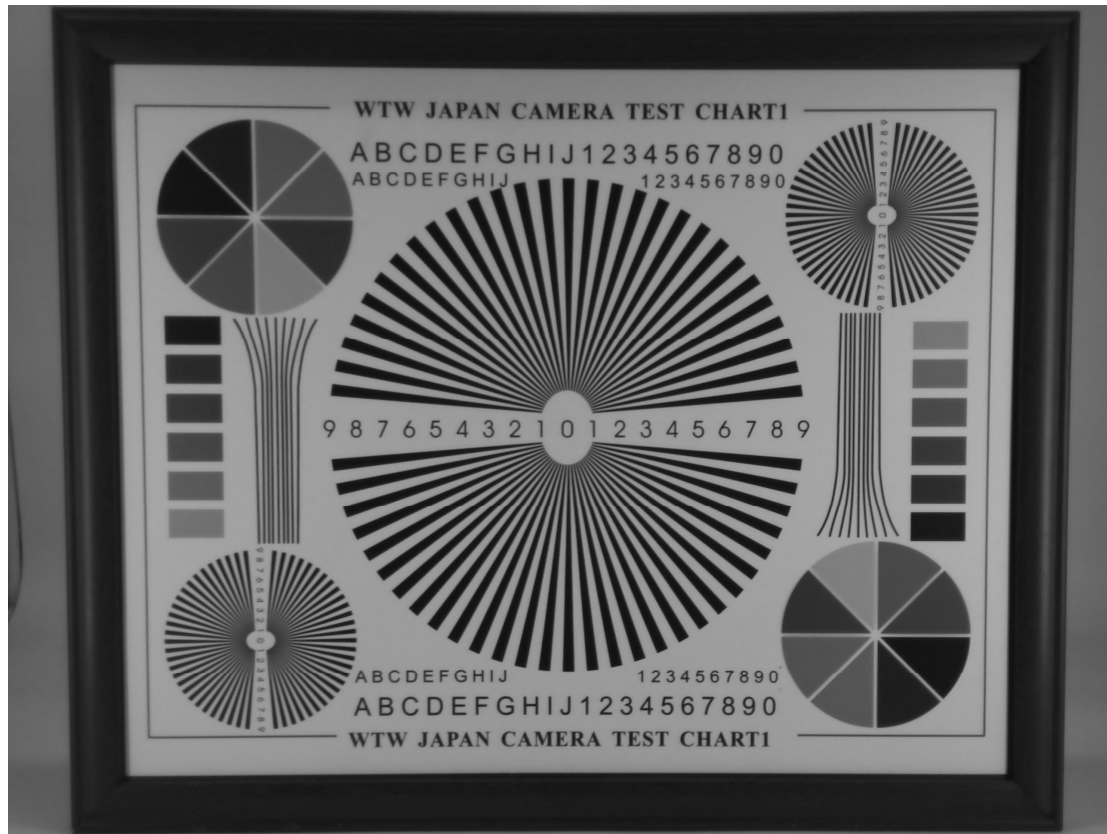
13MP Sony IMX258 Monochrome Auto Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPEG	640 x 480 (VGA)	30 FPS
	1280 x 720 (720P)	30 FPS
	1920 x 1080 (1080P)	30 FPS
	2592 x 1944 (5MP)	30 FPS
	3840 x 2160 (8MP)	15 FPS
	4208 x 3120 (13MP)	10 FPS



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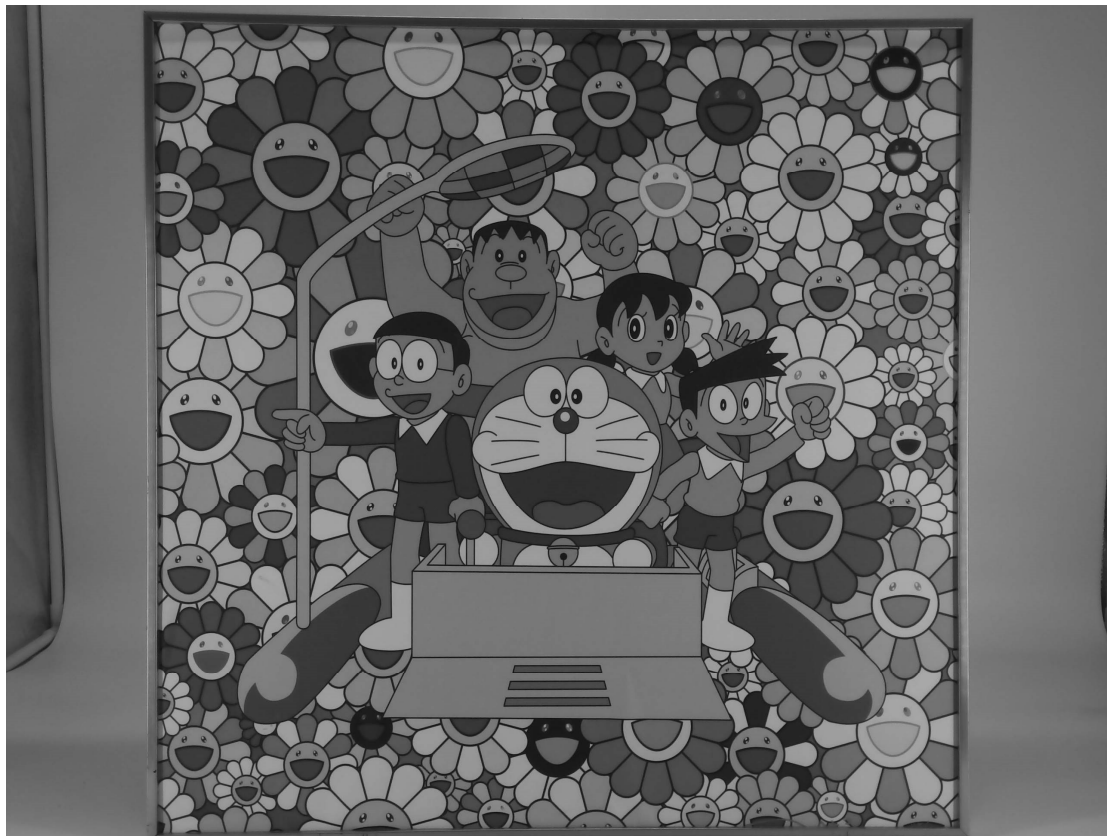
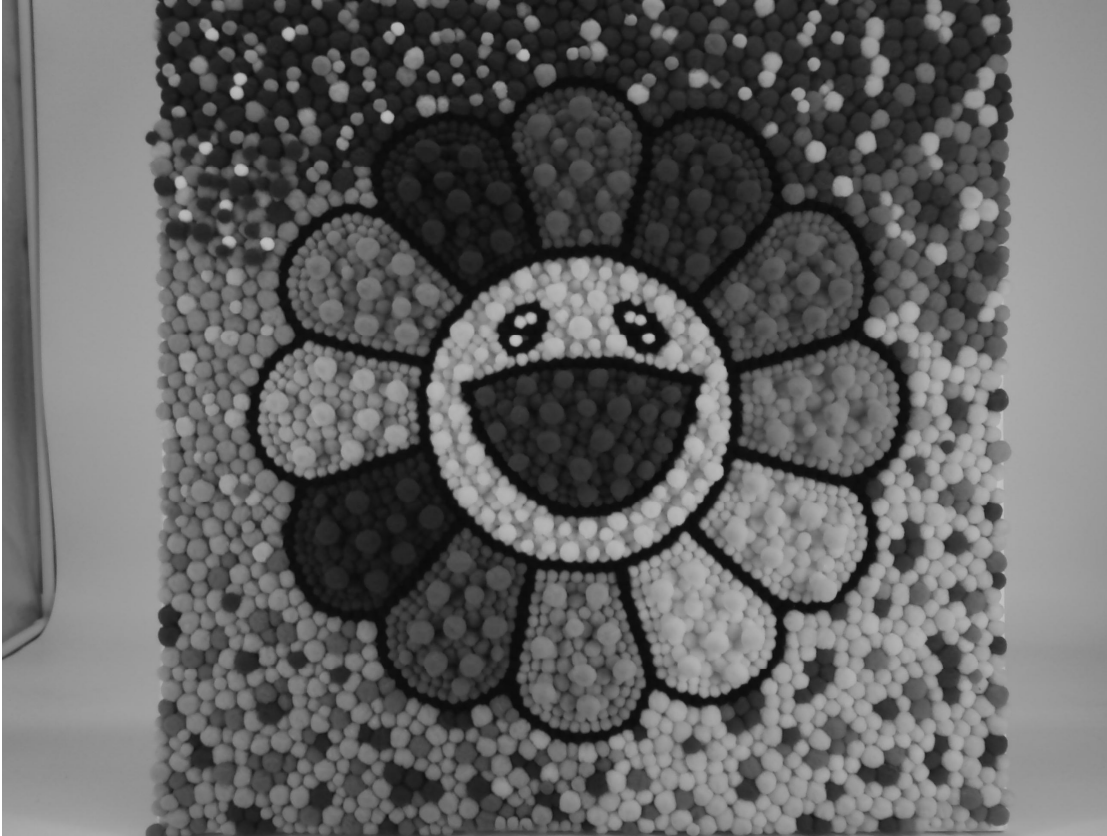
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Periodic table of Elements

GROUP 1 008

1 1.008 H Hydrogen

2 4.002 He Helium

3 6.941 Li Lithium

4 9.01 Be Beryllium

5 10.81 B Boron

6 12.01 C Carbon

7 14.01 N Nitrogen

8 15.99 O Oxygen

9 18.99 F Fluorine

10 20.18 Ne Neon

11 22.99 Na Sodium

12 24.31 Mg Magnesium

13 26.98 Al Aluminium

14 28.08 Si Silicon

15 30.97 P Phosphorus

16 32.07 S Sulfur

17 35.45 Cl Chlorine

18 39.95 Ar Argon

19 39.09 K Potassium

20 40.08 Ca Calcium

21 44.95 Sc Scandium

22 47.87 Ti Titanium

23 50.94 V Vanadium

24 51.99 Cr Chromium

25 54.94 Mn Manganese

26 55.85 Fe Iron

27 58.93 Co Cobalt

28 58.69 Ni Nickel

29 63.55 Cu Copper

30 65.39 Zn Zinc

31 69.72 Ga Gallium

32 72.61 Ge Germanium

33 74.92 As Arsenic

34 78.96 Se Selenium

35 78.96 Br Bromine

36 83.80 Kr Krypton

37 85.47 Rb Rubidium

38 87.62 Sr Strontium

39 88.91 Y Yttrium

40 91.22 Zr Zirconium

41 92.91 Nb Niobium

42 95.94 Mo Molybdenum

43 97.90 Tc Technetium

44 101.1 Ru Ruthenium

45 102.9 Rh Rhodium

46 106.4 Pd Palladium

47 107.9 Ag Silver

48 112.4 Cd Cadmium

49 114.8 In Indium

50 118.7 Sn Tin

51 121.8 Sb Antimony

52 127.6 Te Tellurium

53 126.9 I Iodine

54 131.3 Xe Xenon

55 132.9 Cs Cesium

56 137.3 Ba Barium

57-71 Lanthanides

72 178.5 Hf Hafnium

73 180.9 Ta Tantalum

74 183.8 W Tungsten

75 186.2 Re Rhenium

76 190.2 Os Osmium

77 192.2 Ir Iridium

78 195.1 Pt Platinum

79 196.9 Au Gold

80 200.6 Hg Mercury

81 204.4 Tl Thallium

82 207.2 Pb Lead

83 208.9 Bi Bismuth

84 210 Po Polonium

85 210 At Astatine

86 222 Rn Radon

87 223 Fr Francium

88 226 Ra Radium

89-103 Actinides

104 261 Rf Rutherfordium

105 262 Db Dubnium

106 263 Sg Seaborgium

107 264 Bh Bohrium

108 265 Hs Hassium

109 268 Mt Meitnerium

110 281 Ds Darmstadtium

111 280 Rg Roentgenium

112 285 Cn Copernicium

113 284 Nh Nihonium

114 289 Fl Flerovium

115 288 Mc Moscovium

116 292 Lv Livermorium

117 294 Ts Tennessine

118 294 Og Oganesson

57 138.9 La Lanthanum

58 140.1 Ce Cerium

59 140.9 Pr Praseodymium

60 144.2 Nd Neodymium

61 145 Pm Promethium

62 150.4 Sm Samarium

63 151.9 Eu Europium

64 157.2 Gd Gadolinium

65 158.9 Tb Terbium

66 162.5 Dy Dysprosium

67 164.9 Ho Holmium

68 167.2 Er Erbium

69 168.9 Tm Thulium

70 173 Yb Ytterbium

71 174.9 Lu Lutetium

89 232 Ac Actinium

90 232 Th Thorium

91 231 Pa Protactinium

92 238 U Uranium

93 239 Np Neptunium

94 239 Pu Plutonium

95 243 Am Americium

96 247 Cm Curium

97 252 Bk Berkelium

98 251 Cf Californium

99 252 Es Einsteinium

100 257 Fm Fermium

101 258 Md Mendelevium

102 259 No Nobelium

103 260 Lr Lawrencium

Legend: Hydrogen (Gas), Alkali Metals, Alkaline Earth Metals, Transition Metals, Other Metals, Metalloids, Non-metals, Halogens, Noble Gases, Lanthanides, Actinides

Average Atomic Mass: 6.941

Atomic Number: 3

Name: Lithium

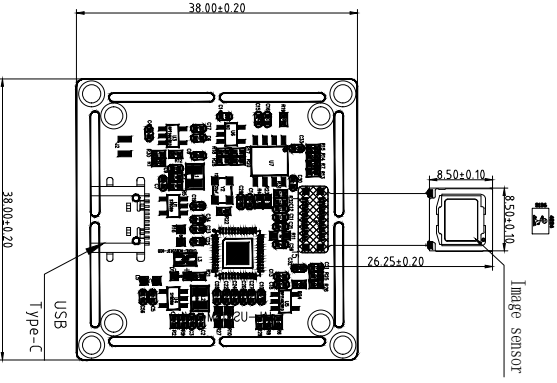
Symbol: Li

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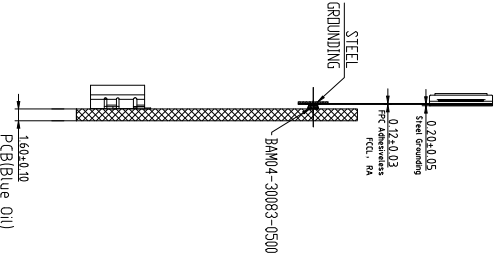
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ROHS

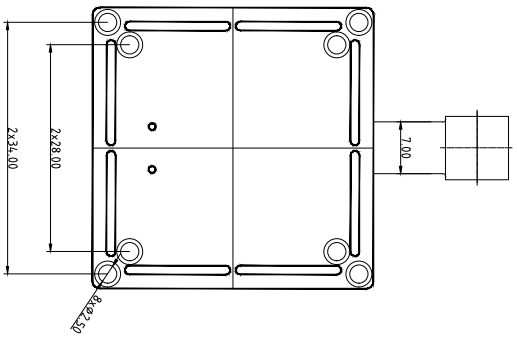
A1	GND	B12	GND
A4	VBUS	B9	VBUS
A5	CC1	B8	SBU2
A6	DP1	B7	DN2
A7	DN1	B6	DP2
A8	SBU1	B5	CC2
A9	VBUS	B4	VBUS
A12	GND	B1	GND
PIN	SIGNAL NAME	PIN	SIGNAL NAME



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Parameters:

1、 Sensor specification:

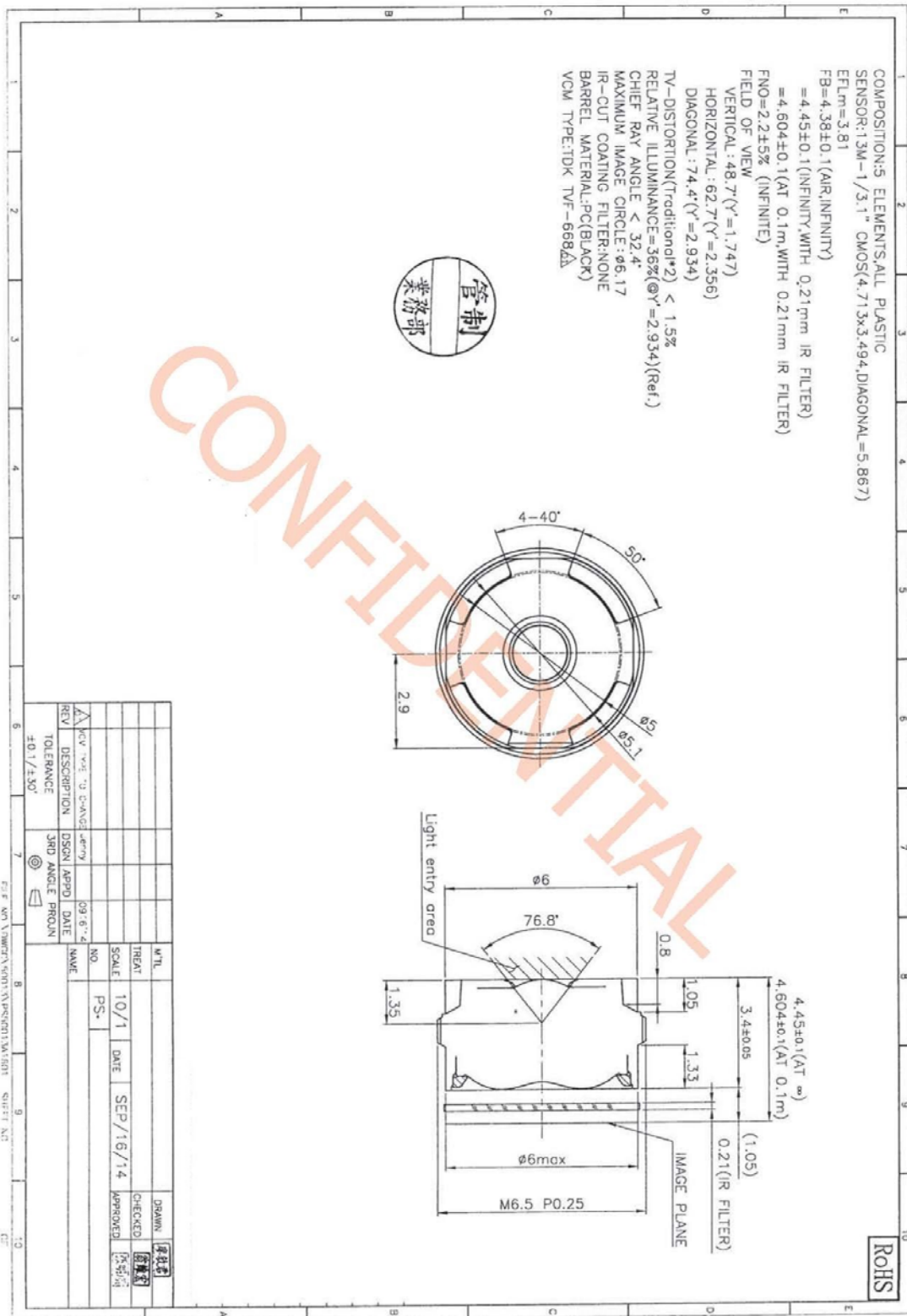
- Image Sensor: IMX258
- Pixel: 1.12um×1.12um
- Lens Type: 1/3.06
- Important Voltage Description: USB DC5V

Version	Information	Date
V1.0	First Version	5-23-2022

Designed By	Kevin	Model Name:	USB3A-AF-IMX258BW V1.0		
Checked By	Aouly Yan	Projection Type:	Unit: mm	Material:	-----
		Third Angle	Scale: 1:1	Sheet: 1 of 1	Version: 1/0



Lens Model: KLT-LENS-50013A1



[Product Brief]

Ver.1.0

IMX258

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

Description

IMX258 is a diagonal 5.867mm (Type 1/3.06) 13 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor R^{STM} 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 multiplexed 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 1.2 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.

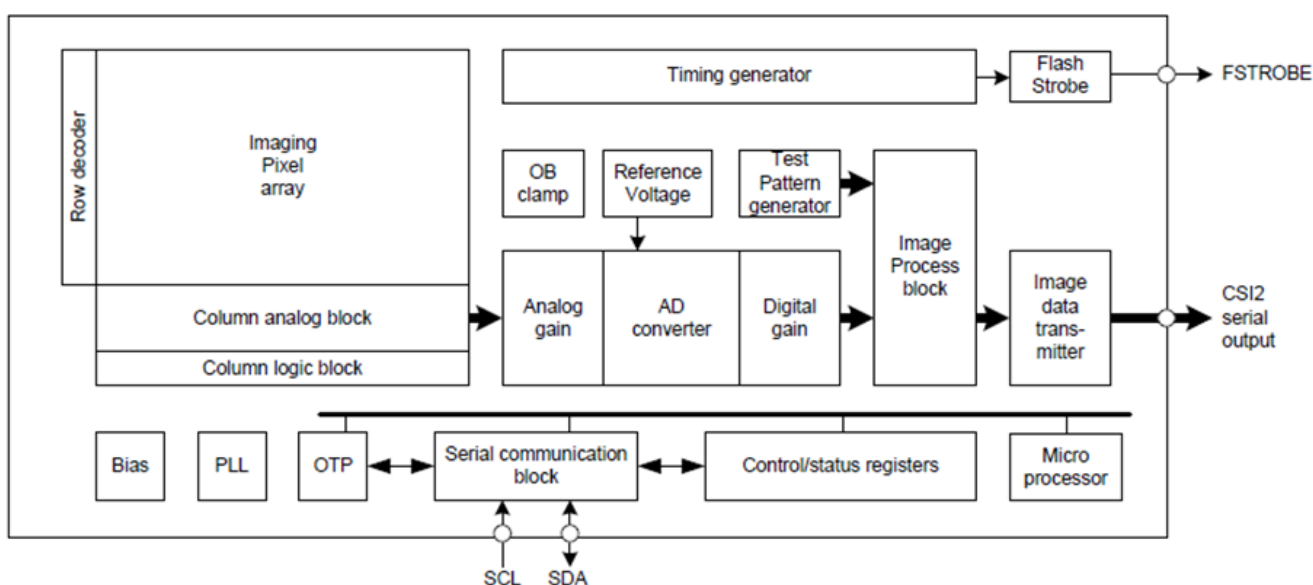
Functions and Features

- ◆ Back-illuminated and stacked CMOS image sensor Exmor R^{STM}
- ◆ Phase Detection pixel data output for Phase Detection Auto Focus
- ◆ High Dynamic Range (HDR) mode with raw data output.
- ◆ High signal to noise ratio (SNR).
- ◆ Full resolution @30fps (Normal / HDR). 4K2K @30fps (Normal / HDR) 1080p @60fps (Normal)
- ◆ Output video format of RAW10/8.
- ◆ Pixel binning readout and V sub-sampling function.
- ◆ Independent flipping and mirroring.
- ◆ CSI-2 serial data output (MIPI 2lane/4lane, Max. 1.3Gbps/lane, D-PHY spec. ver. 1.1 compliant)
- ◆ 2-wire serial communication.
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- ◆ Dynamic Defect Pixel Correction.
- ◆ Fast mode transition. (on the fly)
- ◆ Dual sensor synchronization operation.
- ◆ 4K bit of OTP ROM for users.
- ◆ Built-in temperature sensor.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size : Diagonal 5.867 mm (Type 1/3.06)
- ◆ Total number of pixels : 4224 (H) × 3192 (V) approx. 13.48 M pixels
- ◆ Number of effective pixels : 4224 (H) × 3144 (V) approx. 13.28 M pixels
- ◆ Number of active pixels : 4208 (H) × 3120 (V) approx. 13.13 M pixels
- ◆ Chip size : 5.990 mm (H) × 3.908 mm (V)
- ◆ Unit cell size : 1.12 μm (H) × 1.12 μm (V)
- ◆ Substrate material : Silicon

System 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 R™ which changed fundamental structure of Exmor™ pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

Cameras Applications



Automotive Driver Pilot



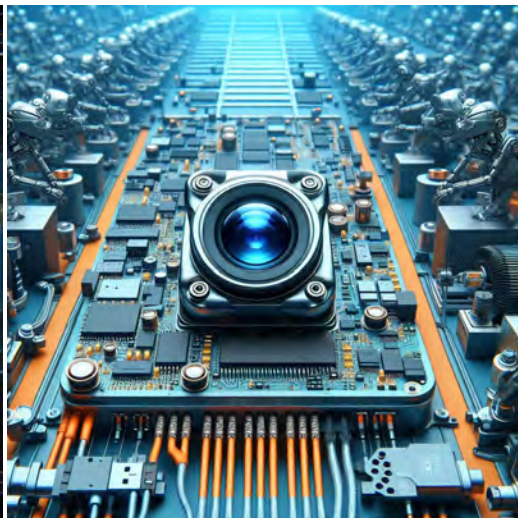
Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



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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
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



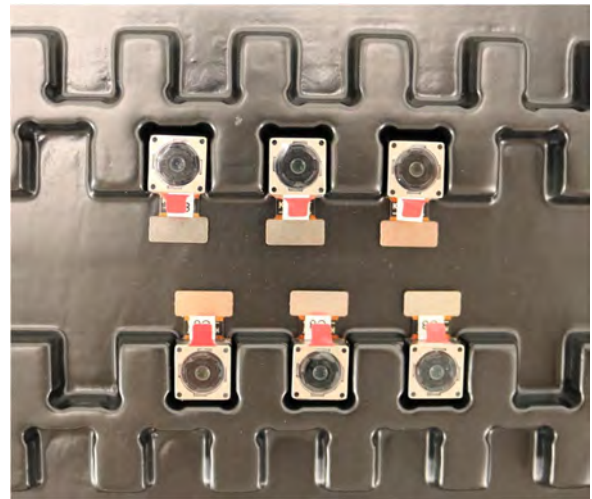
Complete with Lens Protection Film



Tray with Grid and Space

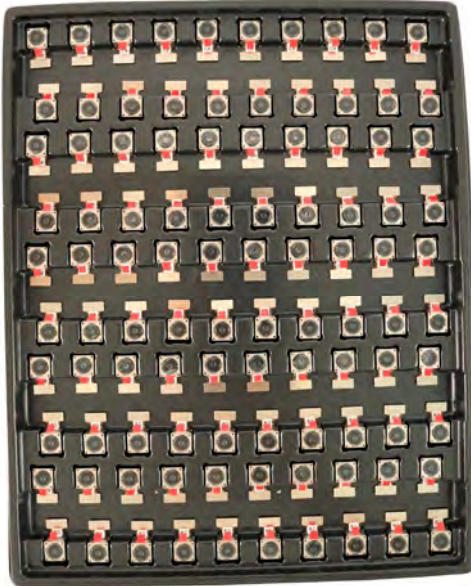


Place Cameras on the Tray

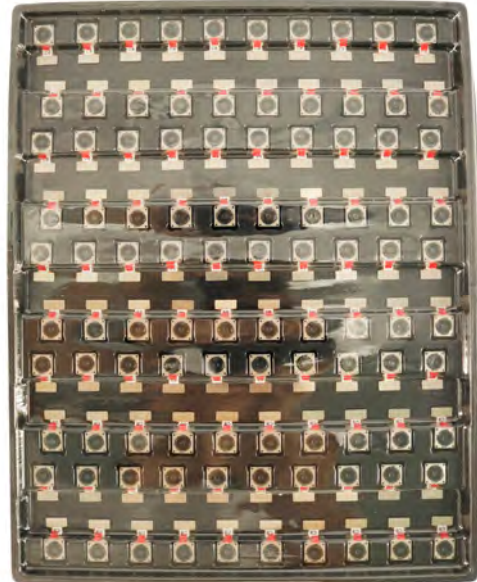


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Full Tray of Cameras



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

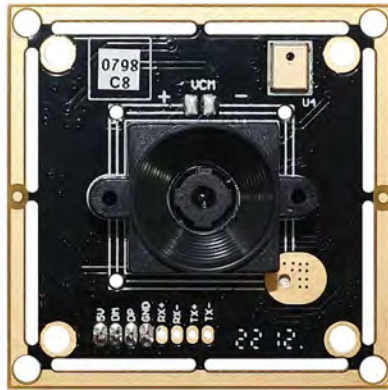




YDSCAM Package Solutions

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





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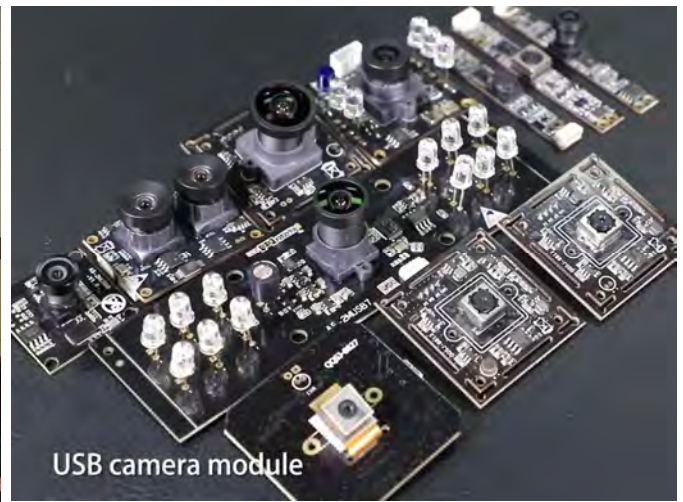
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Company YDSCAM

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. 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 CAMERA MODULE

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YDS Strength

Powerful Factory



Professional Service



Promised Delivery



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