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YDS-KJ9-OV5670 V2.0 5MP OmniVision OV5670 MIPI Interface Fixed Focus Camera Module





Front View Back View

Specifications

Camera Module No.	YDS-KJ9-OV5670 V2.0		
Resolution	5MP		
Image Sensor	OV5670		
Sensor Type	1/5"		
Pixel Size	1.12 um x 1.12 um		
EFL	2.32 mm		
F.NO	2.20		
Pixel	2592 x 1944		
View Angle	76.1°(DFOV) 63.9°(HFOV) 49.8°(VFOV)		
Lens Dimensions	6.50 x 6.50 x 3.90 mm		
Module Size	26.00 x 6.50 mm		
Module Type	Fixed Focus		
Interface	MIPI		
Auto Focus VCM Driver IC	None		
Lens Model	YDS-LENS-SPY853B-2		
Lens Type	650nm IR Cut		
Operating Temperature	-30°C to +85°C		
Mating Connector	DF37NB-20DS-0.4V		



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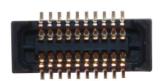




Side View

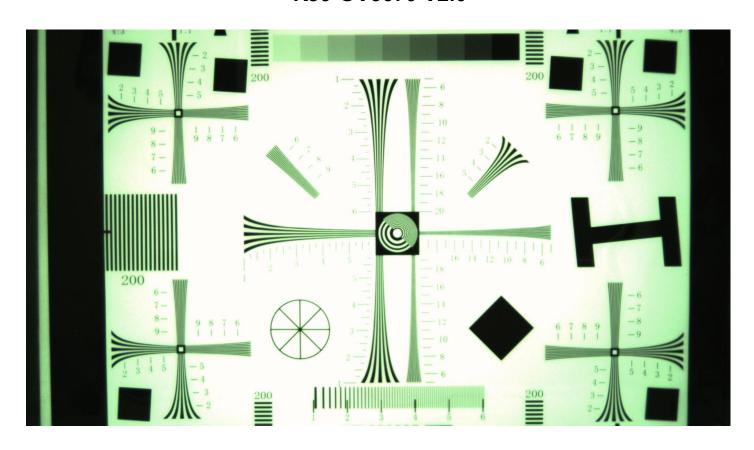


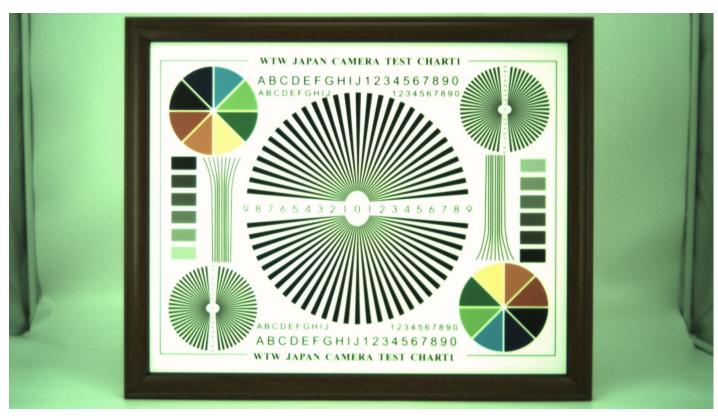
Bottom View



Mating Connector

Real Test Images KJ9-OV5670 V2.0

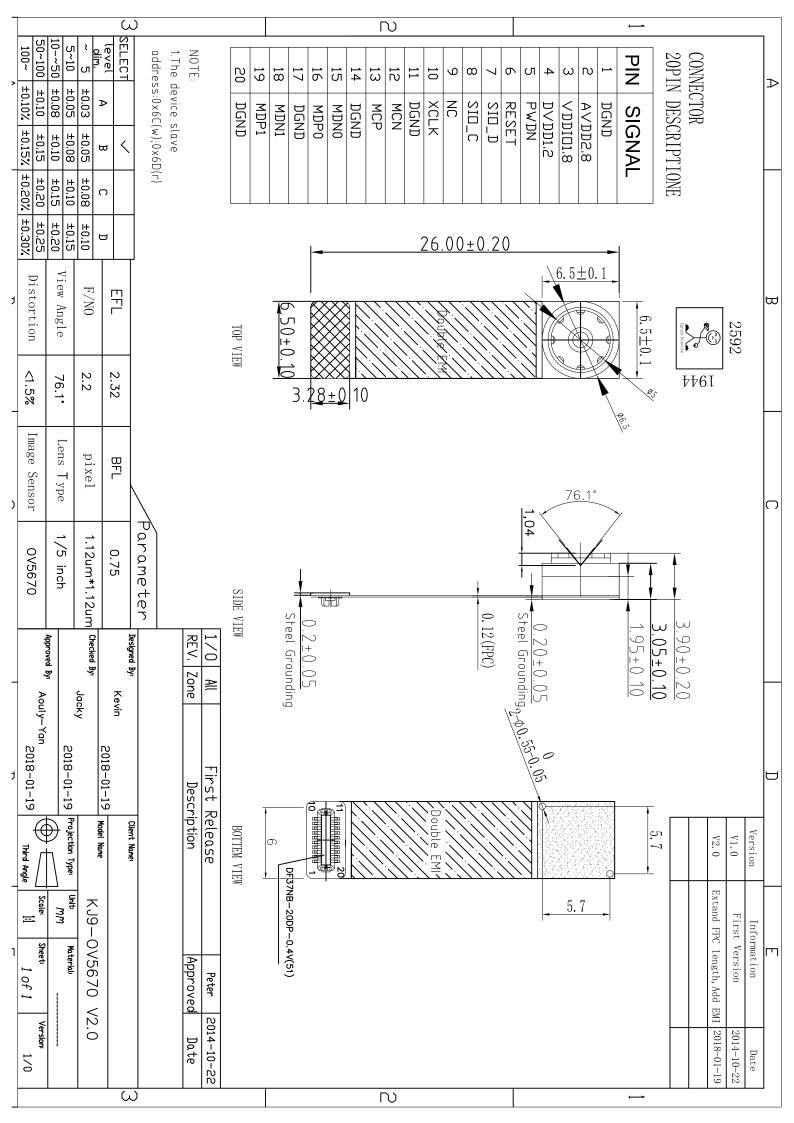


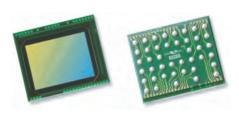


Real Test Images KJ9-OV5670 V2.0









OV5670 5-megapixel product brief





5-Megapixel PureCel® Image Sensor Brings Improved Image Quality to Rear- and Front-Facing Cameras in Mobile Devices

The OV5670 is a 5-megapixel PureCel image sensor that leverages a 1.12-micron pixel to deliver exceptional still images and high-definition (HD) video to front- and rearfacing cameras in smartphones and tablets.

The OV5670 PureCel image sensor can capture full resolution 5-megapixel (2592x1944) images at 30 frames per second (fps), quad HD video at 30 fps, cropped 1080p HD at 60 fps, or 720p HD at 60 fps. When recording 720p HD video with binning, the sensor achieves sensitivity and signal-to-noise ratio that is comparable to the industry's popular 1.75-micron pixel. Additionally, the sensor's 1.12-micron pixel achieves similar full-well capacity (FWC) as the previous generation's 1.4-micron pixel.

When recording full resolution video, the OV5670 uses approximately 35 percent less power compared to OmniVision's previous generation 5-megapixel sensor. The sensor's ultra low power mode further reduces power consumption, thus minimizing battery drain.

The OV5670 fits into a compact 6 x 6 x 3.5 mm camera module, and is available in a cost-effective chip scale package (CSP).

Find out more at www.ovt.com.





Applications

- Smartphones and Feature Phones
- Tablets
- PC Multimedia
- Wearables

Product Features

- 1.12 µm x 1.12 µm pixel
- 5MP at 30 fps
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- supports images sizes: 5MP (2592x1944)
- Quad HD (2560x1440)
- 1080p (1920x1080) 720p (1280x720)
- VGÅ (640x480), and more
- 2k bits of embedded one-time programmable (OTP) memory for customer use

- ultra low power mode (ULPM)
- support for output formats: 10-bit RGB RAW
- interleave row HDR output
- two-wire serial bus control (SCCB)
- MIPI serial output interface (1 or 2-lane)
- 2x binning support
- image quality control:defect pixel correction
 - automatic black level calibration

0V5670



■ 0V05670-G04A (color, chip probing, 200 µm backgrinding, recontructed wafer)

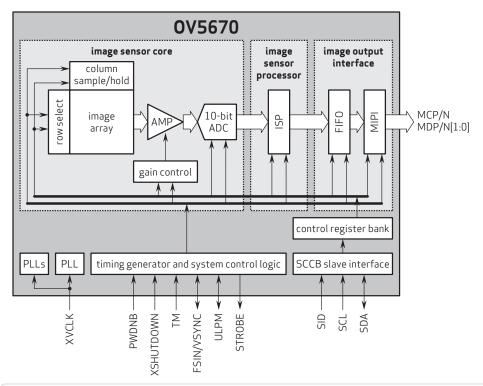
■ 0V05670-H42A (color, lead-free, 42-pin CSP5)

Product Specifications

- active array size: 2592 x 1944
- power supply:core: 1.14 1.26V (1.2V nominal)
- analog: 2.6 3.0V (2.8V nominal) I/O: 1.7 1.9V (1.8V nominal)
- power requirements:
- active: 126 mW standby: 166 µW
- XSHUTDOWN: 1 µW
- temperature range: - operating: -30°C to +85°C junction
- temperature
- stable image: -20°C to +60°C junction pixel size: 1.12 µm x 1.12 µm temperature
- output interfaces: 2-lane MIPI serial output
- output formats: 10-bit RAW RGB data
- lens size: 1/5"
- lens chief ray angle: 31.24° non-linear

- input clock frequency: 6 27 MHz
- max S/N ratio: 35.6 dB
- dynamic range: 68.4 dB @ 16x gain
- maximum image transfer rate: -5MP (2592x1944): 30 fps Quad HD (2560x1440): 30 fps
- 1080p (1920x1080): 60 fps
- **720p** (**1280x720**): 60 fps **VGA** (**640x480**): 120 fps
- sensitivity: 490 mV/lux-sec
- dark current: 14 e⁻/sec @ 60°C junction temperature
- image area: 2945.7 µm x 2214 µm
- package/die dimensions:
 CSP5: 4080 μm x 3430.2 μm
 COB: 4050 μm x 3400.2 μm
- RW: 4100 μm x 3450.2 μm

Functional Block Diagram



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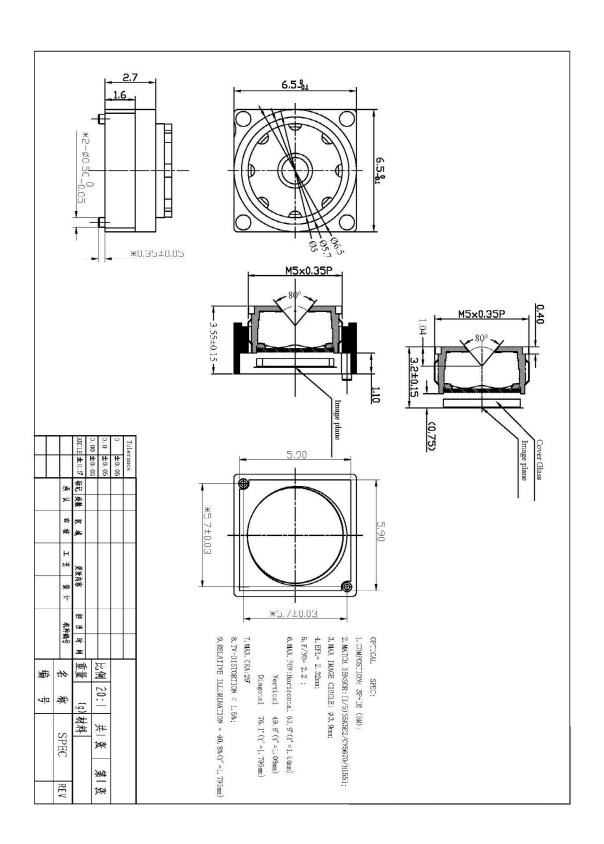
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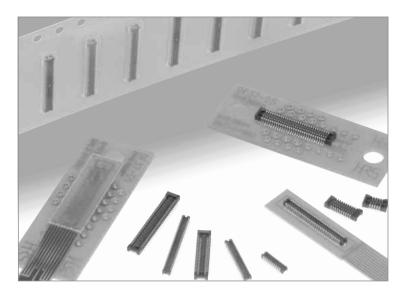
YDS-LENS-SPY853B-2



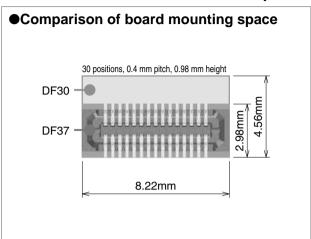
-

0.4 mm Pitch, 0.98 mm Mated Height, Board-to-Board / Board-to-FPC Connectors

DF37 Series



■Further reduction of the board space.



■Features

1. Reduced size and board-occupied area

With the mated height of 0.98 mm, width of 2.98mm and length of 8.22 mm (30 positions) the connectors are one of the smallest in its class. Also 2.6mm depth short-lead type is available.

Sufficiently large flat areas allow pick-up with vacuum nozzles of automatic placement equipment.

2. Reliable electrical and mechanical connection

Despite its small mated height, unique contact configuration, with a 2-point contacts and effective mating length of 0.25mm, assures highly reliable connection while confirming a complete mating with a definite tactile feel.

3. Self alignment

Recognizing the difficulties of mating extremely small connectors in limited spaces, the connectors will self-align within 0.3mm.

4. Physical shock and vibration protection

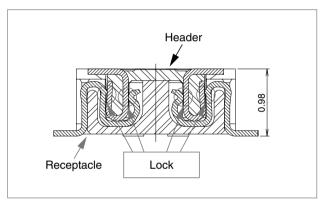
2-point contact assures electrical connection in a shock or vibration applications.

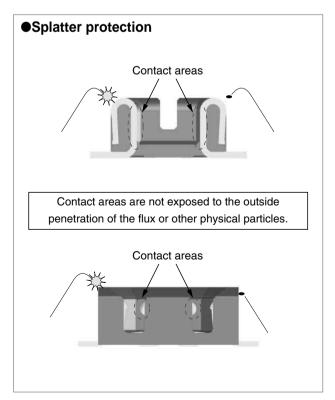
5. Solder wicking prevention

Nickel barriers (receptacles) and unique forming of the contacts (headers) prevent un-intentional solder wicking.

6. Contamination protection

Insulator walls protect the contact areas against flux splatter or other physical particles contamination.





■Specifications

Ratings	Current rating	0.3 A	Operating temperature range	-35°C to +85°C (Note 1)	Storage temperature range	-10°C to +60°C (Note 2)
Nauriys	Voltage rating	30 V AC, DC	Operating humidity range	RH 20% to 80%	Storage humidity range	RH 40% to 70% (Note 2)

Item	Specification	Conditions
1.Insulation resistance	50 MΩ min	100 V DC
2.Withstanding voltage	No flashover or insulation breakdown	100 V AC / 1minute
3.Contact resistance	100 mΩ max.	20 mV AC, 1 kHz, 1 mA
4.Vibration	No electrical discontinuity of 1 μ s or longer No damage or parts dislocation	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours, 3 axis
5.Humidity	Contact resistance: 100 m Ω max., Insulation resistance: 25 M Ω min.	96 hours at 40 \pm 2°C and humidity of 90 to 95% No damage or parts dislocation
Contact resistance: 100 m Ω max., 6.Temperature cycle Insulation resistance: 50 M Ω min. No damage or parts dislocation		-55° C → 5 to 35° C → 85° C → 5 to 35° C Time: 30 min. → 10 min. → 30 min. → 10 min. 5 cycles
7.Durability	Contact resistance: 100 mΩ max.	10 cycles
8.Resistance to	No deformation of components affecting	Reflow: At the recommended temperature profile
soldering heat	performance	Manual soldering: 350°C for 3 seconds

Note 1: Includes temperature rise caused by current flow.

Note 2: The term "storage" here refers to products stored for a long period prior to board mounting and use.

The operating temperature and humidity range covers the non-conducting condition of connectors after board mounting and the temporary storage conditions of transportation, etc.

■Materials

Receptacle

Part	Material	Finish	Remarks
Insulator	LCP	Color: Black	UL94V-0

Header

Part Material		Finish	Remarks
Contacts	Phosphor bronze	Gold plated	

■Ordering Information

① Series name : DF37	Connector style
Configuration	DS: Receptacle
NB: With metal fittings	Contact pitch : 0.4 mm
NC: Without metal fittings	Terminal type V: SMT vertical mount
SB: Short-lead type with metal fittings	Packaging
Number of contacts	(51): Embossed tape packaging (8,000 pieces per reel)
NB/NC: 10, 16, 20, 24, 30, 34, 40, 50, 60, 70, 74	(53): Embossed tape packaging (1,000 pieces per reel)
SB : 10, 16, 20, 24, 30, 34, 40, 50, 60	

●**Headers**

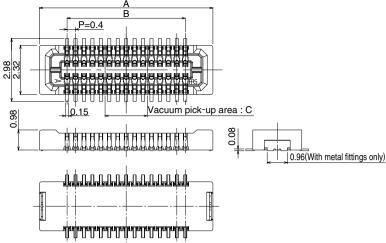
DF 37 # - * DP - 0.4 V (**)

① Series name : DF37	Connector style
Configuration	DP: Header
B: With metal fittings	Contact pitch : 0.4 mm
C: Without metal fittings	Terminal type V: SMT vertical mount
Number of contacts	Packaging
10, 16, 20, 24, 30, 34, 40, 50, 60, 70, 74	(51): Embossed tape packaging (8,000 pieces per reel)
	(53): Embossed tape packaging (1,000 pieces per reel)

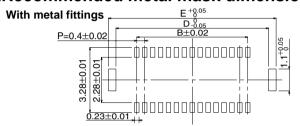
Note: The short-lead type is only available for the receptacle side (with hardware).

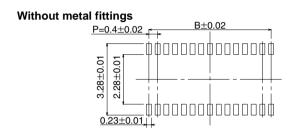
■Receptacles(DF37NB/NC)



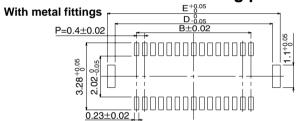


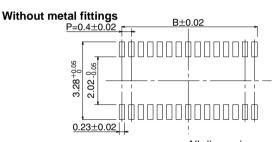
■Recommended metal mask dimensions





■Recommended PCB mounting pattern





All dimensions: mm

With metal fittings

All dimensions: mm				
D	F			

Part Number	CL No.	Number of Contacts	Α	В	С	D	Е
DF37NB-10DS-0.4V(51)	CL684-3301-6-51	10	4.22	1.6	0.8	3.7	4.46
DF37NB-16DS-0.4V(51)	CL684-3302-9-51	16	5.42	2.8	1.2	4.9	5.66
DF37NB-20DS-0.4V(51)	CL684-3303-1-51	20	6.22	3.6	1.6	5.7	6.46
DF37NB-24DS-0.4V(51)	CL684-3304-4-51	24	7.02	4.4	2	6.5	7.26
DF37NB-30DS-0.4V(51)	CL684-3305-7-51	30	8.22	5.6	2	7.7	8.46
DF37NB-34DS-0.4V(51)	CL684-3082-4-51	34	9.02	6.4	2.4	8.5	9.26
DF37NB-40DS-0.4V(51)	CL684-3306-0-51	40	10.22	7.6	2.4	9.7	10.46
DF37NB-50DS-0.4V(51)	CL684-3307-2-51	50	12.22	9.6	2.8	11.7	12.46
DF37NB-60DS-0.4V(51)	CL684-3308-5-51	60	14.22	11.6	3.2	13.7	14.46
DF37NB-70DS-0.4V(51)	CL684-3409-2-51	70	16.22	13.6	3.6	15.7	16.46
DF37NB-74DS-0.4V(51)	CL684-3080-9-51	74	17.02	14.4	4	16.5	17.26

17.02

14.4

4

●Without metal fittings

Part Number	CL No.	Number of Contacts	Α	В	С
DF37NC-10DS-0.4V(51)	CL684-3309-8-51	10	4.22	1.6	0.8
DF37NC-16DS-0.4V(51)	CL684-3310-7-51	16	5.42	2.8	1.2
DF37NC-20DS-0.4V(51)	CL684-3311-0-51	20	6.22	3.6	1.6
DF37NC-24DS-0.4V(51)	CL684-3312-2-51	24	7.02	4.4	2
DF37NC-30DS-0.4V(51)	CL684-3313-5-51	30	8.22	5.6	2
DF37NC-34DS-0.4V(51)	CL684-3083-7-51	34	9.02	6.4	2.4
DF37NC-40DS-0.4V(51)	CL684-3314-8-51	40	10.22	7.6	2.4
DF37NC-50DS-0.4V(51)	CL684-3315-0-51	50	12.22	9.6	2.8
DF37NC-60DS-0.4V(51)	CL684-3316-3-51	60	14.22	11.6	3.2
DF37NC-70DS-0.4V(51)	CL684-3084-0-51	70	16.22	13.6	3.6

CL684-3081-1-51 Note 1: Tape and reel packaging (8,000 pieces/reel). Order by number of reels.

Note 2: This connector is NOT polarized.

DF37NC-74DS-0.4V(51)



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Camera Module Pinout Definition Reference Chart

OmniVision Sony Samsung On-Semi Aptina Himax GalaxyCore PixArt SmartSens Sensors				
Description				
ground for digital circuit				
ground for analog circuit				
DVP PCLK output				
power down active high with internal pull-down resistor				
system input clock				
reset active low with internal pull-up resistor				
no connect				
SCCB data				
SCCB input clock				
DVP VSYNC output				
DVP HREF output				
power for I/O circuit				
power for VCM circuit				
power for analog circuit				
power for digital circuit				
strobe output				
synchronize the VSYNC signal from the other sensor				
SCCB last bit ID input				
mechanical shutter output indicator				
frame exposure / mechanical shutter				
general purpose inputs				
I2C slave address select				
CEN chip enable active high on VCM driver IC				
MIPI 1st data lane negative output				
MIPI 1st data lane positive output				
MIPI 2nd data lane negative output				
MIPI 2nd data lane positive output				
MIPI 3rd data lane negative output				
MIPI 3rd data lane positive output				
MIPI 4th data lane negative output				
MIPI 4th data lane positive output				
MIPI clock negative output				
MIPI clock positive output				
DVP data output port 0				
DVP data output port 1				
DVP data output port 2				
DVP data output port 3				
DVP data output port 4				
DVP data output port 5				
DVP data output port 6				
DVP data output port 7				
DVP data output port 8				
DVP data output port 9				
DVP data output port 10				
DVP data output port 11				



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Cameras Applications





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Camera Reliability Test

Reliability Inspection Item		Tanking Makhad	Acceptance Criteria	
Cat	egory	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
Environmental	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
	ESD Test	Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional
	ESD Test	Air Discharge 4 KV	ESD Testing Machine	Electrically Functional
Electrical	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

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Inspection Item			Lancardia - Marthaul	2
Category		Item	Inspection Method	Standard of Inspection
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



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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



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

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







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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





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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 subsequential events.















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YDS Strength

Powerful Factory





Professional Service







Promised Delivery











