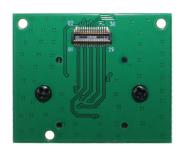


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YDS-TSE-OV13850 V2.0

13MP OmniVision OV13850 MIPI Interface M12 Fixed Focus Camera Module





Front View Back View

Specifications

Camera Module No.	YDS-TSE-OV13850 V2.0
Resolution	13MP
Image Sensor	OV13850
Sensor Type	1/3.06"
Pixel Size	1.12 um x 1.12 um
EFL	12.50 mm
F.NO	2.35
Pixel	4224 x 3136
View Angle	25.6°(DFOV) 20.4°(HFOV) 15.4°(VFOV)
Lens Dimensions	13.65 x 13.65 x 24.20 mm
Module Size	30.00 x 24.50 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Model	YDS-LENS-TRC-2040A2
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	DF40C-30DS-0.4V(51)



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YDS-TSE-OV13850 V2.0 13MP OmniVision OV13850 MIPI Interface M12 Fixed Focus Camera Module



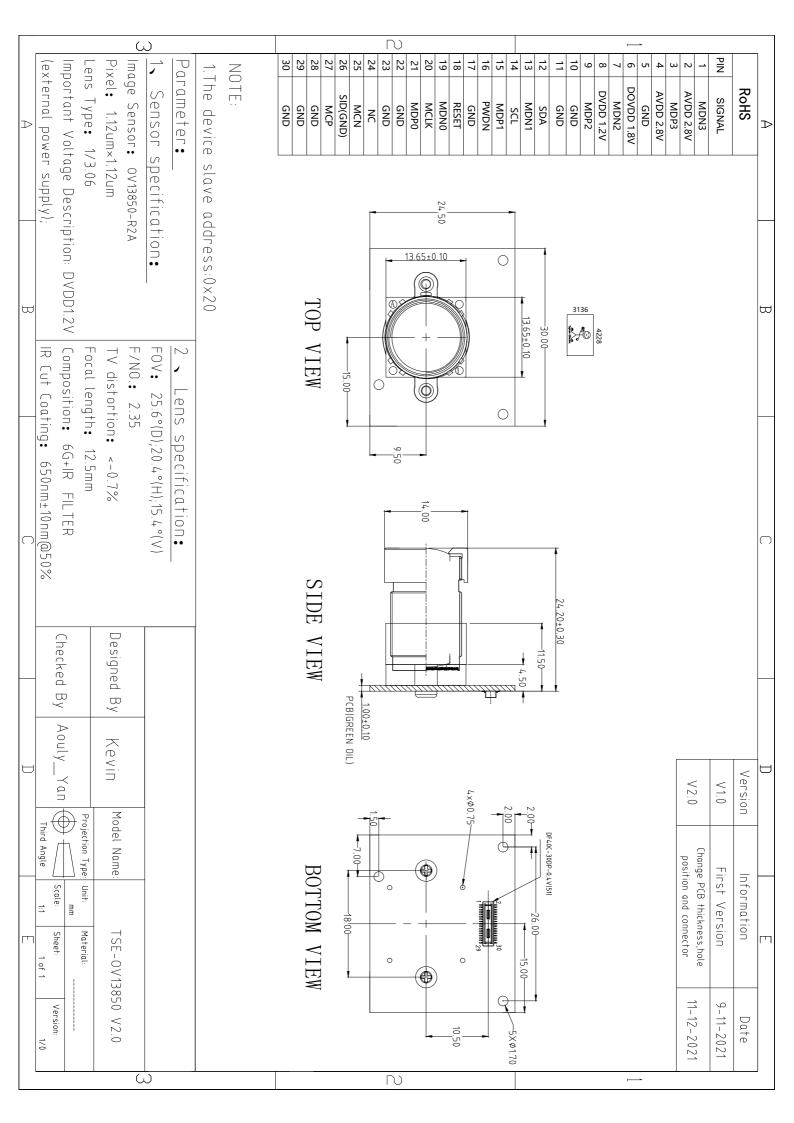


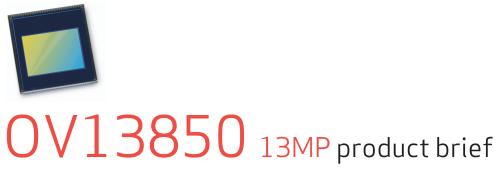
Top View Side View





Bottom View Mating Connector









Power-Efficient 13-Megapixel Image Sensor with Best-In-Class Performance for High-End Smartphones and Tablets

The OV13850 is a high performance PureCel™ 13-megapixel CameraChip™ sensor that delivers best-in-class high- and low-light performance, as well as dramatically reduced power consumption for smartphones and tablets.

The OV13850 sensor offers a number of performance enhancements, including improved full-well capacity (FWC) and sensitivity for industry-leading high- and low-light performance. It also offers a 40 percent reduction in power consumption compared to our previous generation sensor, making the OV13850 ideally suited for feature-rich mobile devices.

The 1/3.06-inch OV13850 supports an active array of 4224 x 3136 pixels (13.2-megapixels) operating at 30 frames per second (fps) for zero shutter lag and can seamlessly transition between recording video and capturing still images. Additionally, the sensor supports 4K2K ultra-high definition video at 30 fps with full-horizontal field of view (FOV) and electronic image stabilization (EIS), as well as high frame rate 1080p HD video at 60 fps with EIS to enable high quality videos.

The 0V13850 fits into an industry standard $8.5 \times 8.5 \times 5$ mm module.

Find out more at www.ovt.com.



Applications

- Cellular Phones
- PC Multimedia

■ Tablets

Product Features

- PureCel[™] image sensor
- 1.12 µm x 1.12 µm pixel
- optical size of 1/3.06"
- 31.2° CRA for <6 mm z-height
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- support for image sizes: 13.2MP (4224x3136), 10MP (16:9 4224x2376), 4K2K (3840x2160), EIS 1080p (2112x1188), EIS 720p (1408x792), and more
- 13.2MP at 30 fps
- two-wire serial bus control (SCCB)

- strobe output to control flash
- 8 kbits of embedded one-time programmable (OTP) memory
- two on-chip phase lock loops (PLLs)
- programmable controls: gain, exposure, frame rate, image size, horizontal mirror, vertical flip, cropping, and panning
- image quality controls: defect pixel correction, automatic black level calibration, lens shading correction, and alternate row HDR
- built-in temperature sensor
- suitable for module size of 8.5 x 8.5 x < 6 mm

OV13850



■ 0V13850-G04A

(color, chip probing, 200 µm backgrinding, reconstructed wafer with good die)

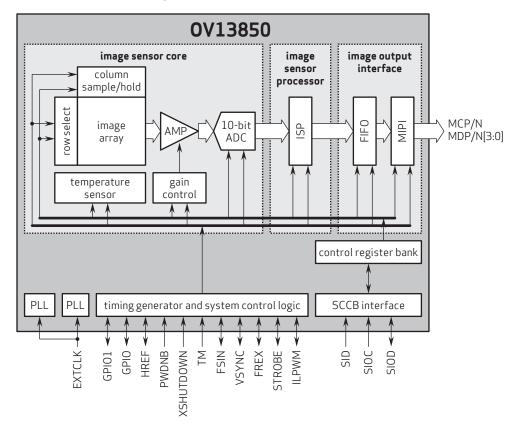
Product Specifications

- active array size: 4224 x 3136

- power supply:
 core: 1.14 1.26V (1.2V nominal)
 analog: 2.6 3.0V (2.8V nominal)
 I/O: 1.7 3.0V (1.8V or 2.8V nominal)
- power requirements: active: 223 mW standby: 300 µW
- XSHUTDOWN: 1 μW
- temperature range:
- operating: -30°C to +85°C junction temperature
- stable image: 0°C to +60°C junction temperature
- output interfaces: up to 4-lane MIPI serial output

- output formats: 10-bit RGB RAW
- lens size: 1/3.06"
- lens chief ray angle: 31.2°
- input clock frequency: 6 64 MHz
- maximum image transfer rate: 30 fps
- scan mode: progressive
- pixel size: 1.12 µm x 1.12 µm
- image area: 4815 µm x 3678.3 µm
- die dimensions: 6210 µm x 5517 µm

Functional Block Diagram



4275 Burton Drive Santa Clara, CA 95054

Tel: +1 408 567 3000 Fax: +1 408 567 3001 www.ovt.com

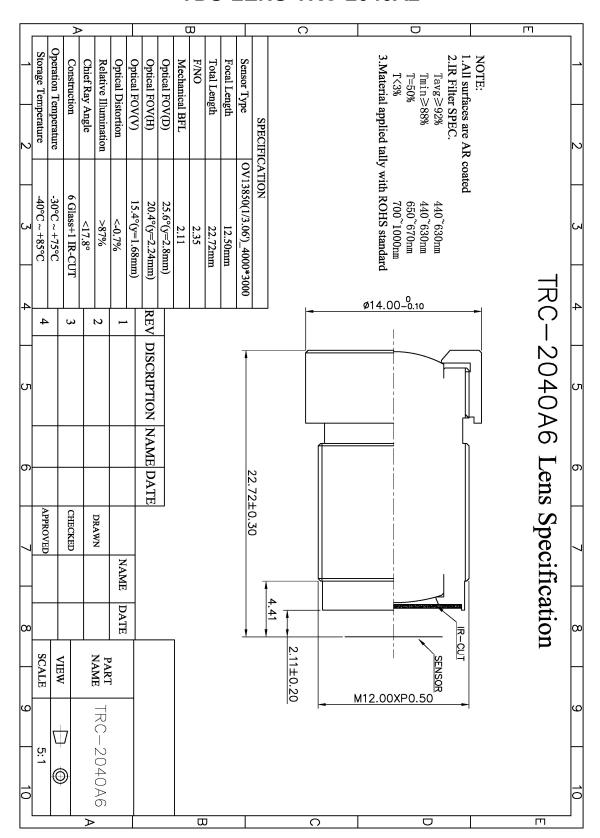
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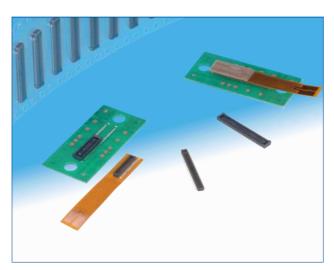
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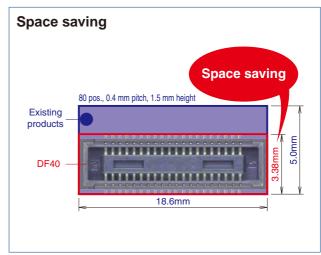
YDS-LENS-TRC-2040A2



0.4mm Pitch, 1.5 to 4.0mm Height, Board-to-Board and Board-to-FPC Connectors

DF40 Series





■Features

1. High density mounting

Space saving design that has a minimum connector width, yet still retains a sufficient vacuum area for easy pick-and-place mounting Minimum width: 3.38mm

2. Multiple stack height options

In addition to its space saving design, several stack heights are available and add versatility to any application. Stack heights: 1.5mm, 2.0mm, 2.5mm, 3.0mm, 3.5mm, and 4.0mm.

3. High contact reliability

Despite its small stature and low profile, the contacts deliver strong contact forces and an effective mating length of 0.45mm on the 1.5mm stacking height. This connector utilizes a locking system that prevents accidental unmating issues and emits a clear tactile click to ensure that mating has been completed.

4. Excellent self-aligning range

The use of guide ribs allows 0.33mm of selfalignment on this connector.

5. Reinforced structure with shock absorbing ribs

Both sides of the connector have been reinforced with the addition of shock absorbing ribs.

6. Solder wicking prevention

Nickel-plated barriers were added to protect the contact areas from potential solder wicking

7. Contamination resistant design

When mated, the connector's design covers the contacts which help to keep dust and other debris away from the contacts. The SMT leads are kept very close to the connector housing which also helps to prevent shorts caused by debris on the exposed contacts.

8. RoHS compliant

Environment friendly and does not use RoHS specified prohibited materials.

All materials and substances used to produce these parts comply with the RoHS standards.

9. High speed signal with noise prevention

The shielded type can support high speed signal transmissions with noise prevention.

High contact reliability - effective mating length 0.45mm Shock absorption ribs Lock system (10 pos. to 50 pos.)

Stacking height variations

Standard type 15 20 25 30 35 40 Stacking

	Siac	Kirig	1.5	2.0	2.5	3.0	3.5	4.0
	hei	ght	mm	mm	mm	mm	mm	mm
Ī		10	0	-	0	-	-	-
		12	0	0	_	_	-	-
		20	0	0	0	-	0	-
		24	0	0	_	-	-	_
	S	30	0	0	0	0	0	-
	tac	34	0	-	-	-	-	-
	Ö	40	0	0	0	0	0	-
	Ç	44	_	0	_	0	-	-
	No. of Contacts	50	0	0	0	0	0	0
	Ž	60	0	0	0	0	0	0
		70	0	0	_	0	_	_
		80	0	0	_	0	0	0
		90	0	_	_	0	_	0
		100	0	_	_	0	_	_

Shielded type

Stac hei	king ght	1.5 mm	3.0 mm		
of Sts	30	0	-		
No. of contacts	48	0	0		
28	70	_	0		



■Product Specifications

		Operating Temperature Range	Storage Temperature Range
Datings	Rated Current 0.3A	-35 to +85°C (Note 1)	-10 to +60°C (Note 2)
Ratings	Rated Voltage AC, DC 30V	Operating Humidity Range	Storage Humidity Range
		20 to 80%	40 to 70% (Note 2)

Items	Specifications	Conditions
1. Insulation Resistance	50MΩ min	Measured with DC 100V
2. Withstanding Voltage	No flashover or breakdown	Apply AC 100V for 1 minute
3. Contact Resistance	90mΩ max	Measured with AC 20mV, 1 kHz and 1mA
4. Vibration Resistance	No electrical discontinuity of 1μ s or greater	Frequency 10-55 Hz, half amplitude 0.75mm, 3 directions for 2 hours
5. Humidity Resistance	Contact resistance : $90m\Omega$ max Insulation resistance : $25m\Omega$ min	Left at temperature $40 \pm 2^{\circ}\text{C}$, humidity 90 to 95%, 96 hours
6. Temperature Cycles	Contact resistance : $90m\Omega$ max Insulation resistance : $50m\Omega$ min	(-55°C : 30 minutes \rightarrow 5~35°C : 10 minutes \rightarrow 85°C : 30 minutes \rightarrow 5~35°C : 10 minutes) 5 cycles
7. Durability	Contact resistance : 90mΩ max	30 mating cycles
8. Soldering Heat Resistance	Should be no melting of resin parts that affects its performance	Reflow: according to the Recommended Temperature Profile Hand solder: Soldering iron temperature 350°C, no more than 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-energized condition of connectors after board mounting and the temporary storage conditions during transportation, etc.

■Materials (Standard, non shielded type) / Finish

Product	Component	Materials	Finish	UL Regulation
Pagantagla	Insulator	LCP	Black	UL94V-0
Receptacle	Contact	Phosphor bronze	Gold plating	
Header	Insulator	LCP	Black	UL94V-0
neadel	Contact	Phosphor bronze	Gold plating	

■Materials (Shielded type) / Finish

Product	Component	Materials	Finish	UL Regulation
	Insulator	LCP	Black	UL94V-0
Receptacle	Contact	Phosphor bronze	Cold ploting	
	Shield plate	Priosprior bronze	Gold plating	
	Insulator	LCP	Black	UL94V-0
Header	Contact	Phosphor bronze	Gold plating	
	Reinforcing metal fitting	rnosphol biolize	Gold plating	

■Product Number Structure (Standard, non-shielded type)

Refer to the chart below when determining the product specifications from the product number. Please select from the product numbers listed in this catalog when placing orders.

Receptacle

$$\frac{\mathsf{DF40}}{\bullet} \ \frac{\#}{2} \ - \ \frac{(**)}{\bullet} \ - \ \frac{*}{4} \ \frac{\mathsf{DS}}{\bullet} \ - \ \frac{0.4}{\bullet} \ \frac{\mathsf{V}}{\bullet} \ \frac{(**)}{\bullet}$$

- 1 Series Name: DF40
- 2 Style
 - B: With reinforcing metal fitting
 - HB: With reinforcing metal fitting (The H denotes a stacking height 2.5mm or above)
 - C: Without reinforcing metal fitting
- HC: Without reinforcing metal fitting (The H denotes a stacking height 2.5mm or above)
- Stacking height

Otdoking holght				
Display	Stacking height			
None	1.5mm			
2.0	2.0mm			
2.5	2.5mm			
3.0	3.0mm			
3.5	3.5mm			
4.0	4.0mm			

- 4 No. of Contacts
- 6 Connector Type
 - DS: Double row receptacle
- 6 Contact Pitch: 0.4mm
- Mating direction Shape V: Vertical SMT
- Packaging Type (51) Embossed tape packaging

Header

$$\frac{\mathsf{DF40}}{\bullet} \ \frac{\#}{2} \ - \ \frac{*}{6} \ \frac{\mathsf{DP}}{\bullet} \ - \ \frac{0.4}{6} \ \frac{\mathsf{V}}{6} \ \frac{(**)}{\bullet}$$

1 Series Name: DF40 3 No. of Contacts 6 Contact Pitch: 0.4mm 6 Mating direction V: Vertical SMT 4 Connector Type 2 Style C: Without reinforcing metal fitting DP: Double row pin header Packaging Type (51) Embossed tape packaging

■Shielded type

Receptacle

$$\frac{\mathsf{DF40}}{\bullet} \ \frac{\mathsf{GB}}{\bullet} \ - \ \frac{(**)}{\bullet} \ - \ \frac{*}{\bullet} \ \frac{\mathsf{DS}}{\bullet} \ - \ \frac{\mathsf{0.4}}{\bullet} \ \frac{\mathsf{V}}{\bullet} \ \frac{(**)}{\bullet}$$

1 Series Name: DF40 3 Stacking height 6 Connector Type DS: Double row receptacle 2 Style Display Stacking height GB: With shield 1.5 1.5mm 6 Contact Pitch: 0.4mm 3.0 3.0mm Mating direction V: Vertical SMT 4 No. of Contacts 8 Packaging Type (51) Embossed tape packaging

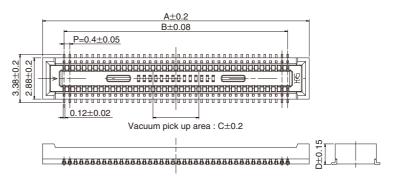
Header

$$\frac{\mathsf{DF40}}{\bullet} \ \frac{\mathsf{GB}}{\bullet} \ - \ \frac{*}{\bullet} \ \frac{\mathsf{DP}}{\bullet} \ - \ \frac{0.4}{\bullet} \ \frac{\mathsf{V}}{\bullet} \ \frac{(**)}{\bullet}$$

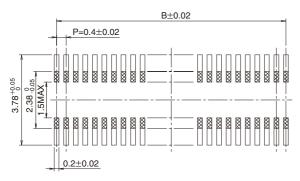
1 Series Name : DF40	3 No. of Contacts	6 Contact Pitch : 0.4mm
2 Style	Connector Type	6 Mating direction V : Vertical SMT
GB: With reinforcing metal fitting (For use with shielded product)	DP : Double row pin header	Packaging Type (51) Embossed tape packaging

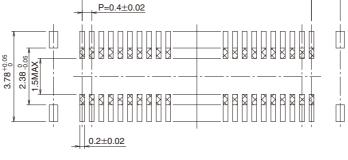
■Receptacle (Stacking height 1.5mm)





● Recommended PCB layout





DF40C(Without reinforcing metal fitting)

DF40B(With reinforcing metal fitting)

■Stacking height 1.5mm

[Specification No.]

(51): Embossed package 5,000 pcs/reel

Unit: mm

						OTHE . ITHE
Part No.	HRS No.	No. of Contacts	Α	В	С	D
DF40B-10DS-0.4V(51)	684-4038-8 51	10	4.6	1.6	1.0	
DF40B-12DS-0.4V(51)	684-4152-3 51	12	5.0	2.0	1.0	
DF40B-30DS-0.4V(51)	684-4090-8 51	30	8.6	5.6	1.5	
DF40B-50DS-0.4V(51)	684-4018-0 51	50	12.6	9.6		
DF40B-60DS-0.4V(51)	684-4049-4 51	60	14.6	11.6	3.2	
DF40B-80DS-0.4V(51)	684-4052-9 51	80	18.6	15.6		
DF40C-20DS-0.4V(51)	684-4005-9 51	20	6.6	3.6	1.0	
DF40C-24DS-0.4V(51)	684-4006-1 51	24	7.4	4.4	1.2	
DF40C-30DS-0.4V(51)	684-4007-4 51	30	8.6	5.6	1.5	1.45
DF40C-34DS-0.4V(51)	684-4023-0 51	34	9.4	6.4	2.3	
DF40C-40DS-0.4V(51)	684-4008-7 51	40	10.6	7.6		
DF40C-50DS-0.4V(51)	684-4009-0 51	50	12.6	9.6		
DF40C-60DS-0.4V(51)	684-4004-6 51	60	14.6	11.6		
DF40C-70DS-0.4V(51)	684-4016-5 51	70	16.6	13.6	3.2	
DF40C-80DS-0.4V(51)	684-4002-0 51	80	18.6	15.6		
DF40C-90DS-0.4V(51)	684-4124-8 51	90	20.6	17.6		
DF40C-100DS-0.4V(51)	684-4033-4 51	100	22.6	19.6		

Note 1: Please place orders by full reel.

Note 2: The surface of the 60 to 100 pos. parts have a small, concave section that will not affect the vacuum pick up operation.

Note 3: Resist coating area.

Note 4: This connector is NOT polarized.



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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 Critoria	
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











