

YDS-L9MF-OV13855 V1.0
13MP OmniVision OV13855 MIPI Interface M12
Fixed Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	YDS-L9MF-OV13855 V1.0
Resolution	13MP
Image Sensor	OV13855
Sensor Type	1/3.06"
Pixel Size	1.12 um x 1.12 um
EFL	2.27 mm
F.NO	2.40
Pixel	4224 x 3136
View Angle	152.0°(DFOV) 122.0°(HFOV) 93.0°(VFOV)
Lens Dimensions	13.00 x 13.00 x 21.62 mm
Module Size	40.05 x 22.00 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Model	YDS-LENS-YM6081
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	DF30FC-30DS-0.4V



YDS-L9MF-OV13855 V1.0 13MP OmniVision OV13855 MIPI Interface M12 Fixed Focus Camera Module



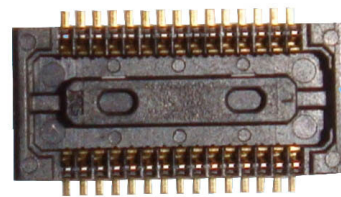
Top View



Side View



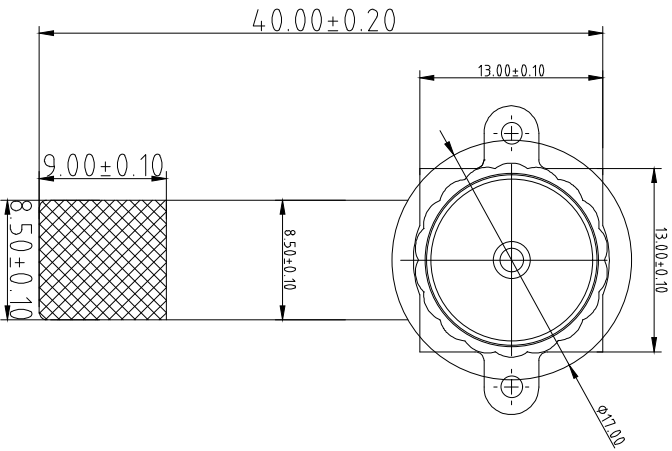
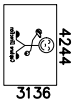
Bottom View



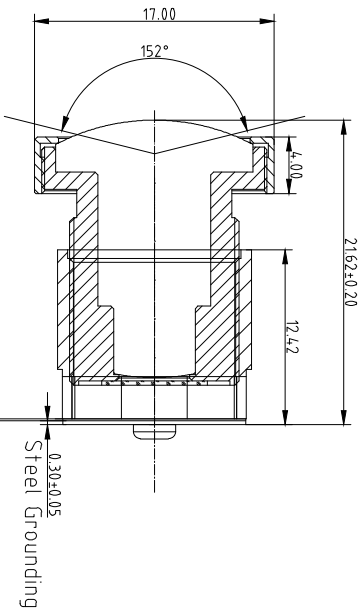
Mating Connector

ROHS

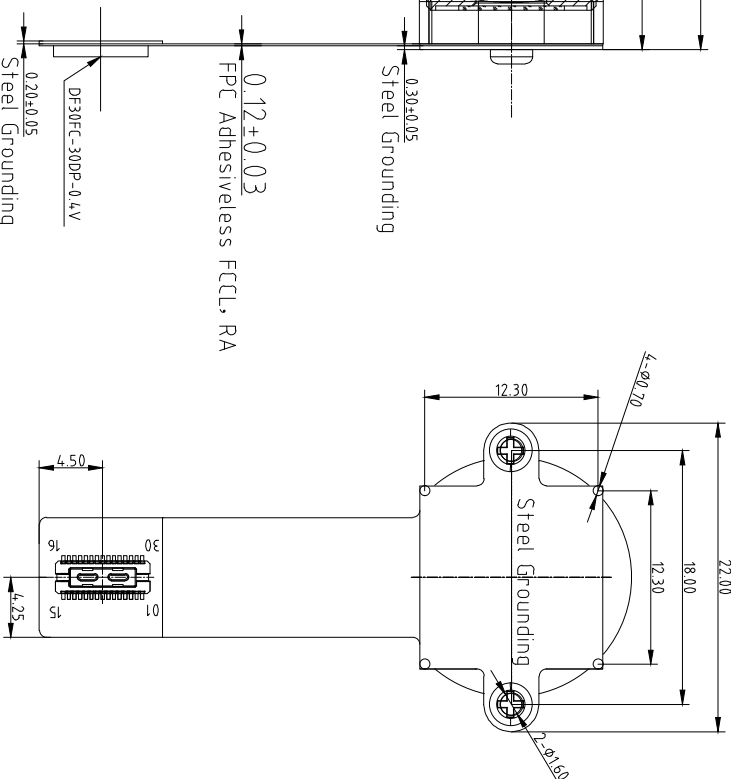
NO	SIGNAL
1	FSIN
2	VSYNC
3	AGND
4	AVDD2.8V
5	DGND
6	DVDD1.2V
7	D0VDD1.8V
8	SDA
9	SCL
10	DGND
11	DGND
12	XSHUTDOWN
13	DGND
14	MCLK
15	DGND
16	MDNO
17	MDDPO
18	DGND
19	MCP
20	MCN
21	DGND
22	MDN1
23	MDDP1
24	DGND
25	MDN2
26	MDDP2
27	DGND
28	MDN3
29	MDDP3
30	STD



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Parameters:

1、Sensor specification:

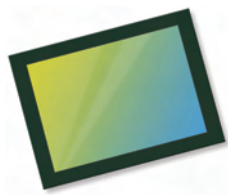
Image Sensor: OV13855
 Pixel: 1.12um×1.12um
 Lens Type: 1/3.06
 Important Voltage Description: DVDD1.2V
 (external power supply);

2、Lens specification:

FOV: 152°(D), 122°(H), 93°(V)
 F/NO: 2.4
 TV distortion: <-15%
 Focal length: 2.27mm
 Composition: 6G

Version	Mark	Information	Date
V1.0	PD	First Version	27-06-2019

Designed By	Kevin	Model Name:	L9MF-OV13855 V1.0
Checked By	Alouy_Yan	Projection Type:	Third Angle
		Unit:	mm
		Scale:	1:1
		Material:	-----
		Sheet:	1 of 1
		Version:	1/0



OV13855 13MP product brief



13-Megapixel PureCel®Plus Sensor Brings High-End Imaging Capabilities to Mainstream Smartphones



available in
a lead-free
package

OmniVision's high performance OV13855 is a 13-megapixel PureCel®Plus image sensor designed to bring high-quality imaging to rear-facing camera applications in mainstream smartphones. It is also well-suited for front-facing and dual camera applications in high-end mobile devices. In addition to best-in-class pixel performance, this third generation 13-megapixel sensor also offers advanced features, such as phase detection autofocus (PDAF).

Built on OmniVision's PureCel®Plus pixel technology, the OV13855 delivers significant improvements in low-light performance, color crosstalk reduction, and angular response when compared with previous-generation 13-megapixel sensors. The OV13855 captures full-

resolution 13-megapixel still images at 30 frames per second (fps) and records ultra-high resolution 4K2K video at 30 fps or 1080p full high definition (HD) at 60 fps.

The OV13855 fits in 8.5 x 8.5 mm autofocus modules with z-heights of less than 5 mm for rear cameras, and 7.5 x 7.5 mm fixed focus modules with z-heights of less than 4.5 mm for high-end front-facing cameras. The sensor is available in non-PDAF (OV13858) and monochrome (OV13355) versions for front-facing and dual camera applications.

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
- optical size of 1/3.06"
- 33.15° CRA
- support for PDAF
- 13MP at 30 fps
- programmable controls for:
 - frame rate
 - mirror and flip
 - cropping
 - windowing
- supports images sizes:
 - 13MP (4224x3136)
 - 10MP (4224x2376)
 - 3MP (2112x1568), and more
- total embedded one-time programmable (OTP) memory: 1024 bytes, 416 bytes for customer use, remaining bytes for internal use
- support for output formats: 10-bit RGB RAW
- interlaced row HDR output
- two-wire serial bus control (SCCB)
- MIPI serial output interface (1-, 2-lane, or 4-lane)
- two on-chip phase lock loops (PLLs)
- 2x binning support
- image quality controls:
 - defect pixel correction
 - automatic black level calibration
 - lens shading correction
- built-in temperature sensor
- suitable for module size of 8.5 x 8.5 x <5 mm

OV13855



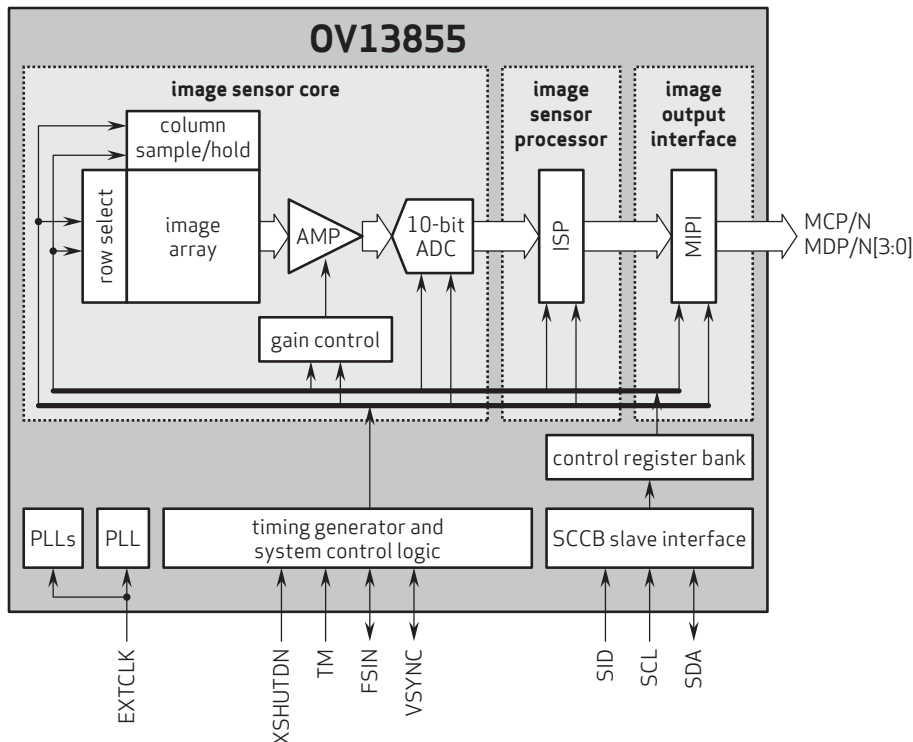
Ordering Information

- OV13855-GA5A-2A (color, chip probing, 150 μm backgrinding, reconstructed wafer)

Product Specifications

- active array size: 4256 x 3168
- lens chief ray angle: 33.15° non-linear
- power supply:
 - analog: 2.7 - 3.0V (2.8V nominal)
 - core: 1.14 - 1.26V (1.2V nominal)
 - I/O: 1.7 - 1.9V (1.8V nominal)
- power requirements:
 - active: 233 mW (based on ISP ON)
 - standby: 1 mW
 - XSHUTDOWN: <10 μA
- temperature range:
 - operating: -30°C to +85°C junction temperature
 - stable image: 0°C to +60°C junction temperature
- output interfaces: 4-lane MIPI serial output
- output formats: 10-bit RGB RAW
- lens size: 1/3.06"
- input clock frequency: 6 - 64 MHz
- maximum image transfer rate:
 - 13MP (4224x3136): 30 fps
 - 10MP (4224x2376): 30 fps
 - 3MP (2112x1568): 60 fps
- sensitivity: 3900 e⁻/Lux-sec
- max S/N ratio: 36.5 dB
- dynamic range: 65 dB @ 1x gain
- minimum exposure: 4-row
- maximum exposure: VTS-8
- pixel size: 1.12 μm x 1.12 μm
- image area: 4749.70 μm x 3535.49 μm
- die dimensions:
 - COB: 5868 μm x 4950 μm
 - RW: 5918 μm x 5000 μm

Functional Block Diagram



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OmniVision

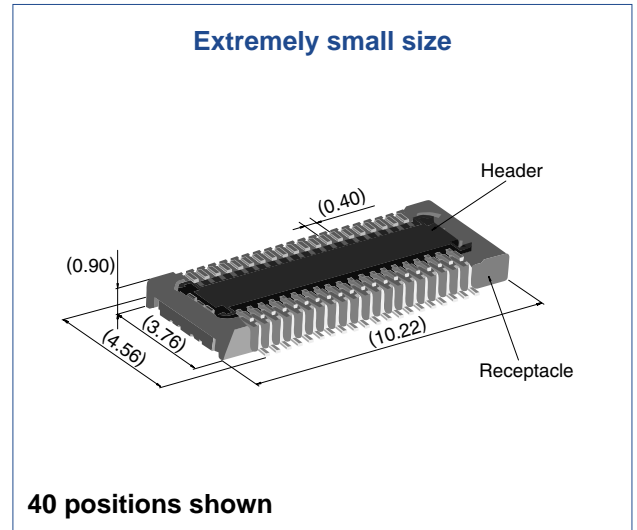
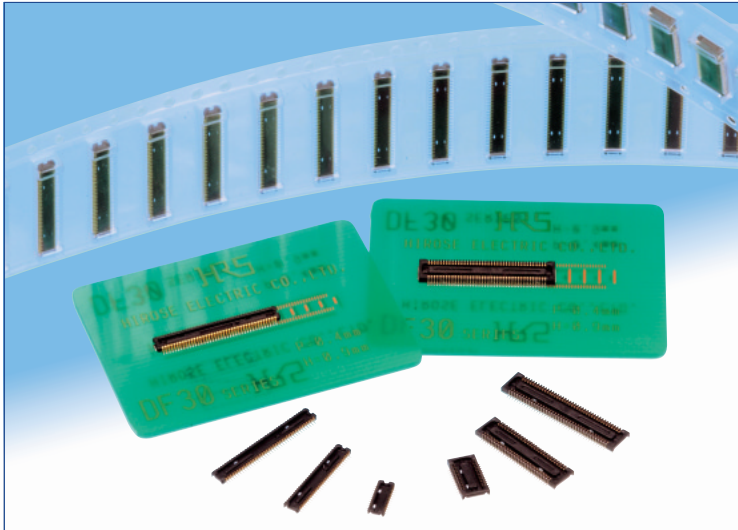
YDS-LENS-YM6081

No.	ITEM	SPECIFICATION
1	焦距 (FFL)	2.25mm
2	光学后焦 (BFL)	3.73mm (IR 0.21mm)
3	机械后焦 (MFL)	3.2mm (IR 0.21mm)
4	光学总长 (TTL)	22mm (IR 0.21mm)
5	光圈 (FNo)	2.6
6	最大像面(Max Image Circle)	Φ5.0
7	光学结构 (Structure)	6G+IR
8	接口(Mount)	M12-P0.5
9	光轴透过率 (Spectral Transmission)	Tavg ≥ 80%
Sensor		
IMX214		
10	视场角 (FOV)	
	Vertical	89.1° (φ=1.747)
	Horizontal	120.0° (φ=2.0357)
	Diagonal	149.2° (φ=2.934)
11	光学畸变 ("Optical Distortion")	-54.3%
12	相对亮度 (Relative IL)	55.0%
13	主光线角度 (CRA)	29.7°
14	IR FILTER SPEC (Built-in Others available)	
	Tavg >= 85% @ 425-650 nm	
	Tavg <= 3% @ 700-1000 nm	
	T < 5% @ 1050 nm	

标记	处数	分区	更改文件号	签名	年、月、日
设计		20210427	标准化		
审核			批准		
工艺					
阶段标记			重量	比例	
共	张	第	张	4:1	

0.4 mm Pitch, 0.9 mm Height, Board-to-Board / Board-to-FPC Connectors

DF30 Series



Overview

Continuous miniaturization and increased component density on PCB created demand for extremely low profile connectors. This series is addition of a new extremely low profile connectors to Hirose's wide range of high reliability board-to-board/board-to-FPC connection solutions.

Features

1. Contact reliability

Concentration of the contact's normal forces at the single point assures good contact wipe and electrical reliability, while confirming the fully mated condition with a definite tactile click.

2. Self alignment

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

3. Automatic board placement

Packaged on tape-and-reel the plug and headers have sufficiently large flat areas to allow pick-up with vacuum nozzles of automatic placement equipment.

4. Variety of contact positions and styles

Available in standard contact positions of: 20, 22, 24, 30, 34, 40, 50, 60, 70 and 80 with and without metal fittings. Addition of metal fittings does not affect external dimensions of the connectors.

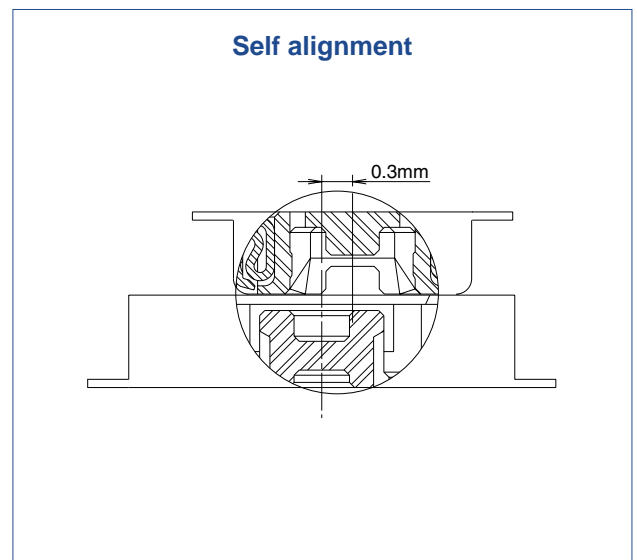
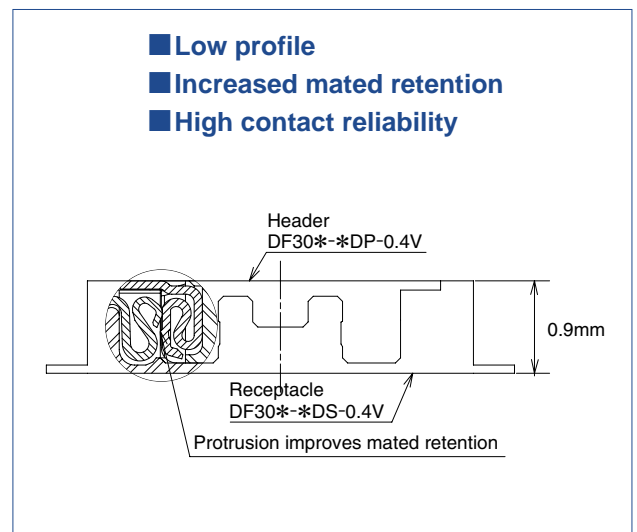
Smaller contact positions are also available.

5. Support for continuity test connector

Connectors which have increased insertion and removal durability are available for continuity tests. Contact your Hirose sales representative for details.

Applications

Cellular phones, PDA's, mobile computers, digital cameras, digital video cameras, and other devices demanding high reliability connections in extremely limited spaces.



Product Specifications

Rating	Rated current 0.3A	Operating temperature range : -35°C to 85°C (Note 1)	Storage temperature range -10°C to 60°C (Note 2)
	Rated voltage 30V AC	Operating humidity range : Relative humidity 20% to 80%	Storage humidity range Relative humidity 40% to 70% (Note 2)

Item	Specification	Conditions
1. Insulation resistance	50 MΩ min.	100V DC
2. Withstanding voltage	No flashover or insulation breakdown.	100V AC / one minute
3. Contact resistance	100 mΩ max.	100 mA
4. Vibration	No electrical discontinuity of 1 μs or more	Frequency: 10 to 55 Hz, single amplitude of 0.75mm, 2 hours, 3 axis
5. Humidity	Contact resistance: 100 mΩ max. Insulation resistance: 25 MΩ min.	96 hours at temperature of 40°C±2°C and RH of 90% to 95%
6. Temperature cycle	Contact resistance: 100 mΩ max. Insulation resistance: 50 MΩ min.	Temperature: -55°C→+5°C to +35°C→+85°C→+5°C to +35°C Duration: 30→10→30→10(Minutes) 5 cycles
7. Durability (insertions/withdrawals)	Contact resistance: 100 mΩ max.	50 cycles(Connector for conductivity tests: 500 cycles)
8. Resistance to soldering heat	No deformation of components affecting performance.	Reflow: At the recommended temperature profile Manual soldering: 300°C for 3 seconds

Note 1: Includes temperature rise caused by current flow.

Note 2: The term "storage" refers to products stored for long period of time prior to mounting and use. Operating temperature range and humidity range covers non-conducting condition of installed connectors in storage, shipment or during transportation.

Materials and Finishes

Connectors	Component	Material	Finish	Remarks
Receptacles and Headers	Insulator	LCP	Color : Black	UL94V-0
	Contacts	Phosphor bronze	Gold plated	————
	Metal fittings	Phosphor bronze	Tin-copper plated	————

Ordering information

Receptacles and Headers

DF30 **FC** - ***** **DS - 0.4** **V** **(**)**
1 2 3 4 5 6 7

1 Series name: DF30	5 Contact pitch: 0.4 mm
2 Configuration FB: With metal fittings, without bosses FC: Without metal fittings, without bosses CJ: Connector for conductivity tests	6 Termination section V: Straight SMT
3 Number of positions: 20, 22, 24, 30, 34, 40, 50, 60, 70, 80	7 Packaging (81): Embossed tape packaging (5,000 pieces per reel) (82): Embossed tape packaging (1,000 pieces per reel)
4 Connector type DS: Double row receptacle DP: Double row header	

■ Receptacles (without metal fittings)



◆ Recommended PCB mounting pattern



Recommended solder paste thickness: 120 μm

[Specification number] -**, (**)
 (81): Embossed tape packaging (5,000 pieces per reel)

* Tolerances non- accumulative.

Unit: mm

Part Number	CL No.	Number of contacts	A	B	C
DF30FC-20DS-0.4V(**)	CL684-1109-8-**	20	6.22	3.6	1.2
DF30FC-22DS-0.4V(**)	CL684-1110-7-**	22	6.62	4.0	1.2
DF30FC-24DS-0.4V(**)	CL684-1111-0-**	24	7.02	4.4	1.2
DF30FC-30DS-0.4V(**)	CL684-1112-2-**	30	8.22	5.6	1.2
DF30FC-34DS-0.4V(**)	CL684-1113-5-**	34	9.02	6.4	1.36
DF30FC-40DS-0.4V(**)	CL684-1078-6-**	40	10.22	7.6	1.6
DF30FC-50DS-0.4V(**)	CL684-1114-8-**	50	12.22	9.6	2.0
DF30FC-60DS-0.4V(**)	CL684-1082-3-**	60	14.22	11.6	2.4
DF30FC-70DS-0.4V(**)	CL684-1115-0-**	70	16.22	13.6	2.8
DF30FC-80DS-0.4V(**)	CL684-1116-3-**	80	18.22	15.6	3.2

Note 1: Order by number of reels.

Note 2: Receptacles with 24 or fewer contacts positions will not have recessed areas.



YDS CAMERA MODULE

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							
FREQ		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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Cameras Applications



IMAGING DEVICES



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



YDSCAM Package Solutions

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





YDS CAMERA MODULE

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 subsequent events.



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