

YDS-MAA28-OV16880 V1.0

16MP OmniVision OV16880 MIPI Interface Auto Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	YDS-MAA28-OV16880 V1.0
Resolution	16MP
Image Sensor	OV16880
Sensor Type	1/3.06"
Pixel Size	1.0 um x 1.0 um
EFL	3.81 mm
F.NO	2.20
Pixel	4672 x 3504
View Angle	76.8°(DFOV) 62.7°(HFOV) 48.7°(VFOV)
Lens Dimensions	8.50 x 8.50 x 5.60 mm
Module Size	26.50 x 8.80 mm
Module Type	Auto Focus
Interface	MIPI
Auto Focus VCM Driver IC	DW9714P
Lens Model	YDS-LENS-60183A1
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	OK-14F030-04



YDS-MAA28-OV16880 V1.0

16MP OmniVision OV16880 MIPI Interface Auto Focus Camera Module



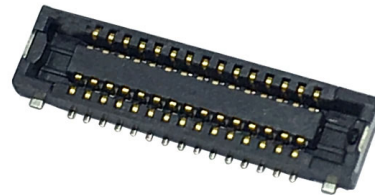
Top View



Side View



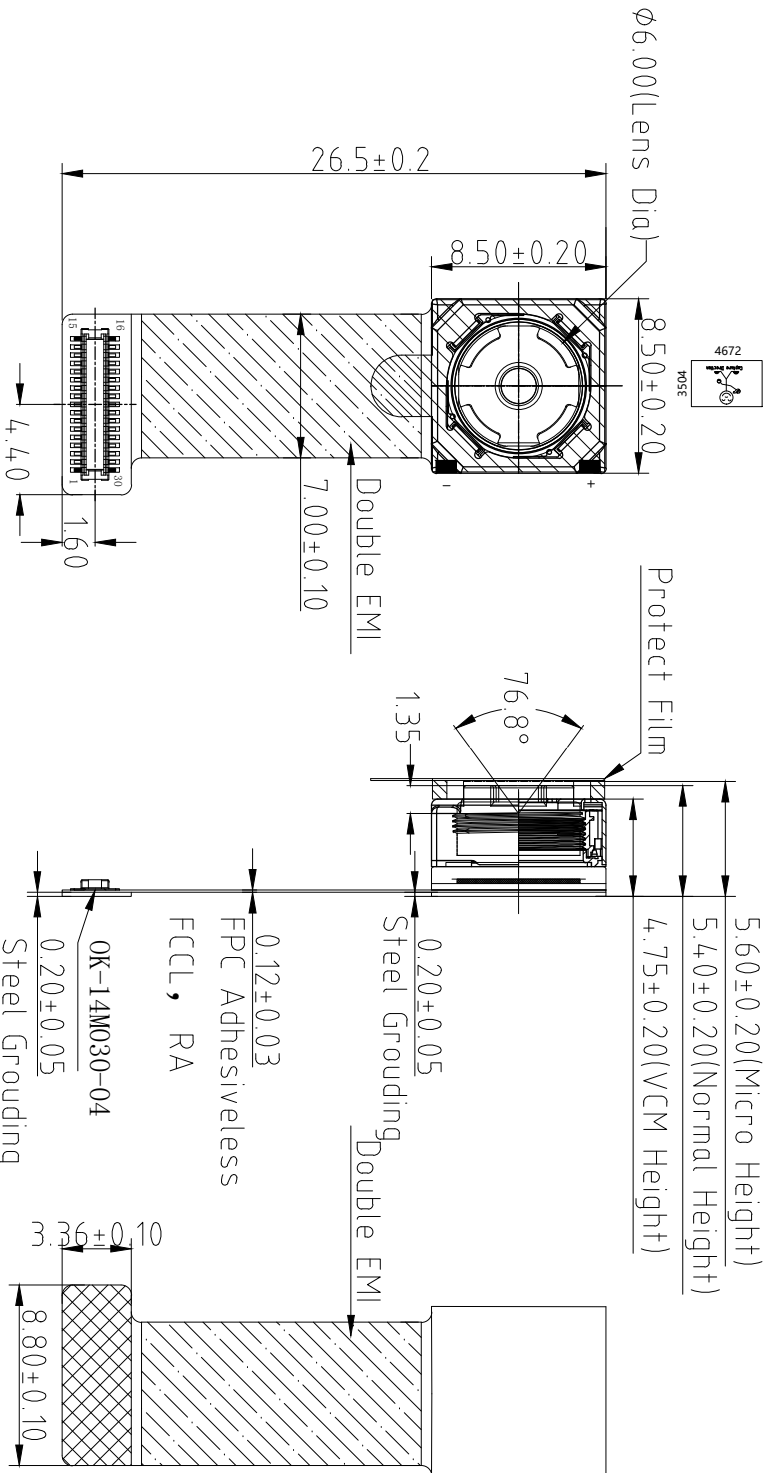
Bottom View



Mating Connector

Version	Information	Date
V1.0	First Version	4-6-2022

RoHS	
PIN	SIGNAL
1	MCLK
2	DGND
3	MDPO
4	MDNO
5	DGND
6	MDN1
7	MDP1
8	DGND
9	MCN
10	MCP
11	DGND
12	AFVDD2.8V
13	AFGND
14	AVDD2.8V
15	AGND
16	DVDD1.2V
17	DOVDD1.8V
18	DGND
19	SCL
20	SDA
21	RESET
22	DGND
23	NC
24	DGND
25	MDP3
26	MDN3
27	DGND
28	MDN2
29	MDP2
30	DGND



NOTE:

1. The device slave address: 0x20(w); 0x21(r)

Parameters:

1、Sensor specification:

Image Sensor: OV16880
 Pixel: 1.0umx1.0um
 Lens Type: 1/3.06
 Important Voltage Description: DVDD1.2V
 (External power supply);

2、Lens specification:

FOV: 76.8°(D), 62.7°(H), 48.7°(V);
 F/NO.: 2.2
 TV distortion: <1.5%
 Focal length: 3.81mm
 Composition: 6P+IR FILTER
 IR Cut Coating: 650nm±10nm@50%

SIDE VIEW

BOTTOM VIEW

A

B

C

D

E

3

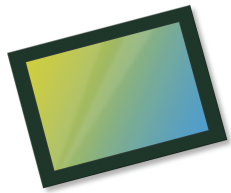
3

2

2

1

1



OV16880 16MP product brief



16-Megapixel 1-Micron Pixel PureCel®Plus-S Image Sensor with Phase Detection Autofocus for Slim Mobile Devices



available in
a lead-free
package

OmniVision's high performance OV16880 is a 1/3.06-inch 16-megapixel image sensor built on OmniVision's PureCel®Plus-S stacked die technology. Utilizing an advanced 1-micron pixel, the sensor brings ultra-high resolution image and video capture, as well as advanced features such as phase detection autofocus (PDAF), to slim smartphones and tablets.

OmniVision's PureCel®Plus-S sensors utilize buried color filter array (BCFA) and deep trench isolation (DTI) technology, which dramatically reduces pixel crosstalk and improves signal-to-noise ratio to produce superior images and video. Additionally, this technology enables a slimmer module design by allowing larger chief ray angle (CRA) lenses without degradation of image quality.

The OV16880 PureCel®Plus-S image sensor is capable of capturing 16-megapixel (4672 x 3504 pixels) images at 30 frames per second (fps), thus allowing burst photography and zero shutter lag at full resolution. Additionally, the sensor is capable of capturing 4K video at 30 fps, 1080p video at 90 fps, and 720p video at 120 fps.

The sensor can fit into an 8.5 x 8.5 mm module with a z-height less than 5 mm. The OV16880 is currently in mass production.

Find out more at www.ovt.com.



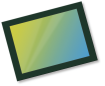
Applications

- Smartphones
- Digital Video Camcorders (DVC)
- Digital Still Cameras (DSC)
- PC Multimedia

Product Features

- automatic black level calibration (ABLC)
- programmable I/O drive capability
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- up to 1/2/4-lane LVDS interface with speed up to 1.5 Gbps/lane
- support for dynamic DPC cancellation
- embedded 13kbits (1664 bytes) of one-time programmable (OTP) memory for customer use
- supports output formats: 10-bit RAW RGB
- interleave row HDR output
- supports horizontal and vertical subsampling
- support for high speed AF
- supports typical images sizes: 4672x3504, 4672x2628, 2336x1752, 1920x1080, 1280x720
- support for PDAF
- supports 2x2 binning
- three on-chip phase lock loops (PLLs)
- standard serial SCCB interface
- programmable I/O drive capability
- built-in temperature sensor
- up to 4-lane MIPI TX interface with speed up to 1.5 Gbps/lane

OV16880



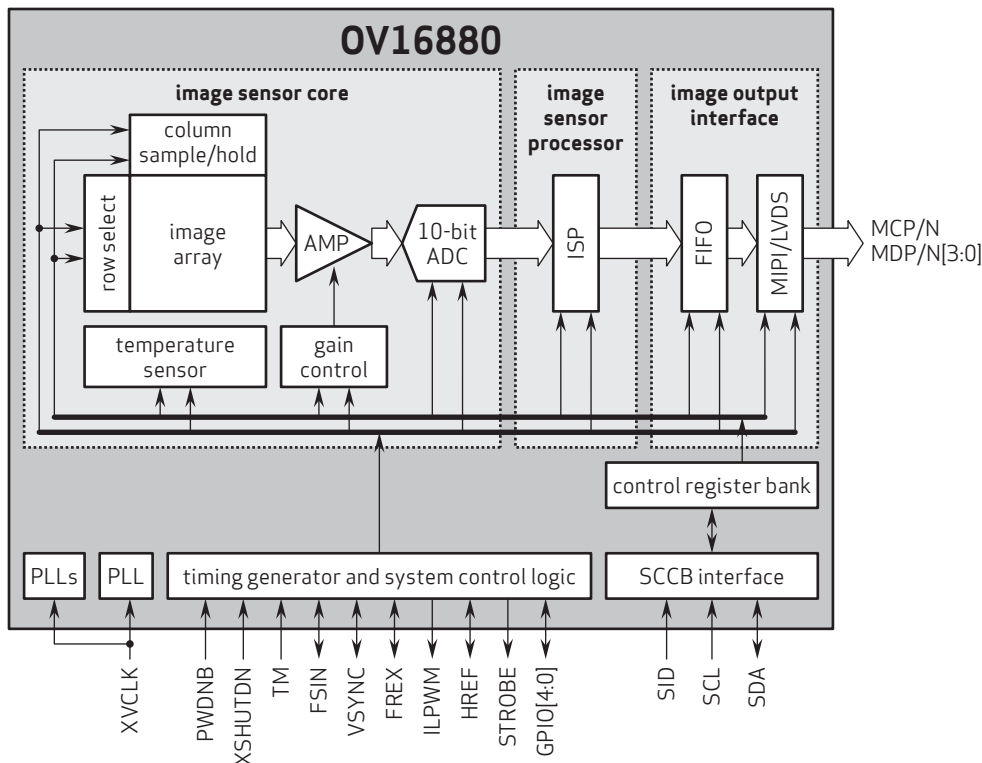
Ordering Information

- OV16880-GA5A-1B**
(color, chip probing, 150 μm backgrinding, reconstructed wafer with good die)

Product Specifications

- active array size:** 4672 x 3504
- maximum image transfer rate:**
 - 4672x3504: 30 fps
 - 4672x2628: 30 fps
 - 2336x1752: 60 fps
 - 1920x1080: 90 fps
 - 1280x720: 120 fps
- power supply:**
 - core: 1.2V
 - analog: 2.8V
 - I/O: 1.8V
- power requirements:**
 - active: 300 mW
 - standby: 6 mA
 - XSHUTDN: 3 μA
- temperature range:**
 - operating: -30°C to +85°C junction temperature
 - stable image: 0°C to +60°C junction temperature
- output formats:** 10-bit RGB RAW
- lens size:** 1/3.06"
- lens chief ray angle:** 34.2° non-linear
- input clock frequency:** 6 - 64 MHz
- sensitivity:** 3200 e⁻/lux-sec
- max S/N ratio:** 36.8 dB
- dynamic range:** 72 dB @ 16x gain
- scan mode:** progressive
- pixel size:** 1.0 μm x 1.0 μm
- dark current:** 4 e⁻/sec @ 60°C junction temperature
- image area:** 4741.632 μm x 3564.288 μm
- die dimensions:**
 - COB: 5640 μm x 4560 μm
 - RW: 5690 μm x 4610 μm

Functional Block Diagram



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OmniVision

FEATURES

- 120mA output driver with 10-bit resolution DAC
- Smart Actuator Control (SAC™) modes
- Supply voltage (V_{DD}): 2.3V to 4.3V
- I/O voltage (V_{IN}): 1.8V to V_{DD}
- Fast mode and Fast mode plus I²C interface compatible
- Power On Reset (POR)
- Power Down (PD) mode current consumption less than 1uA
- Package: 6-pin WLCSP (0.77mm x 1.14mm x 0.30mm)

APPLICATIONS

- Mobile camera
- Digital still camera
- Camcorder
- Web camera
- Action camera

GENERAL DESCRIPTION

The DW9714P designed for linear control of Voice Coil Motors (VCM). This device is compatible with DW9714. The DW9714P has a single 10-bit DAC with 120mA output current sink capability. This device features SAC™ mode which can minimize the mechanical vibration and achieve very fast mechanical settling time. The SAC™ is protected by patent and registered trademark of DONGWOON ANATECH.

The DW9714P operates from a single 2.3V to 4.3V supply. The internal DAC is controlled via an I²C serial interface that operates at clock rate up to 1MHz. The I²C address for the DW9714P is 0x18. The DW9714P offers PD mode with current consumption less than 1uA.

The DW9714P can be used for auto focus applications in mobile cameras, digital still cameras, camcorders, web cameras and action cameras.

TYPICAL APPLICATION CIRCUIT

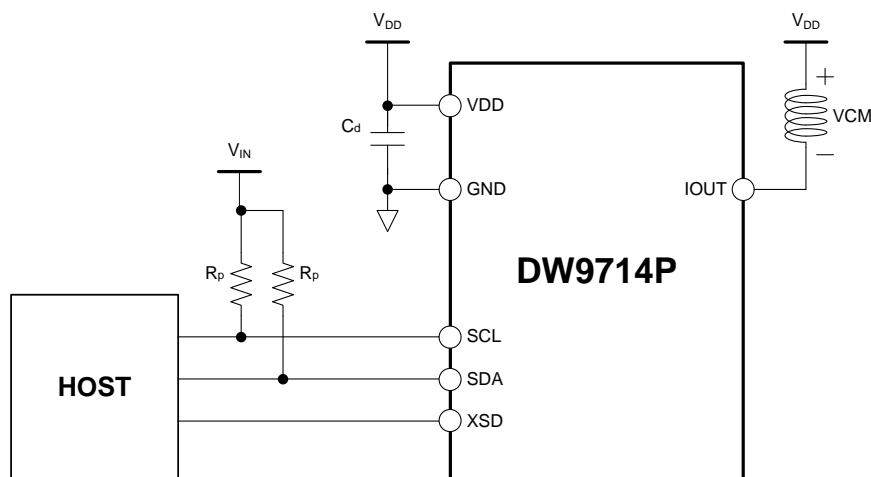
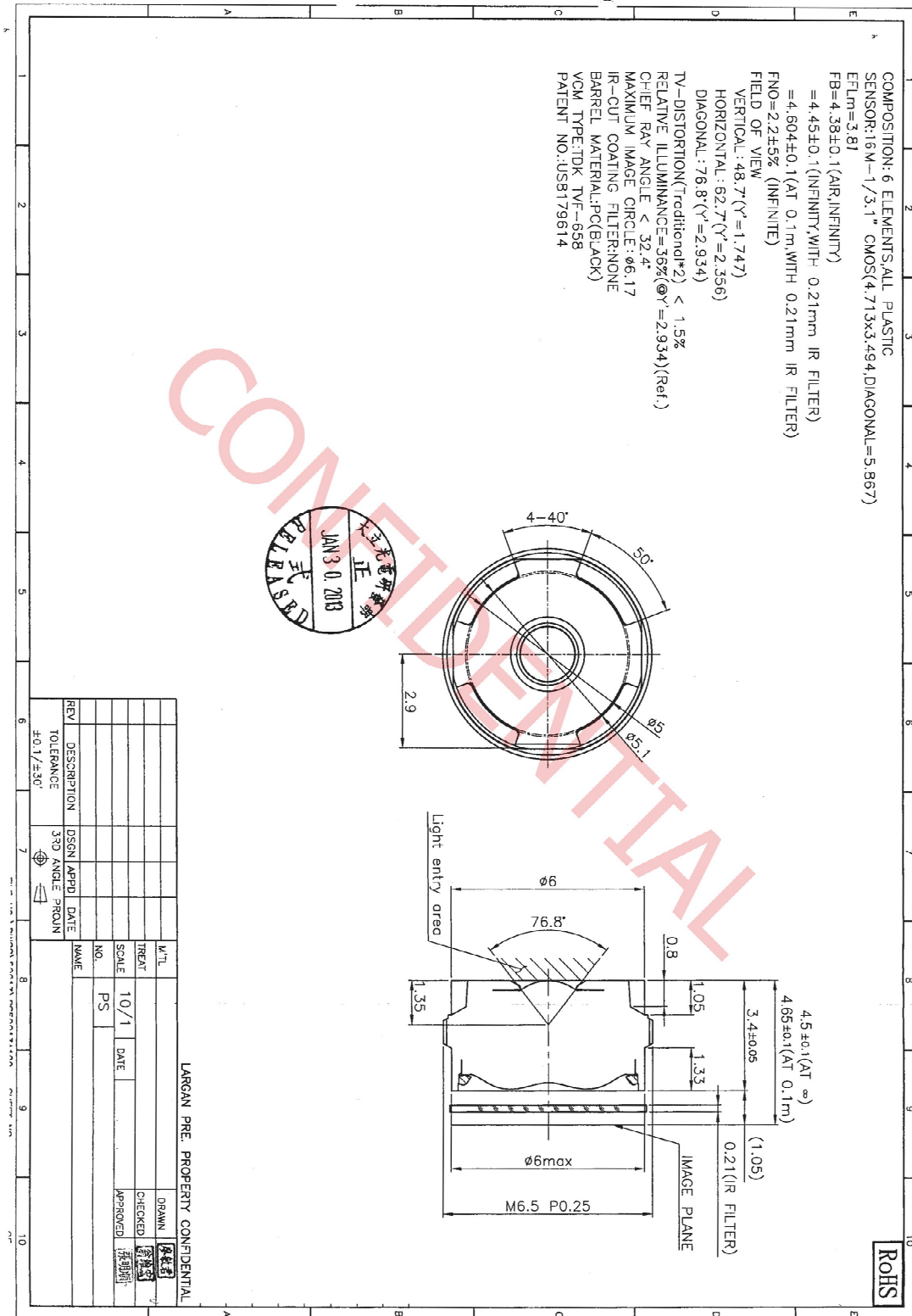
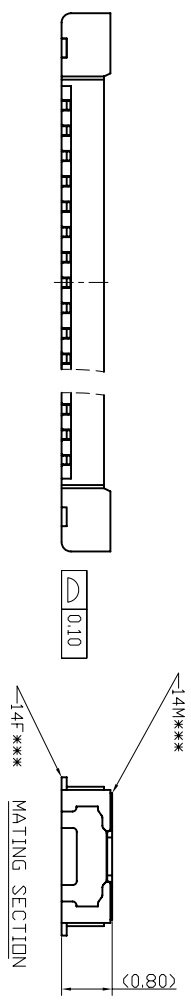
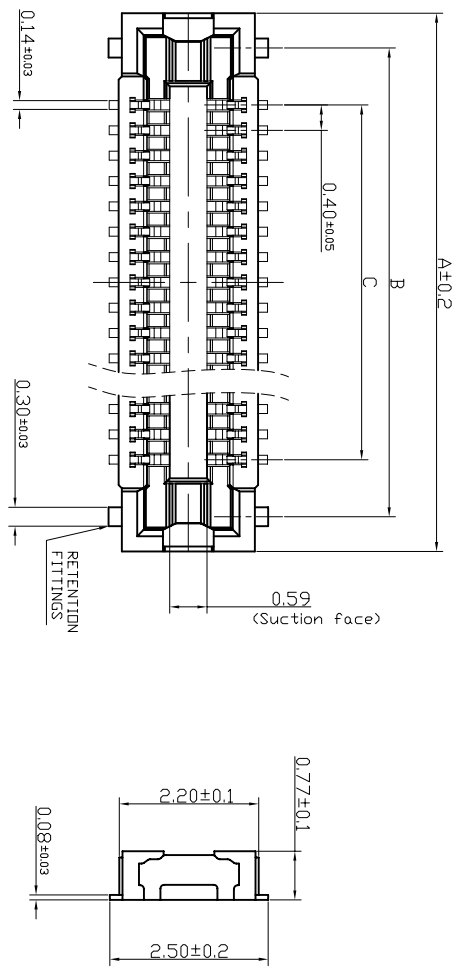


Figure 1. Typical application circuit

YDS-LENS-60183A1



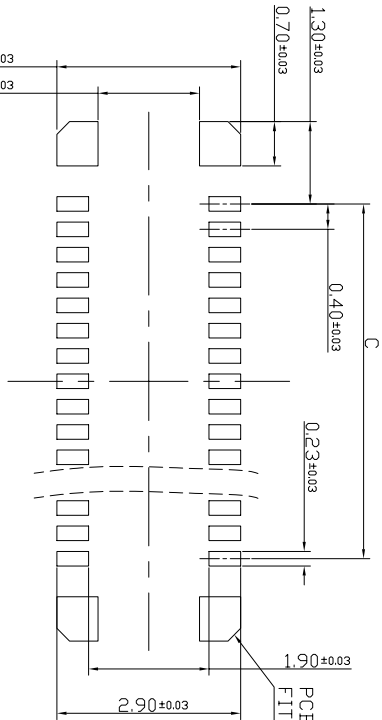
REV	ECN NO	DRA	APPD	DATE
A	FIRST RELEASE	George Gao	Huinan Zhou	2013.09.18
B	SECOND VERSIONS	George Gao	Huinan Zhou	2015.10.22



- Specifications:
- Material:
 - Molded portion: LCP resin (UL94 V-0)
 - Contact and Post: Copper alloy.
 - Surface treatment:
 - Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) ; Exposed nickel portions.
 - Metal clips: Base: Ni plating Surface: Au flash plating (except the terminal tips) Or: Base: Ni plating Surface: Sn flash plating (except the terminal tips)
 - Characteristics:
 - Rated voltage: 60V AC/DC
 - Rated current: 0.3A/contact (Max. 5A at total contact)
 - Insulation resistance: Min. 1000MΩ (initial)
 - Breakdown voltage: 150V AC for 1 min.
 - Saltwater spray resistance (header and socket mated): 24 hours, insulation resistance min.100MΩ, contact resistance max. 90mΩ
 - Contact resistance: Max. 90mΩ
 - Ambient temperature: -55℃~+85℃
 - Storage temperature: -55℃~+85℃ (product only); -40℃~+50℃ (emboss packing)
 - Composite insertion force: Max. 0.981N/contacts X contacts (initial)
 - Composite removal force: Min. 0.165N/contacts X contacts
 - Post holding force: Min. 0.49N/contacts
 - Insertion and removal life: 50 times

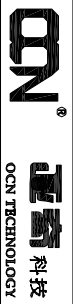
TABLE:

70	16.50	15.40	13.60
50	12.50	11.40	9.60
40	10.50	9.40	7.60
34	9.30	8.20	6.40
30	8.50	7.40	5.60
24	7.30	6.20	4.40
16	5.70	4.60	2.80
12	4.90	3.80	2.00
10	4.50	3.40	1.60
NUMBER DF CONTACTS	A	B	C



OK-14F***-04

SOCKET
PITCH=0.4MM
NUMBER DF CONTACTS



DIMENSION IN MM		TOLERANCE UNLESS OTHERWISE SPECIFIED	
±0.20	±2°	±0.10	±1°
.00 ±0.05	.00 ±0.5°	.000 ±0.3°	
APPRO: _____		TITLE: 0.4MM BTB (MATING HEIGHT 0.8H)	
CHKD: _____		DWG NO: OK-14F***-04	
DRA: George Gao 2015.10.22		PROU	0.1V
		SIZE	A4
		SHEET	1/1
		SCALE	1:1
		REV	B

RECOMMENDED PCB LAYOUT

REV	ECN NO	DRA	APPD	DATE
A	FIRST RELEASE	George Gao	Hunan Zhou	2013.09.12

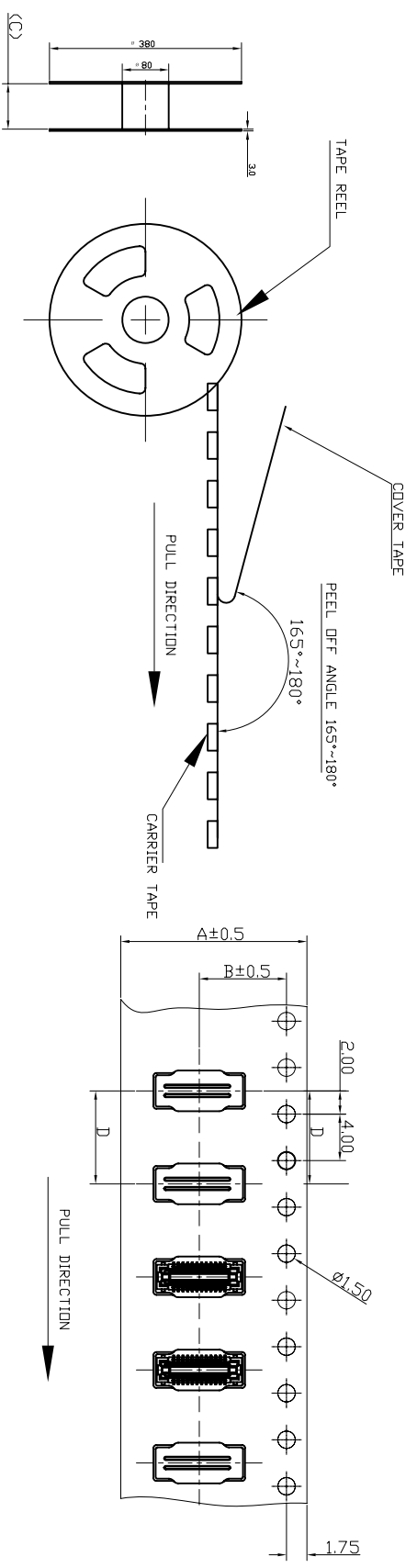


TABLE:

70	24.00	11.50	25.4	8.00	10000
50	24.00	11.50	25.4	8.00	10000
40	16.00	7.50	17.4	8.00	10000
34	16.00	7.50	17.4	4.00	20000
30	16.00	7.50	17.4	4.00	20000
24	16.00	7.50	17.4	4.00	20000
16	16.00	7.50	17.4	4.00	20000
12	16.00	7.50	17.4	4.00	20000
10	16.00	7.50	17.4	4.00	20000
NUMBER OF CONTACTS	A	B	C	D	QTY/REEL

DIMENTION IN mm		TOLERANCE UNLESS OTHERWISE SPECIFIED	
. ± 0.20	. ± 2°	. ± 0.10	. ± 1°
.0 ± 0.10	.0 ± 1°	.00 ± 0.05	.00 ± 0.5°
.000 ± 0.03	.000 ± 0.3°		
		OCN 芯奇科技 OCN TECHNOLOGY	
APPR:	TITLE:	0.4MM BTB (MATING HEIGHT 0.8H)	
CHKD:	DWG NO.:	OK-14F***-04	
DRAW:	PROU:	QTY	SIZE
George Gao	George Gao	1/1	A4
2013.09.18		SHEET	SCALE
		1/1	1:1
		REV	A



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

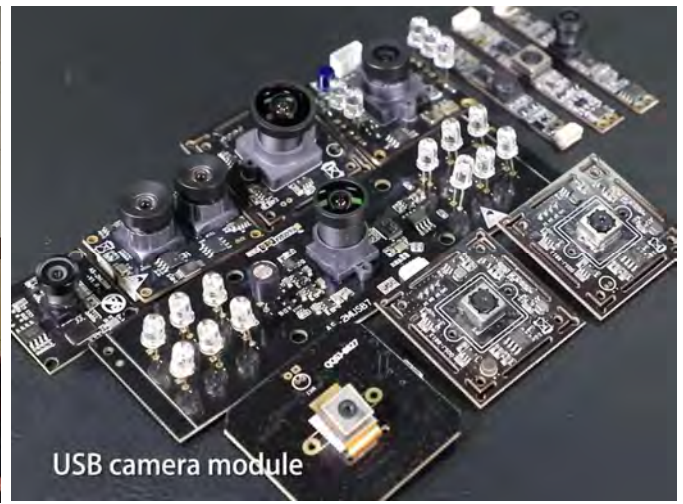
your best camera partner

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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YDS CAMERA MODULE

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YDS Strength

Powerful Factory



Professional Service



Promised Delivery



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