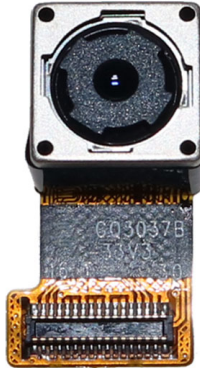


YDS-D6MA-S5K3P3 V3.0

16MP Samsung S5K3P3 MIPI Interface Auto Focus Camera Module



Front View



Back View

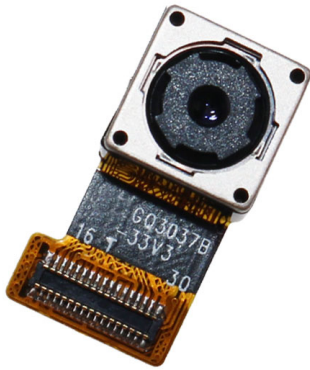
Specifications

Camera Module No.	YDS-D6MA-S5K3P3 V3.0
Resolution	16MP
Image Sensor	S5K3P3
Sensor Type	1/3.1"
Pixel Size	1.00 um x 1.00 um
EFL	4.24 mm
F.NO	2.20
Pixel	4632 x 3480
View Angle	78.4°(DFOV) 66.2°(HFOV) 51.6°(VFOV)
Lens Dimensions	8.50 x 8.50 x 5.37 mm
Module Size	17.60 x 9.40 mm
Module Type	Auto Focus
Interface	MIPI
Auto Focus VCM Driver IC	DW9714
Lens Model	YDS-LENS-50065B5
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +70°C
Mating Connector	OK-10F030-04



YDS-D6MA-S5K3P3 V3.0

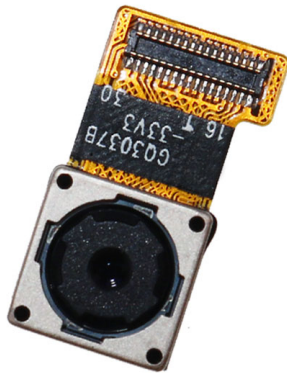
16MP Samsung S5K3P3 MIPI Interface Auto Focus Camera Module



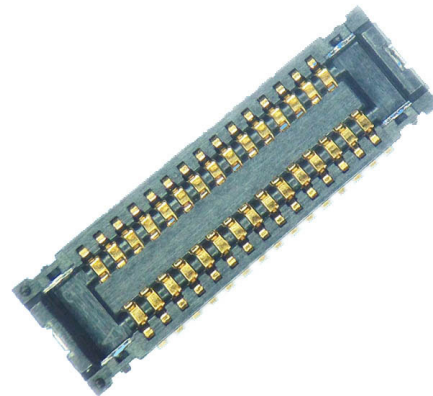
Top View



Side View



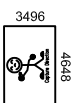
Bottom View



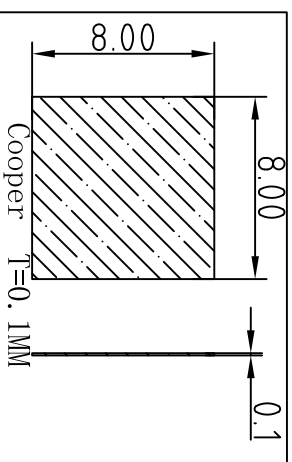
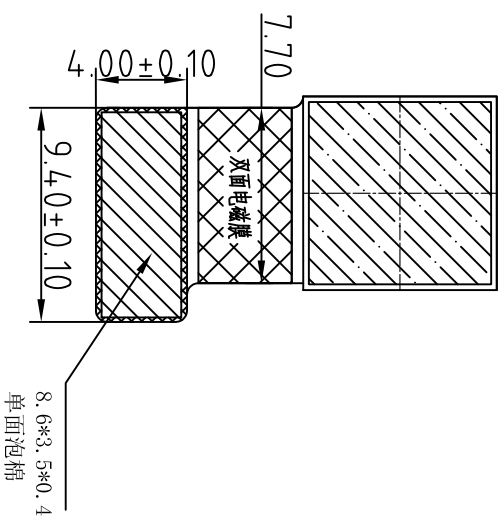
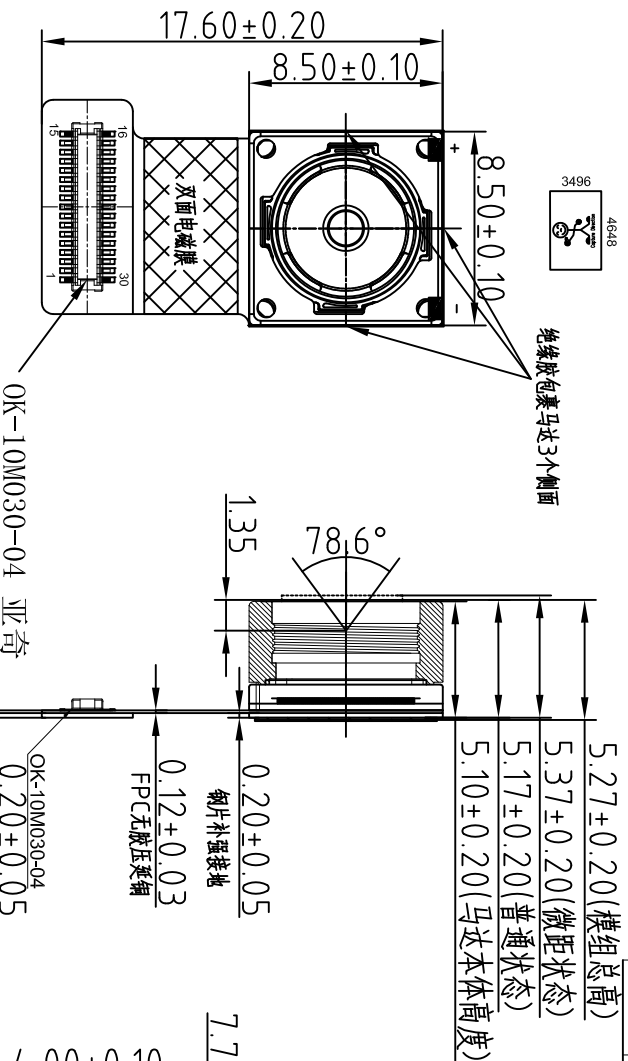
Mating Connector

RoHS

PIN	DEFINITION
1	AF_GND
2	AF_VDD_2.8V
3	DVDD_1.2V
4	D0VDD_1.8V
5	NC
6	AGND
7	AVDD_2.98V
8	DGND
9	SIO_D
10	SIO_C
11	RESET
12	NC
13	GND
14	MCLK
15	GND
16	MDP3
17	MDN3
18	GND
19	MDP2
20	MDN2
21	GND
22	MDP1
23	MDN1
24	GND
25	MCP
26	MCN
27	GND
28	MDPO
29	MDNO
30	GND



绝缘软包马达3个侧面



Parameters:

1、Sensor specification:

Image Sensor: S5K3P3
 Pixel: $1.0\mu m \times 1.0\mu m$
 Lens Type: 1/3.1
 Important Voltage Description: DVDD1.2V
 I2C_IC: 0X20

2、Lens specification:

FOV: 78.6°
 F/NO.: $2.2 \pm 5\%$
 TV distortion: $< 1.5\%$
 Focal length: $4.24mm$
 Composition: 5P

Version	Mark	Information	Date
V1.0	PD	First Version	2017-02-28
V2.0	PD	改短结构	2017-06-28
V3.0	PD	改封装片	2017-06-28

Designed By	Kevin	Model Name:	D6MA-S5K3P3 V3.0		
Checked By	Aouly_Yan	Projection Type:	Unit:	Material:	Version:
			mm	-----	1/0
		Scale:	Sheet:	Version:	
		1:1	1 of 1		

S5K3P3SQ

1/3.1" 16Mp CMOS Image Sensor for supporting PD-AF Pattern

Revision 0.00
December 2015

SAMSUNG Confidential
samsung / ellen.piao at 2015.12.11

Data Sheet

SAMSUNG ELECTRONICS RESERVES THE RIGHT TO CHANGE PRODUCTS, INFORMATION AND SPECIFICATIONS WITHOUT NOTICE.

Products and specifications discussed herein are for reference purposes only. All information discussed herein is provided on an "AS IS" basis, without warranties of any kind.

This document and all information discussed herein remain the sole and exclusive property of Samsung Electronics. No license of any patent, copyright, mask work, trademark or any other intellectual property right is granted by one party to the other party under this document, by implication, estoppel or otherwise.

Samsung products are not intended for use in life support, critical care, medical, safety equipment, or similar applications where product failure could result in loss of life or personal or physical harm, or any military or defense application, or any governmental procurement to which special terms or provisions may apply.

For updates or additional information about Samsung products, contact your nearest Samsung office.

All brand names, trademarks and registered trademarks belong to their respective owners.

© 2015 Samsung Electronics Co., Ltd. All rights reserved.

1 Product Overview

1.1 Introduction

The S5K3P3SQ is a highly integrated 16M pixel camera chip that includes a CMOS image sensor (CIS), image correction functionality and serial transmission using 4-lane MIPI. It is designed for fast yet low power operation, delivering full resolution capture at 30 frames per second (fps) and full field of view (16:9) FHD video at 60fps.

The S5K3P3SQ supports Phase Detection Auto Focus (PD AF) mechanism allowing efficient Auto Focus in the system.

It is fabricated by the SAMSUNG 65 nm back-side-illumination (BSI) CMOS image sensor process developed for imaging applications to realize a high-efficiency and low-power photo sensor. The sensor consists of 4632×3480 effective pixels which meet the 1/3.1-inch optical format.

The CIS has on-chip 10-bit ADC arrays to digitize the pixel output and on-chip Correlated Double Sampling (CDS) to drastically reduce Fixed Pattern Noise (FPN). It incorporates on-chip camera functions such as defect correction, exposure setting, white balance setting, image scaling and image data compression.

The S5K3P3SQ CIS is programmable through a CCI or SPI serial interface and includes on-chip one-time programmable (OTP) non-volatile memory (NVM).

samsung / ellen.piao at 2015.12.11

1.2 Features

- 16Mp sensor with 1/3.1" optics
- Pixel size: 1.0um
- Effective resolution: 4632 (H) × 3480 (V)
- Electronic rolling shutter and global reset
- Support digital video stabilization margins in main view modes
- Frame rate:
 - Capture: 16M 30 fps
 - FHD video: 4M(16:9) 60 fps
 - HD video: 1.78M (16:9) 120 fps
 - High speed: WVGA 120 fps
 - High speed: VGA (4:3) 120 fps
- Phase Detection Auto Focus (PD AF) support
- Interfaces:
 - Fine interface frequency control using additional dedicated PLL for EMI avoidance and integration flexibility.
 - MIPI CSI2 - four lanes (1.5 Gbps per lane)
 - Output formats: RAW8 (using DPCM/PCM compression), RAW10
- Control interface:
 - I2C interface - Two-wire serial communication circuit up to 400 kHz.
- Xenon/LED flash
- Mechanical shutter
- 32Kbit on-chip OTP memory to support defect corrections and chip ID.
- Analog gain x16
- Vertical and horizontal flip mode
- Continuous frame capture mode
- 2/2, 3/3, 4/4, 6/6 - average/average-sub-sampling readout
- Pixel elimination readout function
- Bayer down scaler function for ratios of - x1.5, x2, x2.5, x3, ..., x8 and x1.25
- Bad pixel correction
- On-chip temperature sensor
- Built-in test pattern generation
- Supply voltage: 2.95 V for analog and 2.8 V or 1.8 V for I/O, 1.2 V for digital core supply
- Operating temperature: -30 °C to +70 °C

1. General Description

The DW9714 is single 10-bit DAC with 120mA output current sink capability. Designed for linear control of voice coil motors, the DW9714 is capable of operating voltage to 3.6V. The DAC is controlled via a I²C serial interface that operates DAC by clock rates up to 400kHz.

The DW9714 incorporates with a power-on reset circuit, power-down function, and exactly matched sense resistor. Power-on reset circuit ensure when supply power up, DAC output is to 0V until valid write-bit value takes place. It has a power down features that reduces the current consumption of the device to 1uA maximum.

The DW9714 is designed for auto focus and optical zoom camera phones, digital still cameras, and camcorders applications. The I²C address for the DW9714 is 0x18.

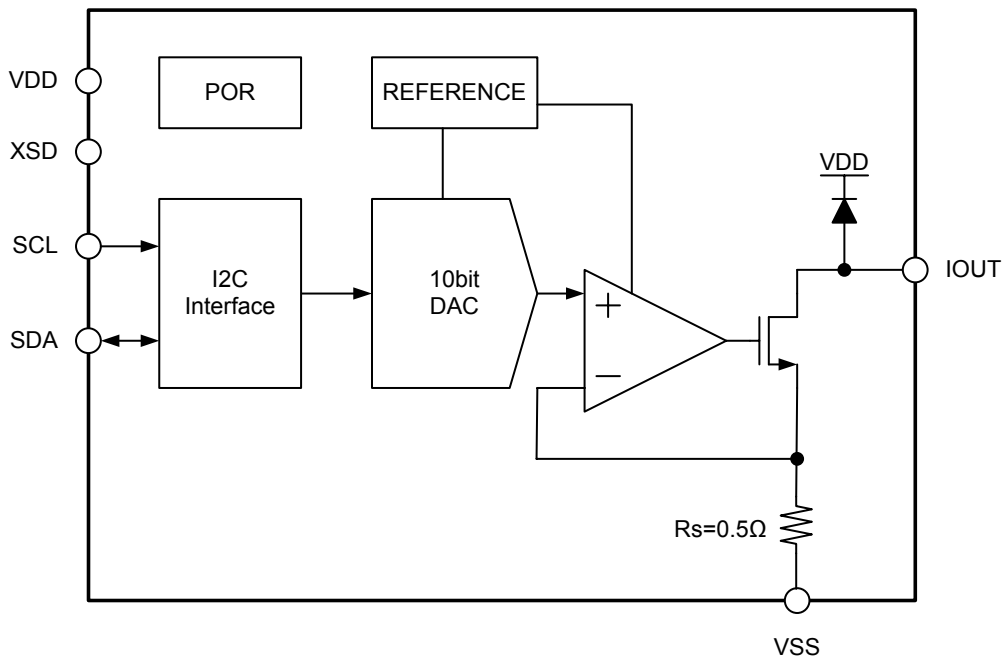
■ Features

- VCM driver for auto-focus
- 10bit resolution current sinking of 120mA for VCM
- VCM slew rate control (SRC) – Linear slope control, Dual level control
- Supply voltage range (VDD) : 2.3V to 3.6V
- Fast mode I²C interface (1.8V interface available)
- Power on reset (POR)
- Package : 0.80mm(W) X 1.20mm(H) X 0.3mm(T) 6pins WLCSP

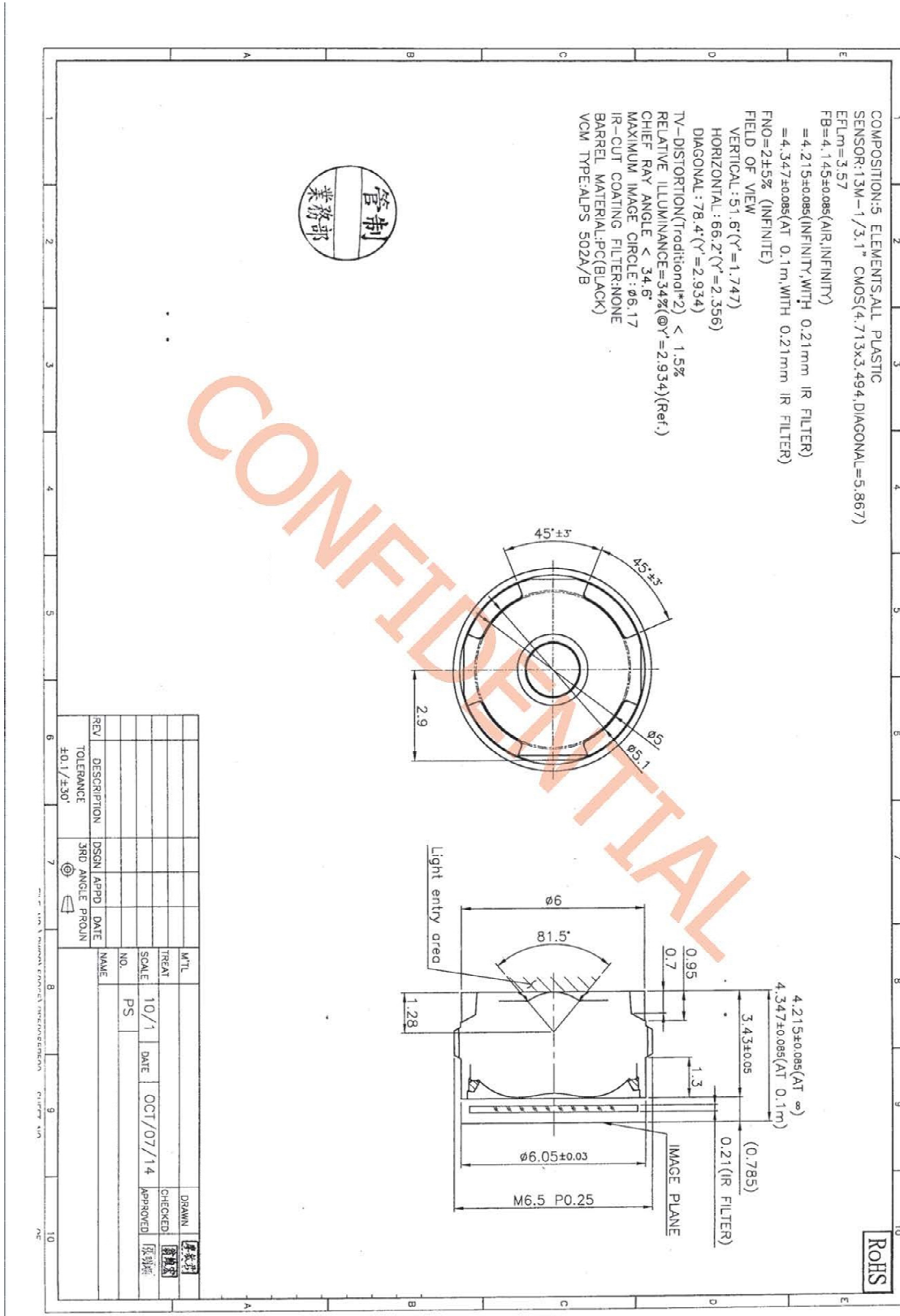
■ Applications

- Digital camera
- Cell phone
- Lens auto focus
- Web camera

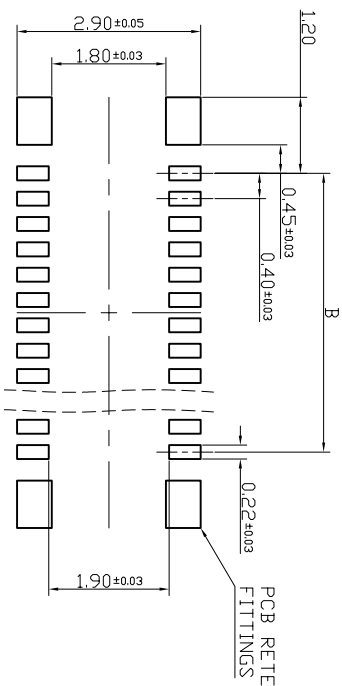
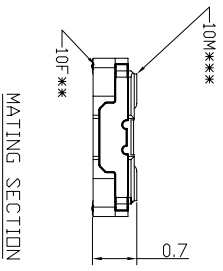
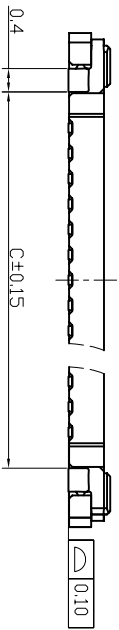
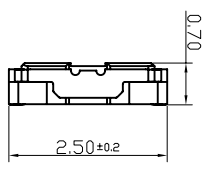
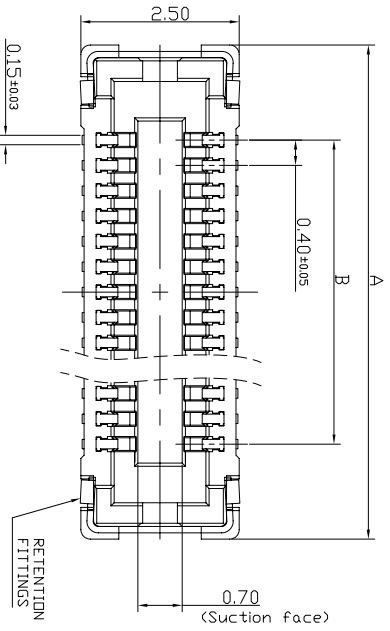
2. Block Diagram



YDS-LENS-50065B5



REV	ECN NO	DRA	APPD	DATE
A	FIRST RELEASE	George Gao	Huwan Zhou	2013/09/18



RECOMMENDED PCB LAYOUT

SOCKET _____
 PITCH=0.4MM
 NUMBER OF CONTACTS

OK-10F***-04

- 3-1. Rated voltage: 60V AC/DC
- 3-2. Rated current: 0.3A/contact (Max. 5A at total contact)
- 3-3. Insulation resistance: Min. 1000M Ω (initial)
- 3-4. Breakdown voltage: 150V AC for 1 min.
- 3-5. Saltwater spray resistance (header and socket mated): 24 hours, insulation resistance min.100M Ω , contact resistance max. 90m Ω
- 3-6. Contact resistance: Max. 90m Ω
- 3-7. Ambient temperature: -55 $^{\circ}$ C~+85 $^{\circ}$ C
- 3-8. Storage temperature: -55 $^{\circ}$ C~+85 $^{\circ}$ C (product only); -40 $^{\circ}$ C~+50 $^{\circ}$ C (emboss packing)
- 3-9. Composite insertion force: Max. 0.981N/contacts X contacts (initial)
- 3-10. Composite removal force: Min. 0.165N/contacts X contacts
- 3-11. Post holding force: Min. 0.49N/contacts
- 3-12. Insertion and removal life: 50 times

TABLE:

40	10.60	7.60
32	9.00	6.00
30	8.60	5.60
26	7.80	4.80
24	7.40	4.40
10	4.60	1.60

NUMBER OF CONTACTS A B



OCN TECHNOLOGY
 TITLE: 0.4MM BTB (MATING HEIGHT 0.7H)

APPRO:	DWG NO.:	PROJ:	Q'TY:	SIZE:	SHEET:	SCALE:	REV:
	OK-10F***-04	George Gao	1	A4	1/1	1:1	A
DRW:							
2013/09/18							

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

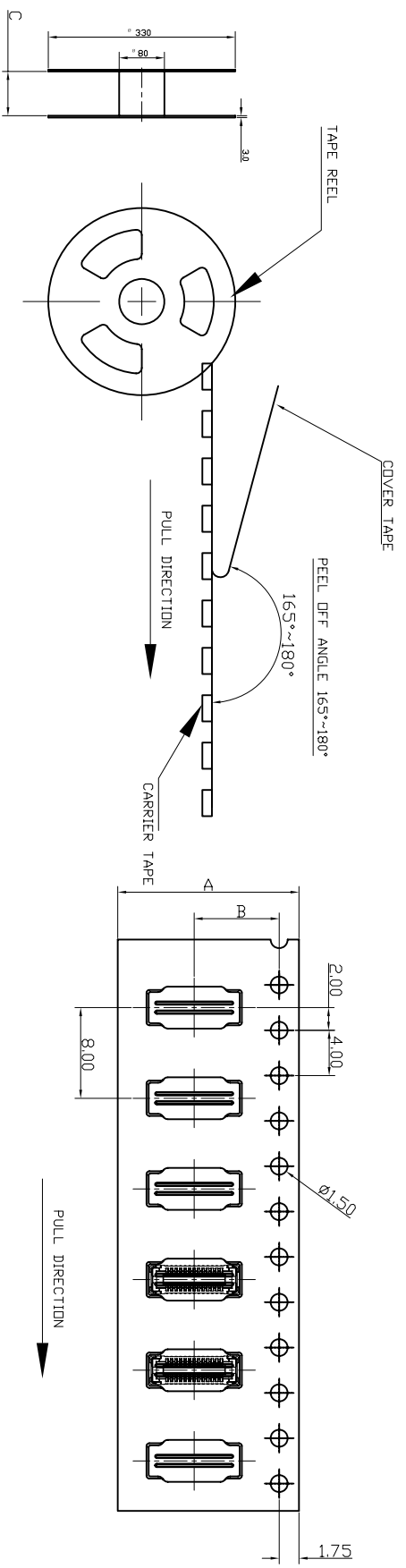


TABLE:

40	24.00	11.50	25.4	5000
32				
30				
26	16.00	7.50	17.4	
24				

NUMBER OF CONTACTS	A	B	C	QTY/REEL
10				

DIMENSION 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

TITLE: 0.4MM BIT (MATING HEIGHT 0.7H)
 DWG NO.: OK-10F***-04

APPR: _____
 CHKD: _____
 DRA: George Gao
 2013.09.18

PROU: _____
 Q'TY: 01 TV
 SIZE: A4
 SHEET: 1/1
 SCALE: 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								
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						

www.YDSCAM.com sales@ydscam.com Phone (WeChat, QQ): (+86) 177 2732 6718

All rights reserved @ YingDeShun Co. Ltd. Specifications subject to change without notice.

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

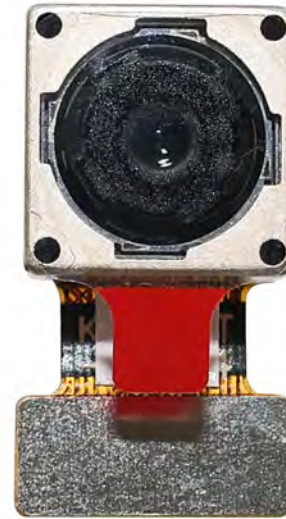
Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches	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



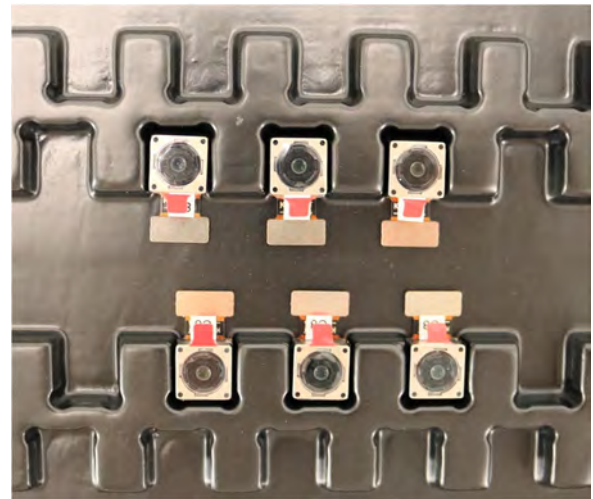
Complete with Lens Protection Film



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

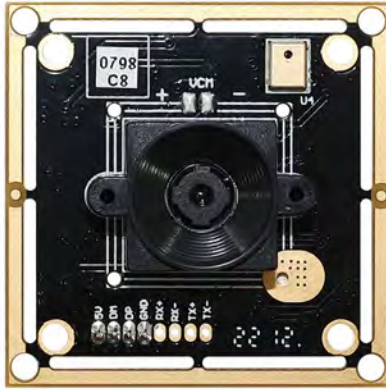




YDSCAM Package Solutions

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.



www.YDSCAM.com sales@ydscam.com Phone (WeChat, QQ): (+86) 177 2732 6718

All rights reserved @ YingDeShun Co. Ltd. Specifications subject to change without notice.



YDS CAMERA MODULE

your best camera partner

YDS Strength

Powerful Factory



Professional Service



Promised Delivery



www.YDSCAM.com sales@ydscam.com Phone (WeChat, QQ): (+86) 177 2732 6718

All rights reserved @ YingDeShun Co. Ltd. Specifications subject to change without notice.