

YDS-C7MA-GC05A2 V1.0

5MP GalaxyCore GC05A2 MIPI Interface Auto Focus Camera Module



Front View



Back View

Specifications

| | |
|---------------------------------|-----------------------------|
| Camera Module No. | YDS-C7MA-GC05A2 V1.0 |
| Resolution | 5MP |
| Image Sensor | GC05A2 |
| Sensor Type | 1/5" |
| Pixel Size | 1.25 um x 1.25 um |
| EFL | 2.27 mm |
| F.NO | 2.20 |
| Pixel | 2592 x 1944 |
| View Angle | 76.0°(DFOV) |
| Lens Dimensions | 8.50 x 8.50 x 4.47 mm |
| Module Size | 24.02 x 8.50 mm |
| Module Type | Auto Focus |
| Interface | MIPI |
| Auto Focus VCM Driver IC | DW9714P |
| Lens Type | 650nm IR Cut |
| Operating Temperature | -20°C to +70°C |
| Mating Connector | GB042-28S-H10 |



YDS-C7MA-GC05A2 V1.0

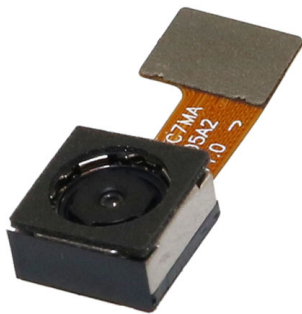
5MP GalaxyCore GC05A2 MIPI Interface Auto Focus Camera Module



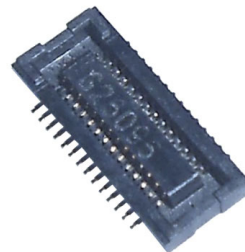
Top View



Side View



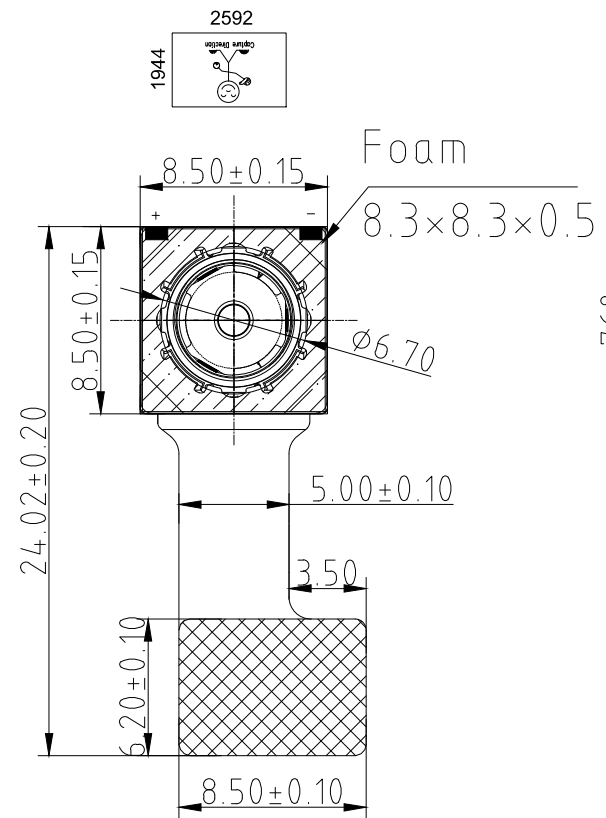
Bottom View



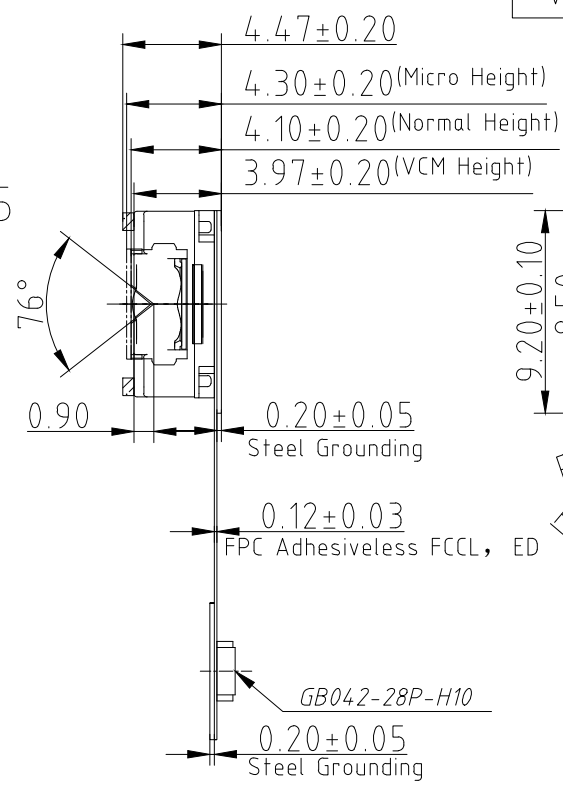
Mating Connector

| Version | Information | Date |
|---------|---------------|-----------|
| V1.0 | First Version | 11-2-2022 |

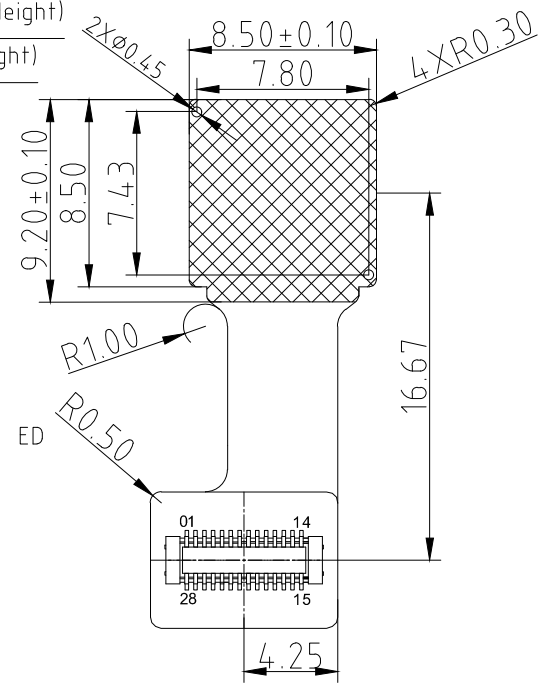
| RoHS | |
|------|------------|
| PIN | SIGNAL |
| 1 | AFVDD 2.8V |
| 2 | AGND |
| 3 | AVDD 2.8V |
| 4 | DGND |
| 5 | SI0C |
| 6 | SI0D |
| 7 | XSHUTDOWN |
| 8 | NC |
| 9 | DGND |
| 10 | DGND |
| 11 | FSYNC |
| 12 | DGND |
| 13 | DGND |
| 14 | MDP0 |
| 15 | MDN0 |
| 16 | DGND |
| 17 | MCP |
| 18 | MCN |
| 19 | DGND |
| 20 | MDP1 |
| 21 | MDN1 |
| 22 | DGND |
| 23 | XCLK |
| 24 | DGND |
| 25 | NC |
| 26 | DOVDD 1.8V |
| 27 | DVDD 1.2V |
| 28 | DGND |



TOP VIEW



SIDE VIEW



BOTTOM VIEW

NOTE:
 1.The device slave address:0x6E;
 2.Driver IC:DW9714P

| Parameters: | 2、Lens specification: |
|-----------------------------------------|--------------------------------|
| 1、Sensor specification: | FOV: 76° |
| Image Sensor: GC05A2 | F/NO.: 2.2 |
| Pixel: 1.12um×1.12um | TV distortion: <1.5% |
| Lens Type: 1/5 | Focal length: 2.27mm |
| Important Voltage Description: DVDD1.2V | Composition: 3P++IR FILTER |
| | IR Cut Coating: 650nm±10nm@50% |

| | | | | | |
|-------------|-----------|------------------|------------------|-----------------|--------------|
| Designed By | Kevin | Model Name: | C7MA-GC05A2 V1.0 | | |
| Checked By | Aouly_Yan | Projection Type: | Unit: | Material: ----- | |
| | | | mm | Scale: | Sheet: |
| | | Third Angle | 1:1 | 1 of 1 | Version: 1/0 |



GC05A2 CSP

1/5" 5Mega CMOS Image Sensor

DataSheet

V0.0

2022-05-18

1. Sensor Overview

1.1 General Description

GC05A2 is a high quality 5Mega Bayer pattern CMOS Image Sensor (CIS) for cellular phone camera application and other products with embedded camera like tablet PC, smart watch, etc. GC05A2 is designed for full-size capturing at 30 frames per second (fps).

The total active pixel array size is 2592x 1944 to meet with the 1/5-inch optical format.

GC05A2 has on-chip 10-bit ADC arrays and corresponding image signal process functions like static DD, black level calibration, etc.

GC05A2 is suitable for fast yet low power consumption application with power supply of AVDD(2.8V)/IOVDD(1.8V or 1.2V)/DVDD(1.2V), which is useful in extending the battery life of cell phones, tablet PCs and a variety of other mobile products.

The CIS provides RAW10 data format through MIPI interface and can be controlled through camera control interface (CCI).

1.3 Features

- Optical format : 1/5 inch
- Pixel size : 1.12μm x 1.12μm BSI
- Active image size : 2592 x 1944
- Color filter : Bayer Pattern
- Output formats : Raw 10bit
- Shutter type : Electronic rolling shutter
- Frame rate : 30fps @ Full size
: 30fps @ 1080P (crop)
: 60fps @ HD (binning)
- MIPI data rate (max) : 1Gbps/lane
- Lane number : 2-lane
- ADC Accuracy : 10 bits
- Power supply requirement : 2.70~3.00V for AVDD (Typical 2.80V)
: 1.15~1.30V for DVDD (Typical 1.20V)
: 1.15~1.25V / 1.70~1.90V for IOVDD
(Typical 1.20V / 1.80V)
- Image Flip : Horizontal/Vertical mirror
- Operation temperature : -20°C ~ 70°C
- Analog Gain : Max. 16x
- OTP support : 64K bits(56K bits for customer)
- Package : COB/CSP/COM
- Max. optical lens CRA : 31.9°C
- PLL support
- Windowing support
- Dual sync application support (master/slave)

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

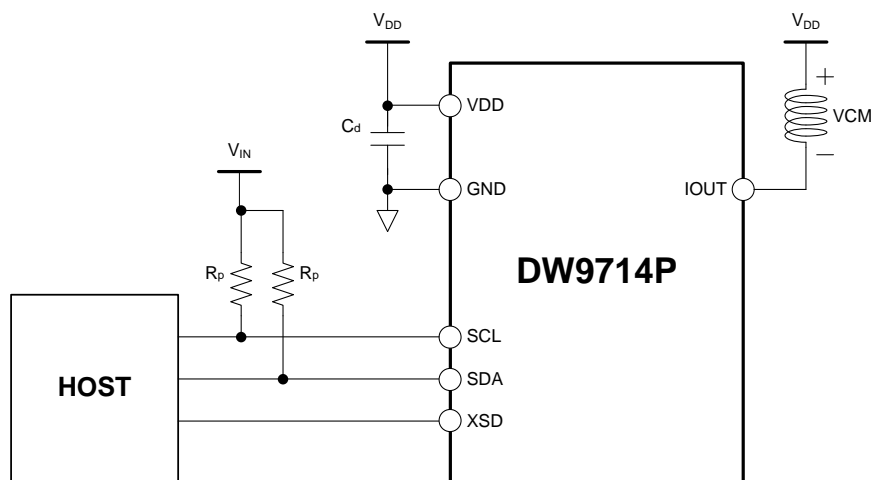


Figure 1. Typical application circuit

GB042 series

0.4mm pitch PCB to PCB Connector

GB042 series | Receptacle & Embossed Tape Assembly



Features

- GB042 series Connector is 0.4 mm pitch, low profile PCB to PCB SMT type connector.
- Improved contact reliability with plug and receptacle contacting at 2 point simultaneously.
- Stable unmating mechanism preventing receptacle contact from being deformed.

Applications

- Mobile phone
- Compact portable devices, etc

Materials & Finishes

| Parts | Materials / Finishes |
|-----------|----------------------------|
| Insulator | UL94V-0 |
| Plug | Copper Alloy |
| Recept. | Copper Alloy Au Plating |

Specifications

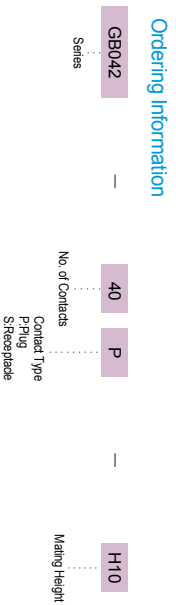
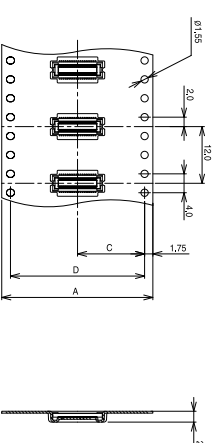
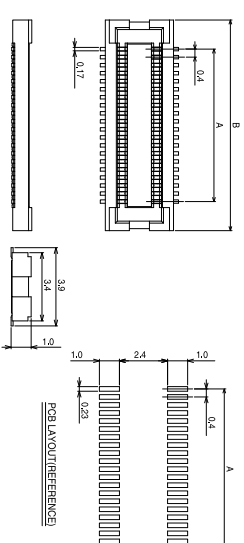
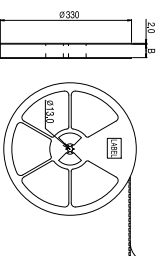
| | |
|---------------------------------|------------------------------|
| No. of Contacts | 10-80 |
| Stacking Height | 1.0mm |
| Contact Spacing | 0.4mm |
| Current Rating | AC, DC 0.3A/pin |
| Voltage Rating | AC, DC 50V |
| Dielectric Withstanding Voltage | AC 250V (rms for one minute) |
| Insulation Resistance | 1000MΩ |
| Contact Resistance | 70mΩ |
| Operating Temp. | -25°C ~ +85°C |

Embossed Tape Assembly



Receptacle

Bobbin



Ordering Information

| No. of Pin | Part Number | Receptacle | | Embossed Tape Assembly | | | |
|------------|------------------------|------------|------|------------------------|------|------|------|
| | | A | B | A | B | C | D |
| 10 | GB042-10S-**-H10-E3000 | 1.6 | 4.5 | | | | |
| 20 | GB042-20S-**-H10-E3000 | 3.6 | 6.5 | 16.0 | 18.0 | 7.5 | - |
| 24 | GB042-24S-**-H10-E3000 | 4.4 | 7.3 | | | | |
| 28 | GB042-28S-**-H10-E3000 | 5.2 | 8.1 | | | | |
| 30 | GB042-30S-**-H10-E3000 | 5.6 | 8.5 | | | | |
| 34 | GB042-34S-**-H10-E3000 | 6.4 | 9.3 | | | | |
| 40 | GB042-40S-**-H10-E3000 | 7.6 | 10.5 | 24.0 | 26.0 | 11.5 | - |
| 44 | GB042-44S-**-H10-E3000 | 8.4 | 11.3 | | | | |
| 50 | GB042-50S-**-H10-E3000 | 9.6 | 12.5 | | | | |
| 54 | GB042-54S-**-H10-E3000 | 10.4 | 13.3 | | | | |
| 60 | GB042-60S-**-H10-E3000 | 11.6 | 14.5 | | | | |
| 64 | GB042-64S-**-H10-E3000 | 12.4 | 15.3 | 32.0 | 34.0 | 14.2 | 28.4 |
| 70 | GB042-70S-**-H10-E3000 | 13.6 | 16.5 | | | | |

Cameras Applications



Automotive Driver Pilot



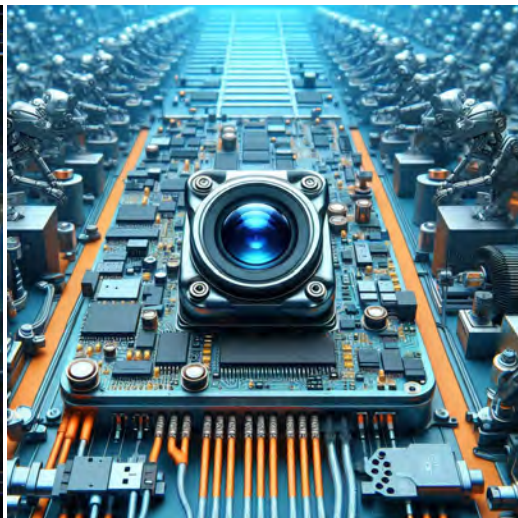
Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



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 | | | | | | | |

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

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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

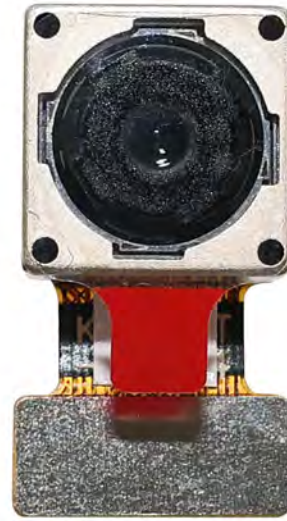
| Inspection Item | | Inspection Method | Standard of Inspection | | |
|------------------|----------|-------------------|-----------------------------|--------------------------------------------|---------------------------------|
| Category | Item | | | | |
| Appearance | FPC/ PCB | Color | The Naked 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



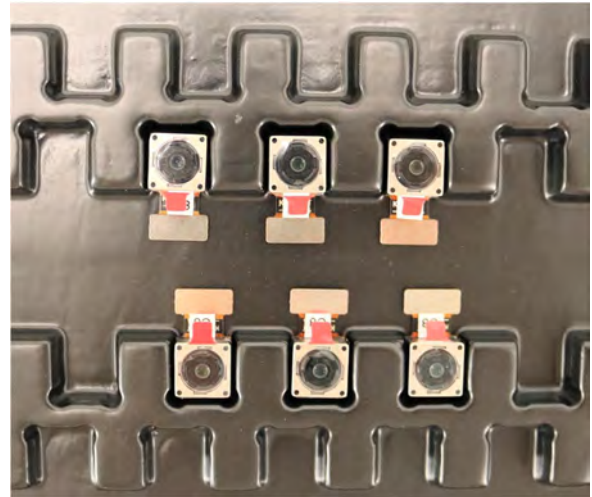
Complete with Lens Protection Film



Tray with Grid and Space

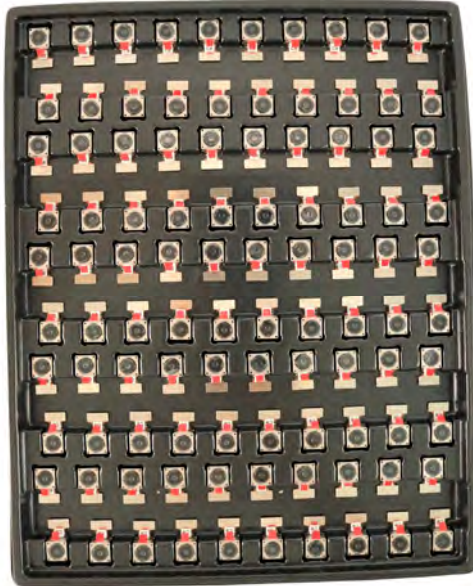


Place Cameras on the Tray

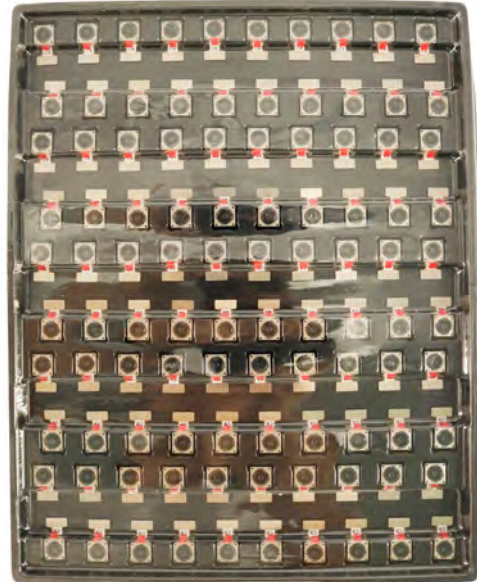


YDSCAM Package Solutions

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

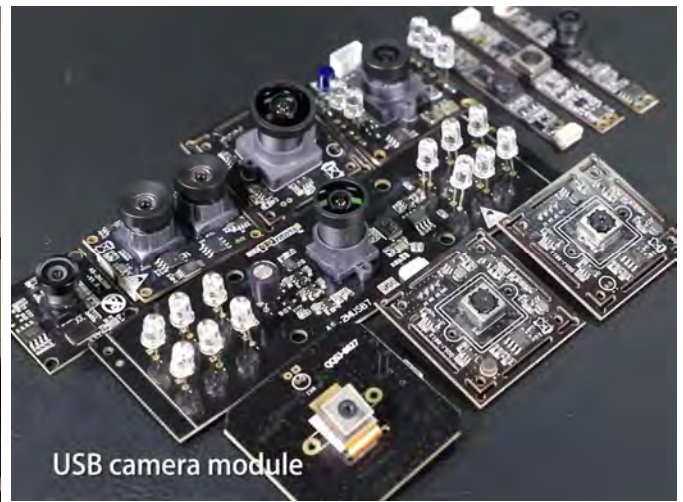
your best camera partner

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@ydscom.com Phone (WeChat, QQ): (+86) 177 2732 6718

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