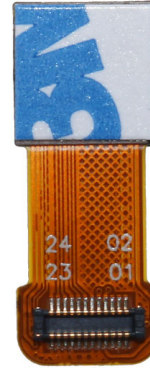


## YDS-M7MA-OV5640-1B V2.1 NIR

**5MP OmniVision OV5640-1B MIPI Interface No IR Filter  
Auto Focus Camera Module**



Front View



Back View

### Specifications

|                                 |                                     |
|---------------------------------|-------------------------------------|
| <b>Camera Module No.</b>        | <b>YDS-M7MA-OV5640-1B V2.1 NIR</b>  |
| <b>Resolution</b>               | 5MP                                 |
| <b>Image Sensor</b>             | OV5640-1B                           |
| <b>Sensor Type</b>              | 1/4"                                |
| <b>Pixel Size</b>               | 1.4 um x 1.4 um                     |
| <b>EFL</b>                      | 3.20 mm                             |
| <b>F.NO</b>                     | 2.80                                |
| <b>Pixel</b>                    | 2592 x 1944                         |
| <b>View Angle</b>               | 70.0°(DFOV) 58.6°(HFOV) 45.3°(VFOV) |
| <b>Lens Dimensions</b>          | 8.50 x 8.50 x 5.22 mm               |
| <b>Module Size</b>              | 21.58 x 8.50 mm                     |
| <b>Module Type</b>              | Auto Focus                          |
| <b>Interface</b>                | MIPI                                |
| <b>Auto Focus VCM Driver IC</b> | Embedded                            |
| <b>Lens Model</b>               | YDS-LENS-M5182                      |
| <b>Lens Type</b>                | No IR Filter Lens                   |
| <b>Operating Temperature</b>    | -30°C to +70°C                      |
| <b>Mating Connector</b>         | AXT524124                           |



## YDS-M7MA-OV5640-1B V2.1 NIR

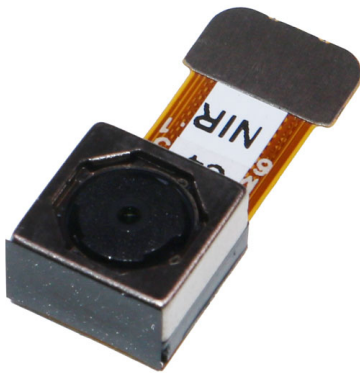
5MP OmniVision OV5640-1B MIPI Interface No IR Filter  
Auto Focus Camera Module



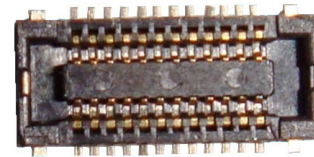
Top View



Side View



Bottom View

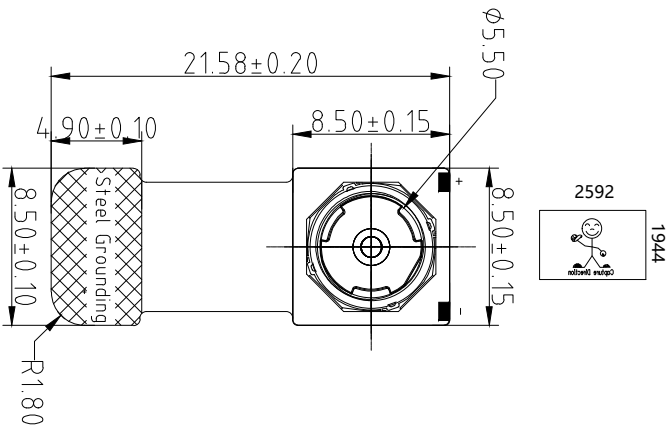


Mating Connector

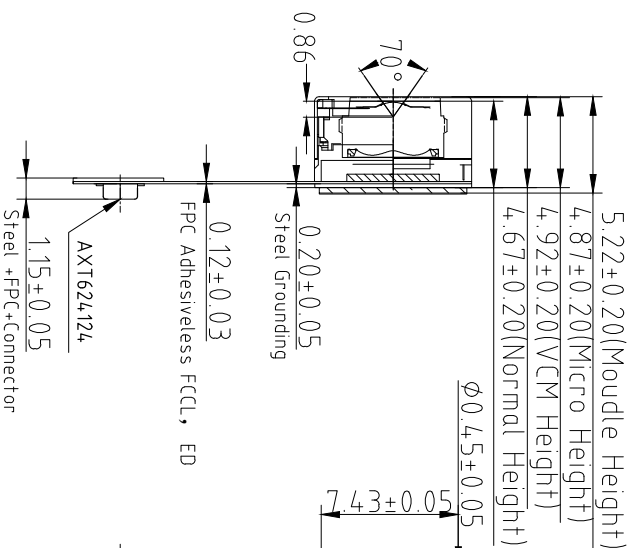
# ROHS

| PIN | NAME      |
|-----|-----------|
| 1   | AFVDD2.8V |
| 2   | AVDD2.8V  |
| 3   | SCL       |
| 4   | SDA       |
| 5   | RESET     |
| 6   | PWDN      |
| 7   | DOVDD1.8V |
| 8   | DVDD1.5V  |
| 9   | GND       |
| 10  | XCLK      |
| 11  | DGND      |
| 12  | DGND      |
| 13  | MDN0      |
| 14  | MCP       |
| 15  | MDP0      |
| 16  | MCN       |
| 17  | DGND      |
| 18  | DGND      |
| 19  | DGND      |
| 20  | MDP1      |
| 21  | DGND      |
| 22  | MDN1      |
| 23  | DGND      |
| 24  | DGND      |

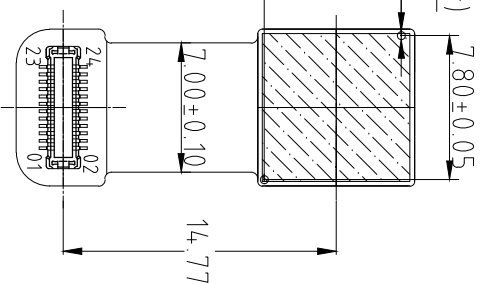
| Version | Information   | Date      |
|---------|---------------|-----------|
| V2.1    | First Version | 4-11-2022 |



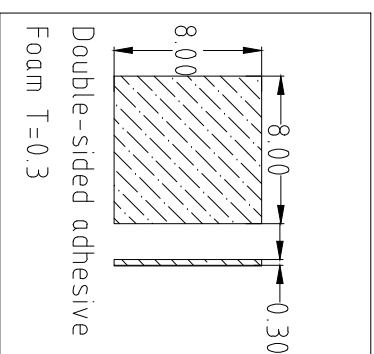
TOP VIEW



SIDE VIEW



BOTTOM VIEW



## Parameters:

### 1、Sensor specification:

Image Sensor: OV5640-1B  
 Pixel: 1.4um×1.4um  
 Lens Type: 1/4  
 Important Voltage Description: DVDD1.5V (external power supply);

### 2、Lens specification:

FOV: 70°(D);58.6°(H);45.3°(V)  
 F/NO: 2.8  
 TV distortion: <1.0%  
 Focal length: 3.2mm  
 Composition: 4P

Designed By

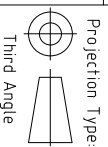
Kevin

Model Name:

M7MA-OV5640-1B V2.1 NIR

Checked By

Aouly



Unit: mm

Scale: 1:1

Material:

Sheet: 1 of 1

Version: 1/0

A

B

C

D

E

3

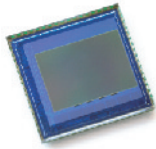
3

2

2

1

1



# OV5640 5-megapixel product brief



## 1/4-inch, 5-Megapixel SOC Image Sensor Optimized for High-Volume Mobile Markets



available in  
a lead-free  
package

The OV5640 delivers a complete 5-megapixel camera solution on a single chip, aimed at offering cost efficiencies that serve the high-volume autofocus (AF) camera phone market. The system-on-a-chip (SOC) sensor features OmniVision's 1.4 micron OmniBSI™ backside illumination architecture to deliver excellent pixel performance and best-in-class low-light sensitivity, while enabling ultra compact camera module designs of 8.5 mm x 8.5 mm with <6 mm z-height. The OV5640 provides the full functionality of a complete camera, including anti-shake technology, AF control, and MIPI while being easier to tune than two-chip solutions, making it an ideal choice in terms of cost, time-to-market and ease of platform integration.

The OV5640 enables 720p HD video at 60 frames per second (fps) and 1080p HD video at 30 fps with complete user control over formatting and output data transfer. The 720p/60 HD video is captured in full field of view (FOV) with 2 x 2 binning, which doubles the sensitivity and improves the signal-to-noise ratio (SNR). Additionally, a unique post-binning re-sampling filter function removes zigzag artifacts around slant edges and minimizes spatial artifacts to deliver even sharper, crisper

color images. To further improve camera performance and user experience, the OV5640 features an internal anti-shake engine for image stabilization, and it supports Scalado™ tagging for faster image preview and zoom.

The OV5640 offers a digital video port (DVP) parallel interface and a high-speed dual lane MIPI interface, supporting multiple output formats. An integrated JPEG compression engine simplifies data transfer for bandwidth-limited interfaces. The sensor's automatic image control functions include automatic exposure control (AEC), automatic white balance (AWB), automatic band filter (ABF), 50/60 Hz automatic luminance detection, and automatic black level calibration (ABLC). The OV5640 delivers programmable controls for frame rate, AEC/AGC 16-zone size/position/weight control, mirror and flip, cropping, windowing, and panning. It also offers color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling to improve image quality.

Find out more at [www.ovt.com](http://www.ovt.com).

## applications

- cellular phones
- toys
- PC multimedia
- digital still cameras

## ordering information

- OV05640-A71A-1B** (color, lead-free)  
71-pin CSP

## features

- 1.4  $\mu\text{m}$  x 1.4  $\mu\text{m}$  pixel with OmniBSI technology for high performance (high sensitivity, low crosstalk, low noise, improved quantum efficiency)
- optical size of 1/4"
- automatic image control functions: automatic exposure control (AEC), automatic white balance (AWB), automatic band filter (ABF), automatic 50/60 Hz luminance detection, and automatic black level calibration (ABLC)
- programmable controls for frame rate, AEC/AGC 16-zone size/position/weight control, mirror and flip, cropping, windowing, and panning
- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling
- support for output formats: RAW RGB, RGB565/555/444, CCIR656, YUV422/420, YCbCr422, and compression
- support for video or snapshot operations
- support for internal and external frame synchronization for frame exposure mode
- support for LED and flash strobe mode
- support for horizontal and vertical sub-sampling, binning
- support for minimizing artifacts on binned image
- support for data compression output
- support for anti-shake
- standard serial SCCB interface
- digital video port (DVP) parallel output interface and dual lane MIPI output interface
- embedded 1.5V regulator for core power
- programmable I/O drive capability, I/O tri-state configurability
- support for black sun cancellation
- support for images sizes: 5 megapixel, and any arbitrary size scaling down from 5 megapixel
- support for auto focus control (AFC) with embedded AF VCM driver
- embedded microcontroller
- suitable for module size of 8.5 x 8.5 x <6mm with both CSP and RW packaging

## key specifications (typical)

- active array size:** 2592 x 1944
- power supply:**
  - core: 1.425 ~ 1.675V (with embedded 1.5V regulator)
  - analog: 2.6 ~ 3.0V (2.8V typical)
  - I/O: 1.8V / 2.8V
- power requirements:**
  - active: 140 mA
  - standby: 20  $\mu\text{A}$
- temperature range:**
  - operating: -30°C to 70°C junction temperature (see [table 8-2](#))
  - stable image: 0°C to 50°C junction temperature (see [table 8-2](#))
- output formats:** 8-/10-bit RGB RAW output
- lens size:** 1/4"
- lens chief ray angle:** 24° (see [figure 10-2](#))
- input clock frequency:** 6~27 MHz
- max S/N ratio:** 36 dB
- dynamic range:** 68 dB @ 8x gain
- maximum image transfer rate:**
  - QSXGA (2592x1944): 15 fps
  - 1080p: 30 fps
  - 1280x960: 45 fps
  - 720p: 60 fps
  - VGA (640x480): 90 fps
- sensitivity:** 600 mV/Lux-sec
- shutter:** rolling shutter / frame exposure
- maximum exposure interval:** 1964 x  $t_{\text{ROW}}$
- pixel size:** 1.4  $\mu\text{m}$  x 1.4  $\mu\text{m}$
- dark current:** 8 mV/s @ 60°C junction temperature
- image area:** 3673.6  $\mu\text{m}$  x 2738.4  $\mu\text{m}$
- package dimensions:** 5985  $\mu\text{m}$  x 5835  $\mu\text{m}$

## YDS-LENS-M5182

| SPECIFICATION                         |  |
|---------------------------------------|--|
| 1. SENSOR SIZE                        | 1/4" (3M COB)                                      |
| 2. MAX IMAGE CIRCLE                   | $\phi 4.85\text{mm}$                               |
| 3. TOTAL TRACK                        | 4.0±0.1mm  |
| 4. EFL                                | 3.2mm  |
| 5. OPTICAL EFL                        | 1.32mm   |
| 6. MECHANICAL EFL                     | 0.98mm   |
| 7. F/NO                               | 2.8=5f   |
| 8. VIEW OR FIELD DIAGONAL             | 45.3° (Y=1.36)<br>58.6° (Y=1.81)<br>70.0° (Y=2.26) |
| 9. OPTICAL DISTORTION                 | <1.0%  |
| 10. TV DISTORTION                     | <1.0%  |
| 11. RELATIVE ILLUMINATION             | >42.2%   |
| 12. CONSTRUCTION                      | 4P   |
| 13. CHIEF RAY ANGLE                   | <25°   |
| 14. CUT FREQUENCY AT 50%              | \  |
| 15. THREAD                            | M6.0X0.35P   |
| 16. IMAGE QUALITY                     | AXIS 330lp/mm                                      |
| 17. APPEARANCE QUALITY (Scratch/Dirt) | 0.7Y 200Lp/mm<br>CENTER 20/lc                      |

| NO | MODIFY CONTENT                  | NAME   | DATE       | ANGLE | RANGE | DIM | UNIT | SCALE | REVISION | DATE       | REMARK |
|----|---------------------------------|--------|------------|-------|-------|-----|------|-------|----------|------------|--------|
| 1  | 增加规格书5.35G/A.35H/95.59 (CV.010) | tonlin | 2016-12-05 | X.XX  | ±0.05 | mm  | mm   | 10:1  | APPROVED | 2016-12-05 |        |

**NOTE:**

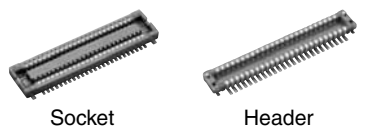
- 镜头表面不可有油污、灰尘、毛丝等异物。
- 镜头配VCM锁附高度为 4.2±0.1mm, 扭力为20--120gf.cm。
- 镜头承受推力为≥2.0kg。
- 镜头组品质参数需符合图中要求。

| DRAWING  |    | FINISH |            |
|----------|----|--------|------------|
| SIZE     | A4 | NAME   | DATE       |
| PRINTING | 3Y | tonlin | 2016-12-05 |
| CHECKED  | 3Y |        |            |
| APPROVED | 3Y |        |            |
|          |    | REV.   |            |
|          |    | A-01   |            |

## NARROW-PITCH, THIN AND SLIM CONNECTOR FOR BOARD-TO-FPC CONNECTION

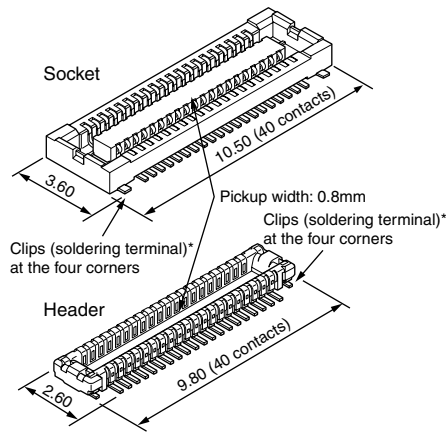
## NARROW PITCH (0.4 mm) CONNECTORS F4S SERIES



Compliance with RoHS Directive

### FEATURES

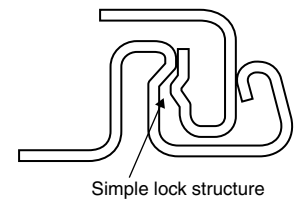
**1. Space-saving (3.6 mm widthwise)**  
 The required space is smaller than our F4 series (40-contact type):  
 Socket — 27% smaller,  
 Header — 38% smaller  
 The small size contributes to the miniaturization of target equipment.



\* Clips for preventing the solder joints from being removed

**2. Highly reliable**  
**TOUGH CONTACT** has strong resistance to adverse environments.  
 (See Page 6 for details of the structure)  
 Note: If extra resistance to shock caused by dropping is required, we recommend using our previous F4 Series.

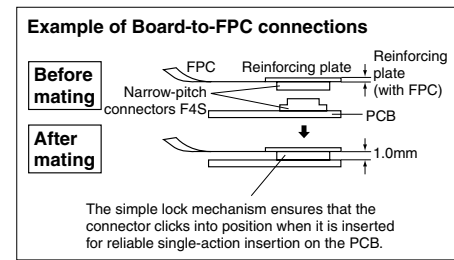
**3. The simple lock structure gives tactile feedback that ensures a superior mating/unmating operation feel.**



**4. Gull-wing type terminals**  
 The gull-wing type terminals facilitate automatic mounting inspections.  
**5. Connectors for inspection available**  
 Connectors for inspection are available that are ideal for modular unit inspection and inspection in device assembly processes.

### APPLICATIONS

Compact portable devices “Cellular phones, DVC, Digital cameras, etc”



### ORDERING INFORMATION

AXT      **4**

5: Narrow Pitch Connector F4S (0.4 mm pitch) Socket  
 6: Narrow Pitch Connector F4S (0.4 mm pitch) Header

Number of contacts (2 digits)

Mated height  
 <Socket>  
 1: For mated height 1.0 mm  
 2: For mated height 1.2 mm  
 <Header>  
 1: For mated height 1.0 mm  
 2: For mated height 1.2 mm

Functions  
 <Socket, Header>  
 2: Without positioning bosses

Surface treatment (Contact portion / Terminal portion)  
 <Socket>  
 4: Base: Ni plating Surface: Au plating (for Ni barrier available)  
 <Header>  
 4: Base: Ni plating Surface: Au plating

Note: Please note that models with a mated height of 1.0 mm (7th digit of part number is “1”) and 1.2 mm (7th digit of part number is “2”) are not compatible.



# AXT5, 6

## PRODUCT TYPES

| Mated height | Number of contacts | Part number |           | Packing      |              |
|--------------|--------------------|-------------|-----------|--------------|--------------|
|              |                    | Socket      | Header    | Inner carton | Outer carton |
| 1.0mm        | 10                 | AXT510124   | AXT610124 | 3,000 pieces | 6,000 pieces |
|              | 12                 | AXT512124   | AXT612124 |              |              |
|              | 14                 | AXT514124   | AXT614124 |              |              |
|              | 16                 | AXT516124   | AXT616124 |              |              |
|              | 18                 | AXT518124   | AXT618124 |              |              |
|              | 20                 | AXT520124   | AXT620124 |              |              |
|              | 22                 | AXT522124   | AXT622124 |              |              |
|              | 24                 | AXT524124   | AXT624124 |              |              |
|              | 26                 | AXT526124   | AXT626124 |              |              |
|              | 28                 | AXT528124   | AXT628124 |              |              |
|              | 30                 | AXT530124   | AXT630124 |              |              |
|              | 32                 | AXT532124   | AXT632124 |              |              |
|              | 34                 | AXT534124   | AXT634124 |              |              |
|              | 36                 | AXT536124   | AXT636124 |              |              |
|              | 38                 | AXT538124   | AXT638124 |              |              |
|              | 40                 | AXT540124   | AXT640124 |              |              |
|              | 42                 | AXT542124   | AXT642124 |              |              |
|              | 44                 | AXT544124   | AXT644124 |              |              |
|              | 46                 | AXT546124   | AXT646124 |              |              |
|              | 48                 | AXT548124   | AXT648124 |              |              |
| 50           | AXT550124          | AXT650124   |           |              |              |
| 54           | AXT554124          | AXT654124   |           |              |              |
| 60           | AXT560124          | AXT660124   |           |              |              |
| 64           | AXT564124          | AXT664124   |           |              |              |
| 70           | AXT570124          | AXT670124   |           |              |              |
| 80           | AXT580124          | AXT680124   |           |              |              |
| 1.2mm        | 10                 | AXT510224   | AXT610224 |              |              |
|              | 30                 | AXT530224   | AXT630224 |              |              |
|              | 40                 | AXT540224   | AXT640224 |              |              |
|              | 50                 | AXT550224   | AXT650224 |              |              |
|              | 80                 | AXT580224   | AXT680224 |              |              |

- Notes: 1. Order unit: For mass production: in 1-inner-box (1-reel) units  
 Samples for mounting check: in 50-connector units. Please contact our sales office.  
 Samples: Small lot orders are possible. Please contact our sales office.
2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our sales office.
3. Please contact us for connectors having a number of contacts other than those listed above.



# SPECIFICATIONS

## 1. Characteristics

|                               | Item  | Specifications   | Conditions  |
|-------------------------------|---|--|---|
| Electrical characteristics    | Rated current   | 0.3A/contact (Max. 5 A at total contacts)  |   |
|                               | Rated voltage   | 60V AC/DC  |   |
|                               | Breakdown voltage                                     | 150V AC for 1 min.   | No short-circuiting or damage at a detection current of 1 mA when the specified voltage is applied for one minute.                    |
|                               | Insulation resistance                                 | Min. 1,000M $\Omega$ (initial)   | Using 250V DC megger (applied for 1 min.)   |
|                               | Contact resistance                                    | Max. 90m $\Omega$  | Based on the contact resistance measurement method specified by JIS C 5402.   |
| Mechanical characteristics    | Composite insertion force                             | Max. 0.981N/contacts $\times$ contacts (initial)   |   |
|                               | Composite removal force                               | Min. 0.165N/contacts $\times$ contacts   |   |
| Environmental characteristics | Contact holding force (Socket contact)                | Min. 0.49N/contacts  | Measuring the maximum force. As the contact is axially pull out.  |
|                               | Ambient temperature                                   | -55°C to +85°C   | No freezing at low temperatures. No dew condensation.   |
|                               | Soldering heat resistance                             | Peak temperature: 260°C or less (on the surface of the PC board around the connector terminals)<br>300°C within 5 sec. 350°C within 3 sec. | Infrared reflow soldering<br>Soldering iron   |
|                               | Storage temperature                                   | -55°C to +85°C (product only)<br>-40°C to +50°C (emboss packing)   | No freezing at low temperatures. No dew condensation.   |
|                               | Thermal shock resistance (header and socket mated)    | 5 cycles,<br>insulation resistance min. 100M $\Omega$ ,<br>contact resistance max. 90m $\Omega$  | Sequence<br>1. -55 $\frac{3}{5}$ °C, 30 minutes<br>2. ~, Max. 5 minutes<br>3. 85 $\frac{3}{5}$ °C, 30 minutes<br>4. ~, Max. 5 minutes |
|                               | Humidity resistance (header and socket mated)         | 120 hours,<br>insulation resistance min. 100M $\Omega$ ,<br>contact resistance max. 90m $\Omega$   | Bath temperature 40 $\pm$ 2°C,<br>humidity 90 to 95% R.H.   |
|                               | Saltwater spray resistance (header and socket mated)  | 24 hours,<br>insulation resistance min. 100M $\Omega$ ,<br>contact resistance max. 90m $\Omega$  | Bath temperature 35 $\pm$ 2°C,<br>saltwater concentration 5 $\pm$ 1%  |
|                               | H <sub>2</sub> S resistance (header and socket mated) | 48 hours,<br>contact resistance max. 90m $\Omega$  | Bath temperature 40 $\pm$ 2°C, gas concentration 3 $\pm$ 1 ppm,<br>humidity 75 to 80% R.H.  |
| Lifetime characteristics      | Insertion and removal life                            | 50 times   | Repeated insertion and removal speed of max. 200 times/hours  |
| Unit weight                   |   | 20-contact type: Socket: 0.03 g Header: 0.01 g   |   |

## 2. Material and surface treatment

| Part name        | Material            | Surface treatment  |
|------------------|---------------------|--|
| Molded portion   | LCP resin (UL94V-0) | —  |
| Contact and Post | Copper alloy        | Contact portion: Base: Ni plating Surface: Au plating<br>Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips)<br>The socket terminals close to the portion to be soldered have nickel barriers (exposed nickel portions).<br>Metal clips: Sockets: Base: Ni plating Surface: Pd+Au flash plating (except the terminal tips)<br>Headers: Base: Ni plating Surface: Au plating (except the terminal tips) |

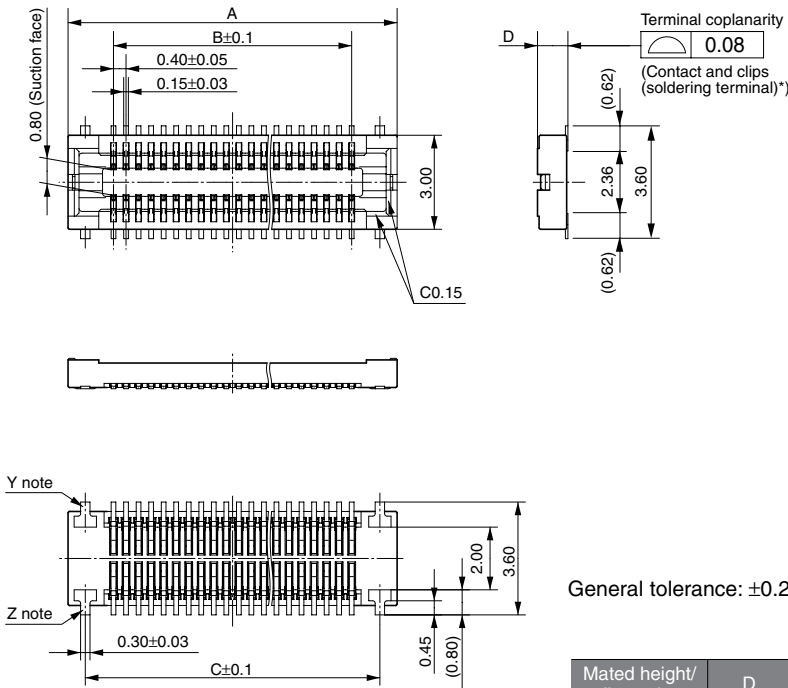
# AXT5, 6

## DIMENSIONS (Unit: mm)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

### Socket (Mated height: 1.0 mm and 1.2 mm)

**CAD Data**



General tolerance: ±0.2

| Mated height/<br>dimension | D    |
|----------------------------|------|
| 1.0mm                      | 0.97 |
| 1.2mm                      | 1.17 |

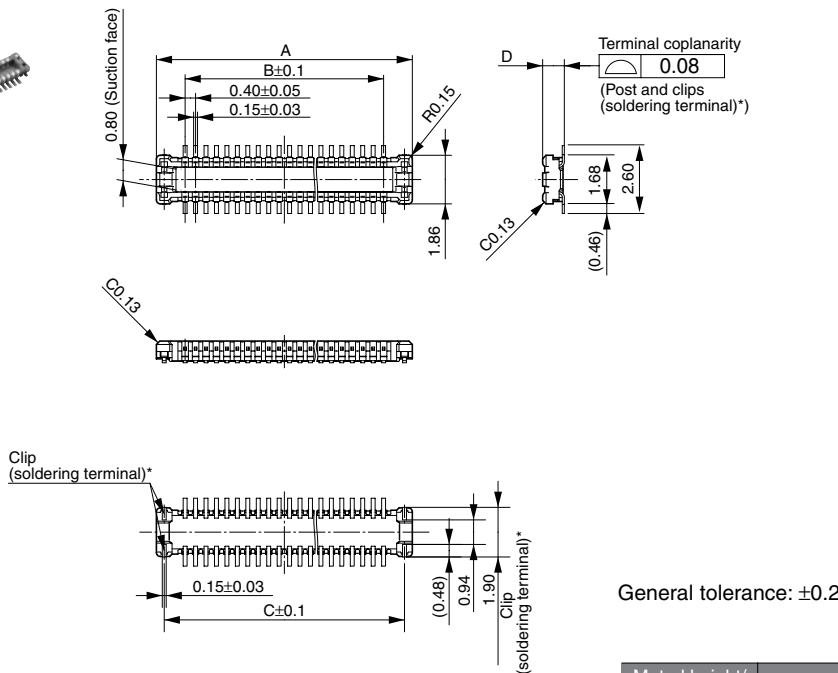
Note: Since the clip (soldering terminal)\* has a single-piece construction, sections Y and Z are electrically connected.

### Dimension table (mm)

| Number of contacts/<br>dimension | A    | B    | C    |
|----------------------------------|------|------|------|
| 10                               | 4.5  | 1.6  | 3.4  |
| 12                               | 4.9  | 2.0  | 3.8  |
| 14                               | 5.3  | 2.4  | 4.2  |
| 16                               | 5.7  | 2.8  | 4.6  |
| 18                               | 6.1  | 3.2  | 5.0  |
| 20                               | 6.5  | 3.6  | 5.4  |
| 22                               | 6.9  | 4.0  | 5.8  |
| 24                               | 7.3  | 4.4  | 6.2  |
| 26                               | 7.7  | 4.8  | 6.6  |
| 28                               | 8.1  | 5.2  | 7.0  |
| 30                               | 8.5  | 5.6  | 7.4  |
| 32                               | 8.9  | 6.0  | 7.8  |
| 34                               | 9.3  | 6.4  | 8.2  |
| 36                               | 9.7  | 6.8  | 8.6  |
| 38                               | 10.1 | 7.2  | 9.0  |
| 40                               | 10.5 | 7.6  | 9.4  |
| 42                               | 10.9 | 8.0  | 9.8  |
| 44                               | 11.3 | 8.4  | 10.2 |
| 46                               | 11.7 | 8.8  | 10.6 |
| 48                               | 12.1 | 9.2  | 11.0 |
| 50                               | 12.5 | 9.6  | 11.4 |
| 54                               | 13.3 | 10.4 | 12.2 |
| 60                               | 14.5 | 11.6 | 13.4 |
| 64                               | 15.3 | 12.4 | 14.2 |
| 70                               | 16.5 | 13.6 | 15.4 |
| 80                               | 18.5 | 15.6 | 17.4 |

### Header (Mated height: 1.0 mm and 1.2 mm)

**CAD Data**



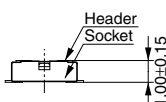
General tolerance: ±0.2

| Mated height/<br>dimension | D    |
|----------------------------|------|
| 1.0mm                      | 0.83 |
| 1.2mm                      | 1.01 |

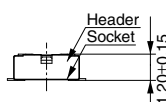
### Dimension table (mm)

| Number of contacts/<br>dimension | A    | B    | C    |
|----------------------------------|------|------|------|
| 10                               | 3.8  | 1.6  | 3.2  |
| 12                               | 4.2  | 2.0  | 3.6  |
| 14                               | 4.6  | 2.4  | 4.0  |
| 16                               | 5.0  | 2.8  | 4.4  |
| 18                               | 5.4  | 3.2  | 4.8  |
| 20                               | 5.8  | 3.6  | 5.2  |
| 22                               | 6.2  | 4.0  | 5.6  |
| 24                               | 6.6  | 4.4  | 6.0  |
| 26                               | 7.0  | 4.8  | 6.4  |
| 28                               | 7.4  | 5.2  | 6.8  |
| 30                               | 7.8  | 5.6  | 7.2  |
| 32                               | 8.2  | 6.0  | 7.6  |
| 34                               | 8.6  | 6.4  | 8.0  |
| 36                               | 9.0  | 6.8  | 8.4  |
| 38                               | 9.4  | 7.2  | 8.8  |
| 40                               | 9.8  | 7.6  | 9.2  |
| 42                               | 10.2 | 8.0  | 9.6  |
| 44                               | 10.6 | 8.4  | 10.0 |
| 46                               | 11.0 | 8.8  | 10.4 |
| 48                               | 11.4 | 9.2  | 10.8 |
| 50                               | 11.8 | 9.6  | 11.2 |
| 54                               | 12.6 | 10.4 | 12.0 |
| 60                               | 13.8 | 11.6 | 13.2 |
| 64                               | 14.6 | 12.4 | 14.0 |
| 70                               | 15.8 | 13.6 | 15.2 |
| 80                               | 17.8 | 15.6 | 17.2 |

### • Socket and Header are mated



Mated height: 1.0 mm



Mated height: 1.2 mm



# 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            |         |        |       |            |        |           |         |
| <b>MIPI Interface</b>         |      |   |         |        |       |            |        |           |         |
| 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                              |         |        |       |            |        |           |         |
| <b>DVP Parallel Interface</b> |      |   |         |        |       |            |        |           |         |
| 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<br>Low -20°C 0.5 Hours<br>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<br>60 Seconds<br>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<br>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

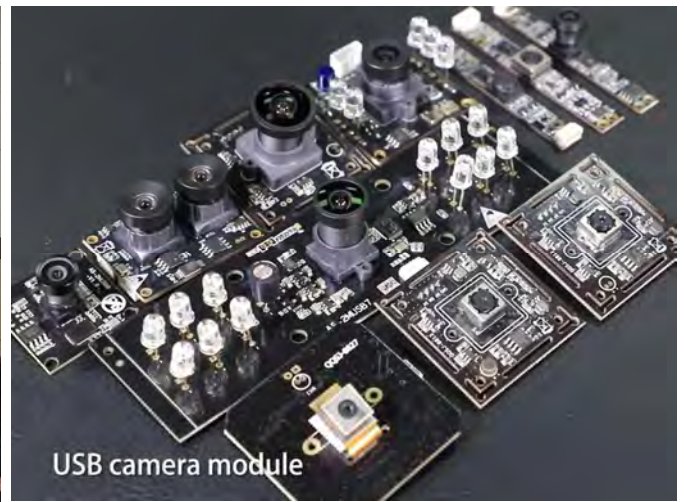
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## Company YDSCAM

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](http://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 Strength

### Powerful Factory



### Professional Service



### Promised Delivery



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