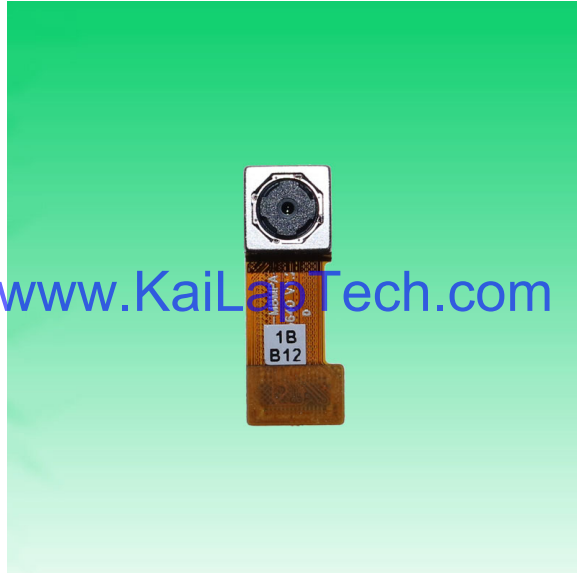


KLT-M8MPA-OV5640-1B V1.2

**5MP OmniVision OV5640-1B MIPI and DVP Parallel Interface
Auto Focus Camera Module**



Front View



Back View

Specifications

| | |
|--------------------------|-------------------------------------|
| Camera Module No. | KLT-M8MPA-OV5640-1B V1.2 |
| Resolution | 5MP |
| Image Sensor | OV5640-1B |
| Sensor Type | 1/4" |
| Pixel Size | 1.4 um x 1.4 um |
| EFL | 3.29 mm |
| F.NO | 2.80 |
| Pixel | 2592 x 1944 |
| View Angle | 68.7°(DFOV) 58.1°(HFOV) 45.0°(VFOV) |
| Lens Dimensions | 8.50 x 8.50 x 5.07 mm |
| Module Size | 25.00 x 9.60 mm |
| Module Type | Auto Focus |
| Interface | MIPI and DVP Parallel |
| Auto Focus VCM Driver IC | Embedded |
| Lens Model | KLT-LENS-M5101 |
| Lens Type | 650nm IR Cut |
| Operating Temperature | -30°C to +70°C |
| Mating Connector | DF30FC-30DS-0.4V |

KLT-M8MPA-OV5640-1B V1.2

**5MP OmniVision OV5640-1B MIPI and DVP Parallel Interface
Auto Focus Camera Module**



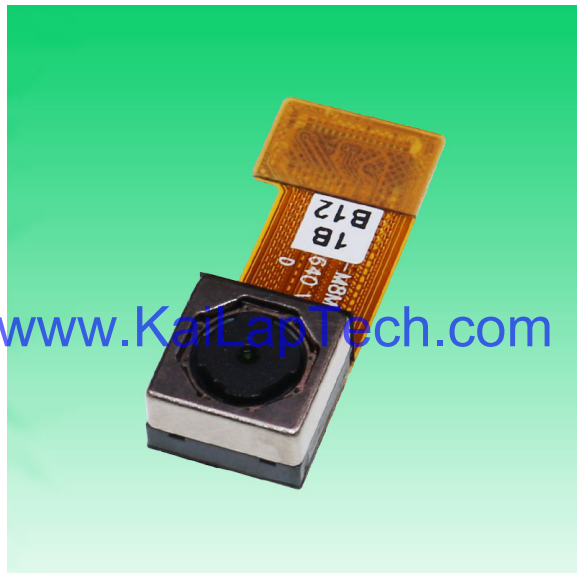
Top View



Side View

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Bottom View

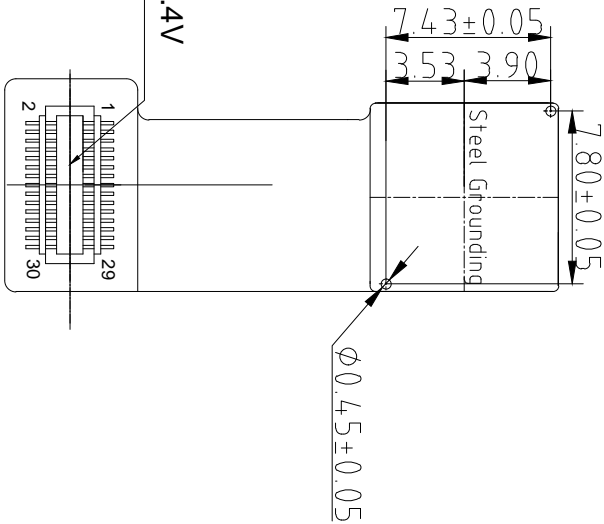
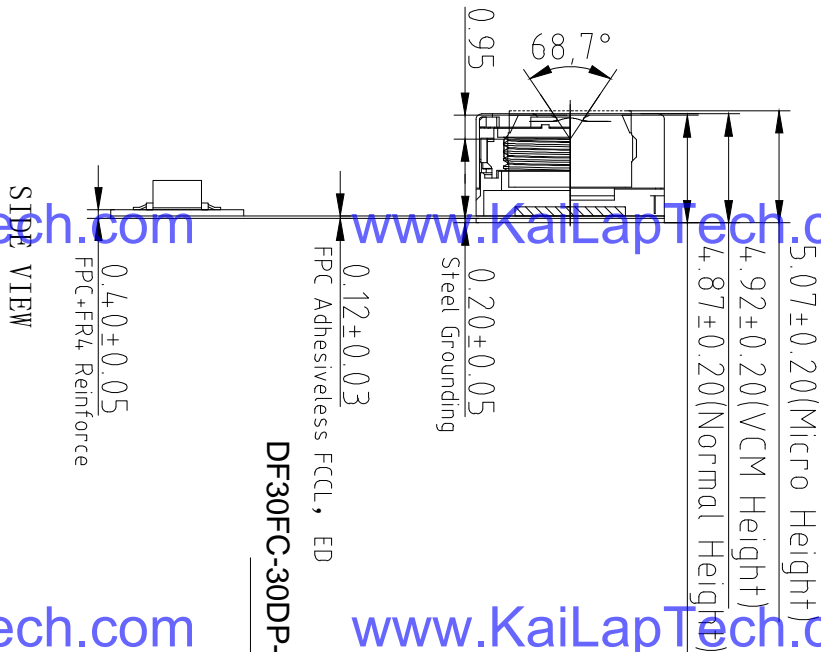
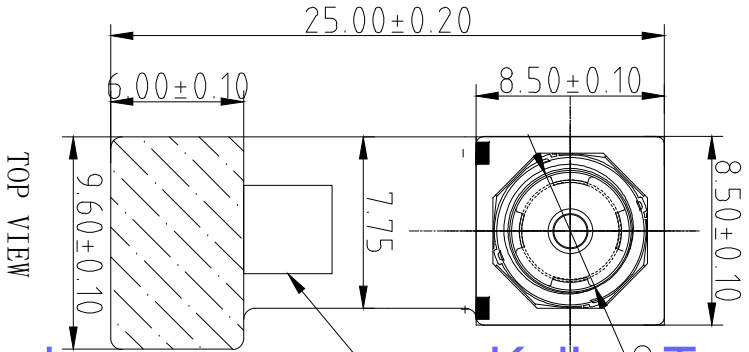


Mating Connector

RoHS

PIN SIGNAL

| | |
|----|-----------|
| 1 | D0 |
| 2 | AVDD2.8V |
| 3 | D1 |
| 4 | AGND |
| 5 | D2 |
| 6 | DVDD1.5V |
| 7 | D3 |
| 8 | RESET |
| 9 | D4/MDN0 |
| 10 | DOVDD1.8V |
| 11 | D5/MDP0 |
| 12 | PWDN |
| 13 | D6/MCN |
| 14 | SIO_C |
| 15 | D7/MCP |
| 16 | SIO_D |
| 17 | D8/MDN1 |
| 18 | DGND |
| 19 | D9/MDP1 |
| 20 | VSYNC |
| 21 | DGND |
| 22 | HREF |
| 23 | XCLK |
| 24 | PCLK |
| 25 | DGND |
| 26 | DGND |
| 27 | AF_GND |
| 28 | STROBE |
| 29 | DGND |
| 30 | VAF_2.8V |



Parameters:

1、Sensor specification:

Image Sensor: 0V5640-1B
Pixel: 1.4umx1.4um
Lens Type: 1/4
Important Voltage Description: DVDD1.5V (external power supply);

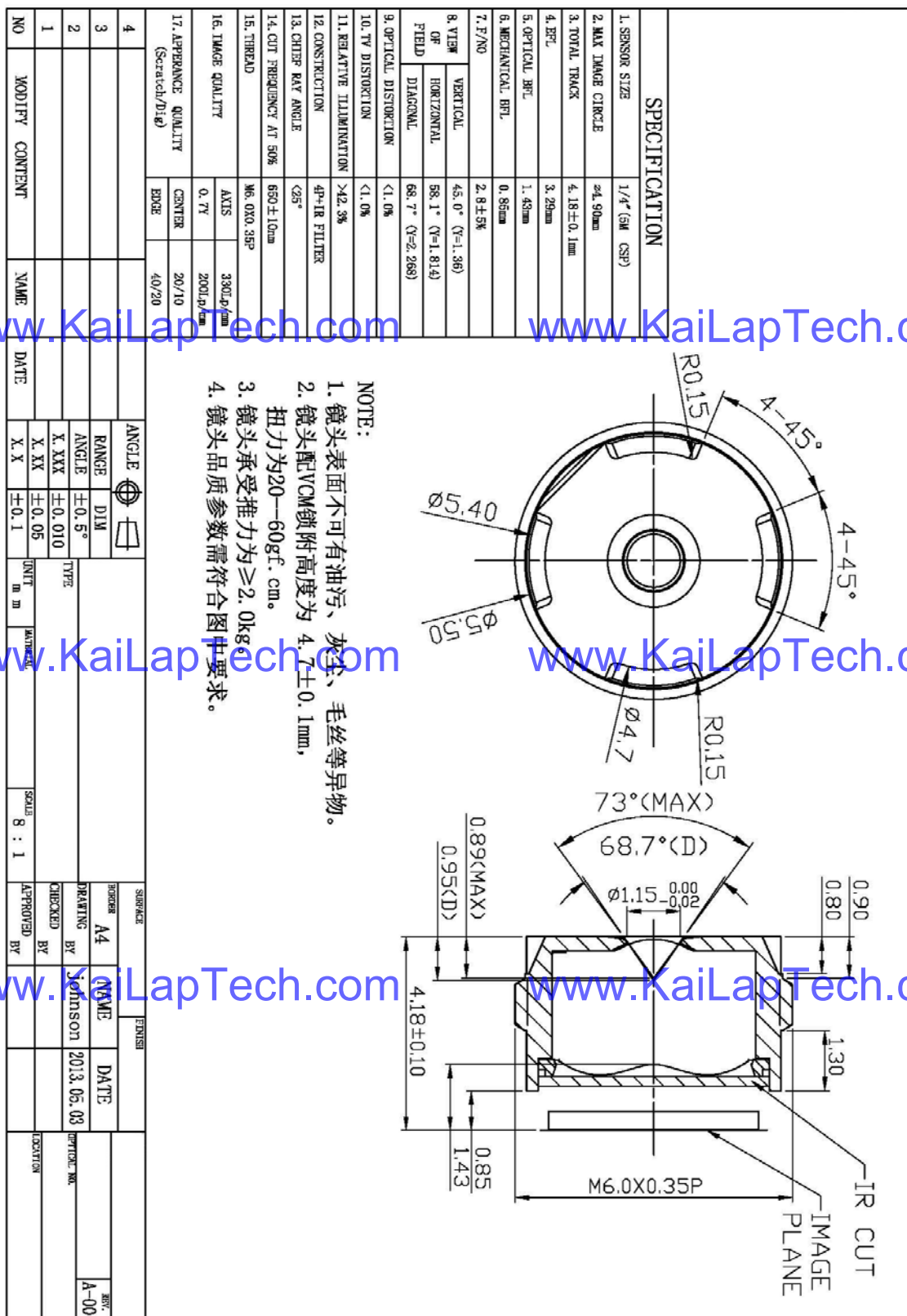
2、Lens specification:

FOV: 68.7°
F/#0: 2.8
TV distortion: <1.0%
Focal length: 3.29mm
Composition: 4P+IR FILTER
IR Cut Coating: 650nm±10nm@50%

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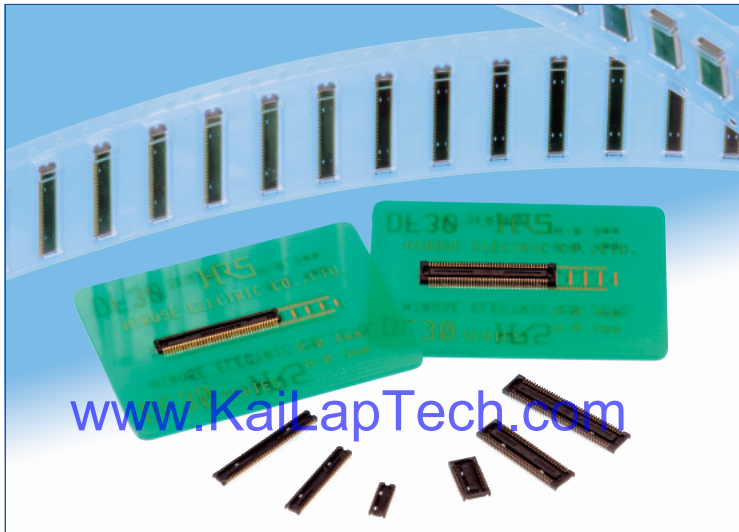
| | | | |
|-------------|-----------|------------------|--------------------------|
| Designed By | Keyan | Model Name: | KLT-M8MPA-0V5640-1B V1.2 |
| Checked By | Aouly Yan | Projection Type: | Third Angle |
| | | Unit: | mm |
| | | Scale: | 1:1 |
| | | Sheet: | 1 of 1 |
| | | Version: | 1/0 |

Lens Model: KLT-LENS-M5101

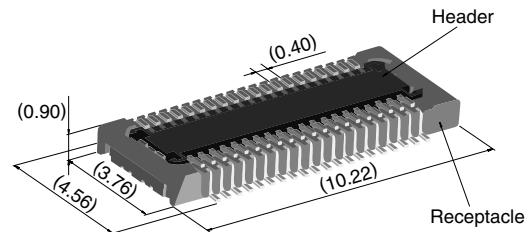


0.4 mm Pitch, 0.9 mm Height, Board-to-Board / Board-to-FPC Connectors

DF30 Series



Extremely small size



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40 positions shown

Overview

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

Features

1. Contact reliability

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

2. Self alignment

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

3. Automatic board placement

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

4. Variety of contact positions and styles

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

Smaller contact positions are also available.

5. Support for continuity test connector

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

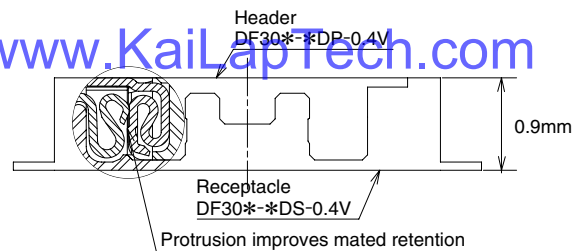
Applications

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

Low profile

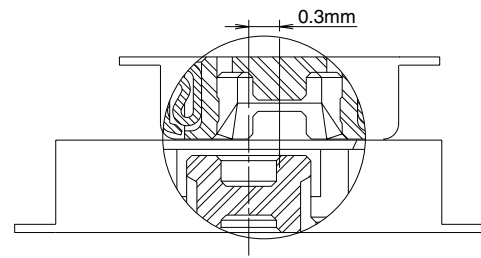
Increased mated retention

High contact reliability



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Self alignment



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■Product Specifications

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

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

Note 1: Includes temperature rise caused by current flow.

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

■Materials and Finishes

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

■Ordering information

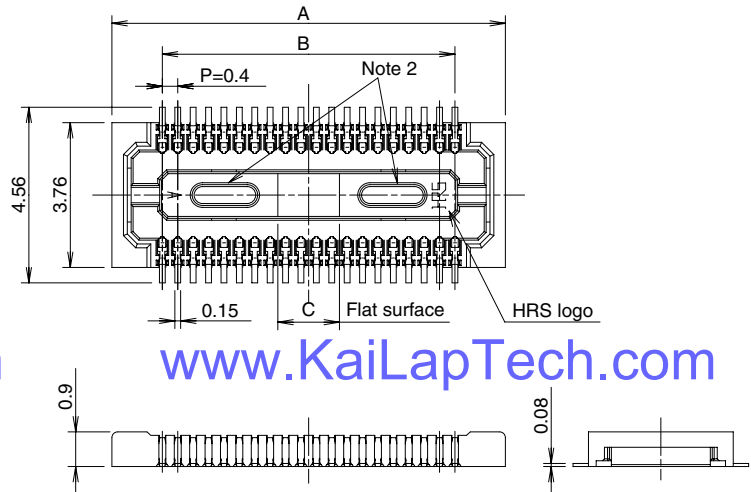
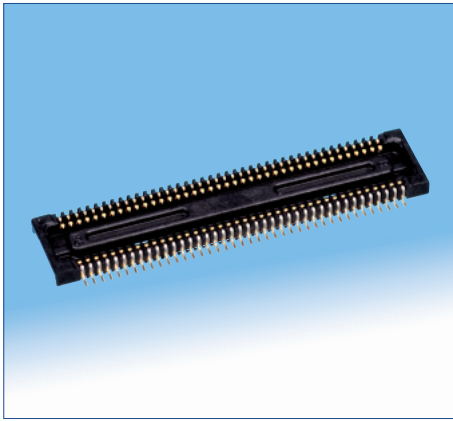
●Receptacles and Headers

DF30 FC - * DS - 0.4 V (**)

1 2 3 4 5 6 7

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

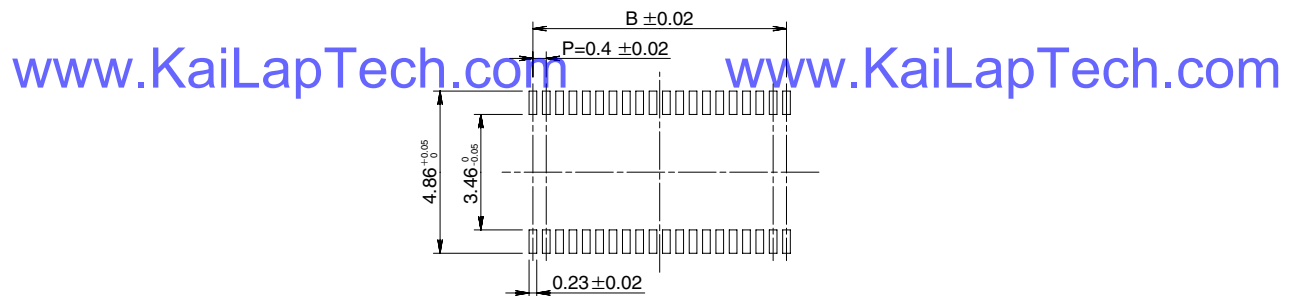
■Receptacles (without metal fittings)



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◆Recommended PCB mounting pattern



Recommended solder paste thickness: 120 μ m

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

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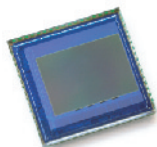
* Tolerances non- accumulative.

Unit: mm

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

Note 1: Order by number of reels.

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



OV5640 5-megapixel product brief

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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.

applications

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

ordering information

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

features

- 1.4 μm x 1.4 μm 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: 1.25 ~ 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 μA
- **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_{ROW}
- **pixel size:** 1.4 μm x 1.4 μm
- **dark current:** 8 mV/s @ 60°C junction temperature
- **image area:** 3673.6 μm x 2738.4 μm
- **package dimensions:** 5985 μm x 5835 μm

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 |

Cameras Applications

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IMAGING DEVICES

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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 |



| Inspection Item | | Inspection Method | Standard of Inspection |
|-----------------|----------|-------------------|---|
| Category | Item | | |
| Appearance | FPC/ PCB | Color | Major Difference is Not Allowed. |
| | | Be Torn/Chopped | Copper Crack Exposure is Not Allowed. |
| | | Marking | Clear, Recognizable (Within 30cm Distance) |
| | Holder | Scratches | The Inside Crack Exposure is Not Allowed |
| | | Gap | Meet the Height Standard |
| | | Screw | Make Sure Screws Are Presented (If Any) |
| | | Damage | The Inside Crack Exposure is Not Allowed |
| | Lens | Scratch | No Effect On Resolution Standard |
| | | Contamination | No Effect On Resolution Standard |
| | | Oil Film | No Effect On Resolution Standard |
| | | Cover Tape | 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 |

KLT Package Solutions

KLT Camera Module



Complete with Lens Protection Film



Tray with Grid and Space



Place Cameras on the Tray



Camera Modules Package Solution

Full Tray of Cameras



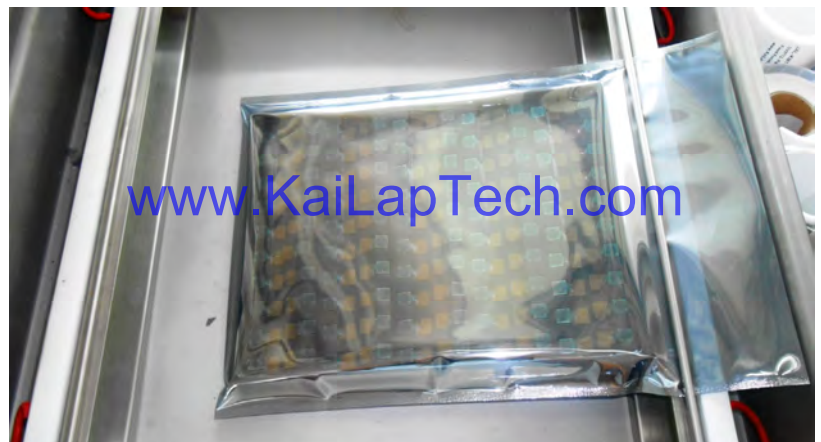
Cover Tray with Lid



Put Tray into Anti-Static Bag



Vacuum the Anti-Static Bag



Camera Modules Package Solution

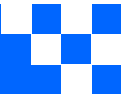
Sealed Vacuum Bag with Labels

1. Model and Description 2. Quantity 3. Shipping Date 4. Caution





CMOS CAMERA MODULES



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Large Order Package Solution

Place Foam Sheets Between Trays

Foam Sheets are Slightly Larger than Trays



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Place Foam Sheets and Trays into Box

Foam Sheets are Tightly Fitting Box

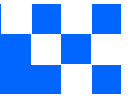


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Small Order Package Solution

Place Foam Sheets and Trays into Small Box



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Package in Small Box for Shipment

Foam Sheets are Nicely Fitting the Small Box



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Place Small Boxes into Larger Box



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Carbon Box Package Solution

Seal the Carbon Box

Final Package Labelled Box



Carbon Box Ready for Shipment

1. Delivery Address and Phone No.
2. Box No. and Ship Date
3. Fragile Caution



Sample Order Package Solution

Place Sample into Small Anti-Static Bag



Place Connectors into Small Ant-Static Bag



Sample Labels on the Small Bag

1. Camera Module or Connector Model 2. Shipping Date and Quantity 3. Caution



Connectors Large Order Package Solution

Connectors in a Wheel



Label Connectors in the Wheel



The Wheel is Perfectly Fitting the Box



Connectors Box Ready for Shipment





CMOS CAMERA MODULES



your BEST camera module partner

Company Kai Lap Technologies (KLT)

Kai Lap Technologies Group Limited. (KLT) was established in 2009, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. KLT is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

KLT 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. KLT 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.

www.KaiLapTech.com

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Limited Warranty

KLT provides the following limited warranty if you purchased the Product(s) directly from KLT company or from KLT's website, www.KaiLapTech.com. Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. KLT 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, KLT 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 KLT is solely limited to repair and/or replacement on the terms set forth above. KLT is not reliable or responsible for any subsequent events.



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KLT Strength

Powerful Factory



Professional Service



Promised Delivery



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