

## KLT-N5MA-IMX258 V3.0

### 13MP Sony IMX258 MIPI Interface Auto Focus Camera Module



Front View



Back View

#### Specifications

<b>Camera Module No.</b>	<b>KLT-N5MA-IMX258 V3.0</b>
<b>Resolution</b>	13MP
<b>Image Sensor</b>	IMX258
<b>Sensor Type</b>	1/3.06"
<b>Pixel Size</b>	1.12 um x 1.12 um
<b>EFL</b>	3.81 mm
<b>F.NO</b>	2.20
<b>Pixel</b>	4224 x 3136
<b>View Angle</b>	74.4°(DFOV) 62.7°(HFOV) 48.7°(VFOV)
<b>Lens Dimensions</b>	8.50 x 8.50 x 5.60 mm
<b>Module Size</b>	110.00 x 8.50 mm
<b>Module Type</b>	Auto Focus
<b>Interface</b>	MIPI
<b>Auto Focus VCM Driver IC</b>	DW9763
<b>Lens Type</b>	650nm IR Cut
<b>Operating Temperature</b>	-20°C to +70°C
<b>Mating Connector</b>	FH35C-27S-0.3SHW

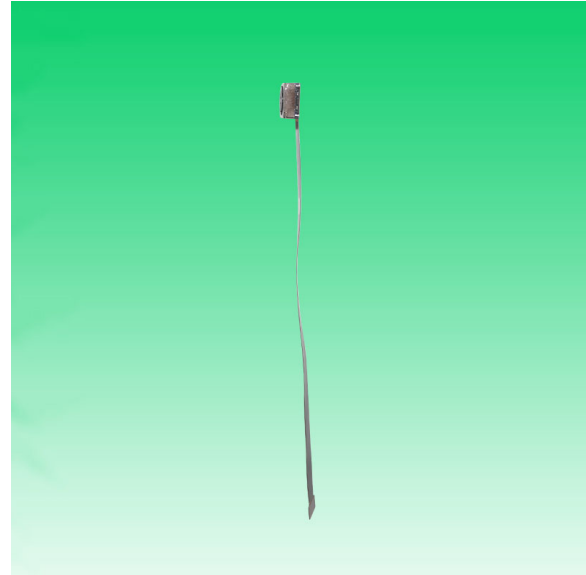


## KLT-N5MA-IMX258 V3.0

### 13MP Sony IMX258 MIPI Interface Auto Focus Camera Module



Top View



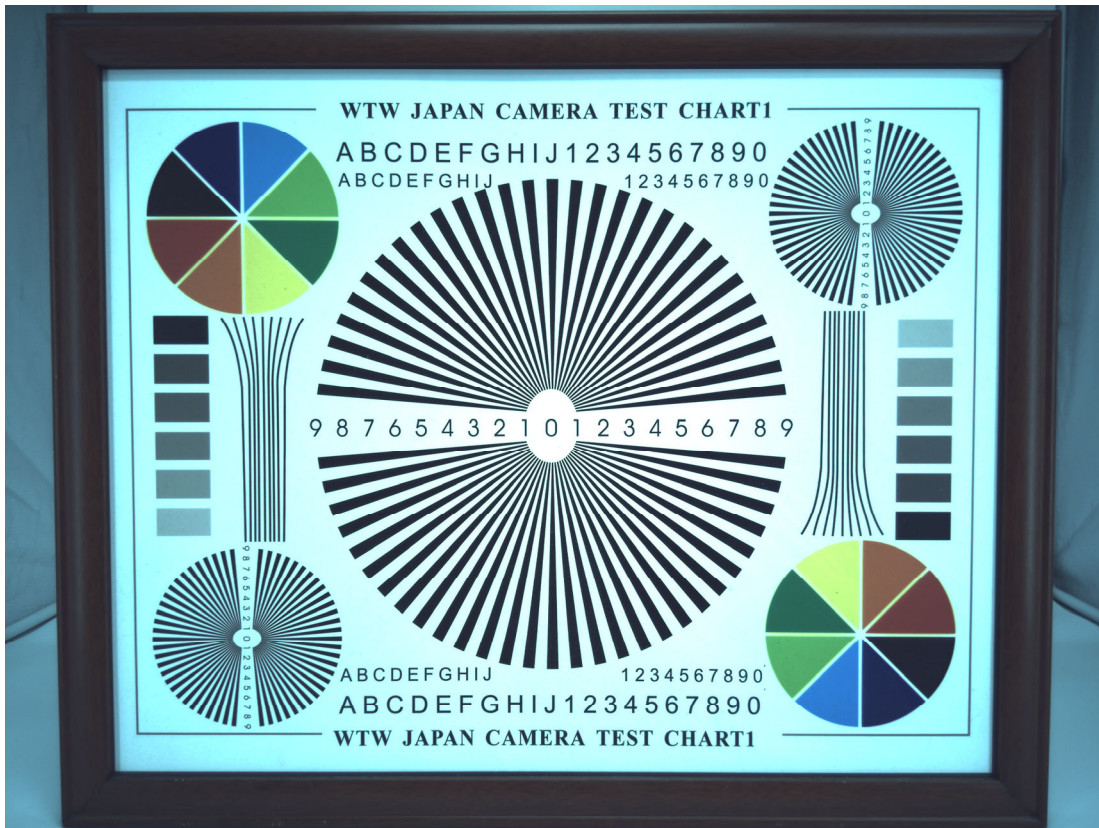
Side View

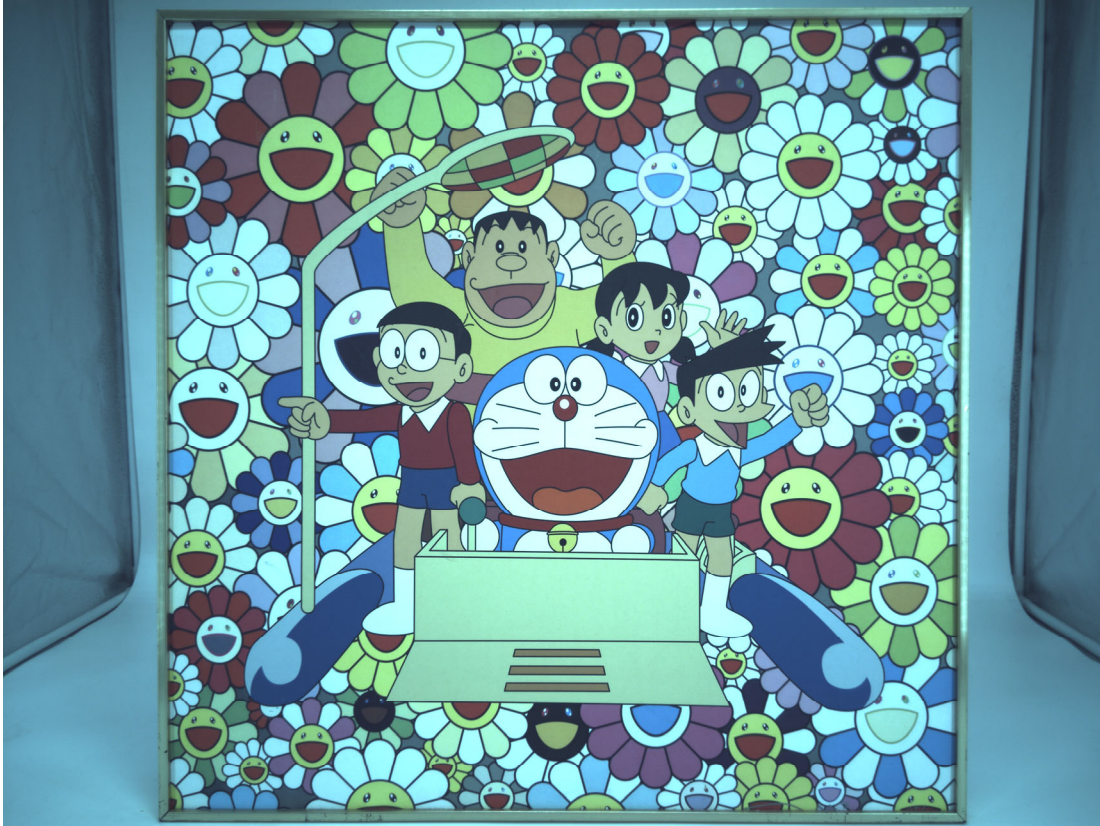


Bottom View



Mating Connector







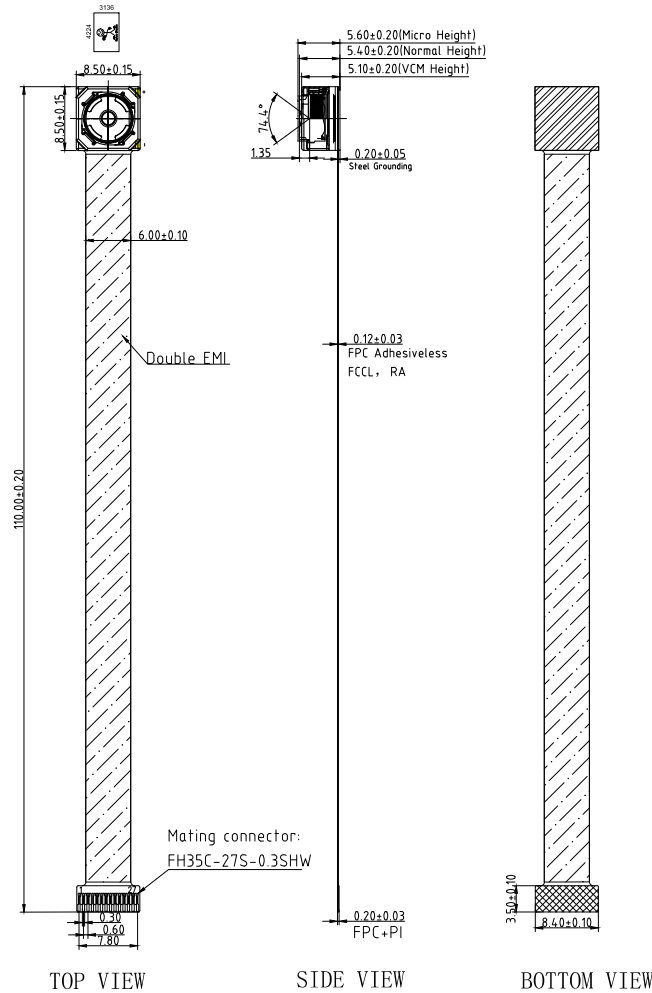
## Periodic table of Elements

<p><b>Legend:</b></p> <ul style="list-style-type: none"> <li style="margin-right: 10px;"><span style="color: red;">■</span> Hydrogen (Gas)</li> <li style="margin-right: 10px;"><span style="color: blue;">■</span> Alkali Metals</li> <li style="margin-right: 10px;"><span style="color: brown;">■</span> Alkaline Earth Metals</li> <li style="margin-right: 10px;"><span style="color: grey;">■</span> Transition Metals</li> <li style="margin-right: 10px;"><span style="color: darkblue;">■</span> Other Metals</li> <li style="margin-right: 10px;"><span style="color: teal;">■</span> Metalloids</li> <li style="margin-right: 10px;"><span style="color: green;">■</span> Non-metals</li> <li style="margin-right: 10px;"><span style="color: yellow;">■</span> Halogens</li> <li style="margin-right: 10px;"><span style="color: purple;">■</span> Noble Gases</li> <li style="margin-right: 10px;"><span style="color: lightblue;">■</span> Lanthanides</li> <li style="margin-right: 10px;"><span style="color: orange;">■</span> Actinides</li> </ul>																		<p>Average Atomic Mass</p> <p>Atomic Number</p> <p>Name</p> <p>Symbol</p>	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
H	He	Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar	K	
1.008	4.002	6.941	9.012	10.81	12.01	14.01	15.99	18.99	20.18	22.99	24.31	26.98	28.08	30.97	32.07	35.45	39.95	39.09	
Hydrogen	Helium	Lithium	Beryllium	Boron	Carbon	Nitrogen	Oxygen	Fluorine	Neon	Sodium	Magnesium	Aluminum	Silicon	Phosphorus	Sulfur	Chlorine	Argon	Potassium	
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	
39.09	40.08	44.95	47.87	50.94	51.99	54.94	55.85	58.93	58.69	63.55	65.39	69.72	72.61	74.92	78.96	79.90	83.80	85.47	
Potassium	Calcium	Scandium	Titanium	Vanadium	Chromium	Manganese	Iron	Cobalt	Nickel	Copper	Zinc	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton	Rubidium	
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Cs	
85.47	87.62	88.91	91.22	92.91	95.94	97.91	101.1	102.9	106.4	107.9	112.4	114.8	118.7	121.8	127.6	126.9	131.3	132.9	
Rubidium	Strontium	Yttrium	Zirconium	Niobium	Molybdenum	Technetium	Ruthenium	Rhodium	Palladium	Silver	Cadmium	Indium	Tin	Antimony	Tellurium	Iodine	Xenon	Cesium	
55	56	57-71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	
132.9	137.3	(232)	178.5	180.9	183.8	186.2	192.2	192.2	195.1	196.9	200.6	204.4	207.2	208.9	(210)	(222)	(223)	(223)	
Cesium	Barium	Lanthanides	Hafnium	Tantalum	Tungsten	Rhenium	Osmium	Iridium	Platinum	Gold	Mercury	Thallium	Lead	Bismuth	Polonium	Astatine	Radon	Francium	
87	88	89-103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og	Ra	
(223)	(226)	(232)	(261)	(262)	(263)	(264)	(265)	(268)	(281)	(280)	(285)	(284)	(289)	(288)	(292)	(294)	(294)	(294)	
Francium	Radium	Actinides	Rutherfordium	Dubnium	Seaborgium	Bohrium	Hassium	Mitlerium	Darmstadtium	Roentgenium	Copernicium	Nihonium	Flerovium	Moscovium	Livermorium	Tennesseum	Oganesson	Radium	
71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Ac	Th	Pa	U	
138.9	140.1	140.9	144.2	150.4	151.9	157.2	158.9	162.5	164.9	167.2	168.9	170.9	173.0	174.9	(232)	(232)	(231)	(238)	
Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium	Actinium	Thorium	Protactinium	Uranium	
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	(232)	(232)	(231)	(238)	
Actinium	Thorium	Protactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkelium	Californium	Einsteinium	Fermium	Mendelevium	Nobelium	Lawrencium	(232)	(232)	(231)	(238)	



PIN	SIGNAL
1	AFEN
2	DOVDD1.8V
3	DVDD1.2V
4	XSHUTDOWN
5	GND
6	MCLK
7	NC
8	AFVDD2.8V
9	SDA
10	SCL
11	GND
12	MCN
13	MCP
14	GND
15	MD0N
16	MD0P
17	GND
18	MD1N
19	MD1P
20	GND
21	MD2N
22	MD2P
23	AGND
24	MD3N
25	MD3P
26	FSTROBE
27	AVDD2.8V

Version	Information
V1.0	First Version
V2.0	Change connector
V3.0	Improve MIPI impedance



NOTE:

- 1.The device slave address:0x34;
- 2.Driver IC and its I2C Address: DW9763; 0x18h;
- 3.MIPI Impedance Control 100Ω±10%

Parameters:

1、Sensor specification:

Image Sensor: IMX258  
 Pixel: 1.12um×1.12um  
 Lens Type: 1/3.06  
 Important Voltage Description: DVDD1.2V (external power supply);

2、Lens specification:

FOV: 74.4°(D);62.7°(H);48.7°(V);  
 F/NO.: 2.2  
 TV distortion: <1.5%  
 Focal length: 3.81mm  
 Composition: 5P++IR FILTER  
 IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By	Kevin	Model Name:	KLT-N5MA-IMX258 V3.0		
Checked By	Jacky	Projection Type:	Unit:	Date: 3/7/2026	
			mm	Scale:	Sheet: 1 of 1
		Third Angle	1:1		

## [Product Brief]

Ver.1.0

# IMX258

Diagonal 5.867 mm (Type 1/3.06) 13Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

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### Description

IMX258 is a diagonal 5.867mm (Type 1/3.06) 13 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor R<sup>STM</sup> technology to achieve high speed image capturing by column parallel A/D converter circuits and high sensitivity and low noise image (comparing with conventional CMOS image sensor) through the backside illuminated imaging pixel structure. R, G, and B pigment primary color mosaic filter is employed. By introducing spatially multiplexed exposure technology, high dynamic range still pictures and movies are achievable. It

equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.7 V, digital 1.2 V and 1.8 V for input/output interface and achieves low power consumption.

In addition, this product is designed for use in cellular phone and tablet pc. When using this for another application, Sony does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than cellular phone and tablet pc. Consult your Sony sales representative if you have any questions.

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### Functions and Features

- ◆ Back-illuminated and stacked CMOS image sensor Exmor R<sup>STM</sup>
- ◆ Phase Detection pixel data output for Phase Detection Auto Focus
- ◆ High Dynamic Range (HDR) mode with raw data output.
- ◆ High signal to noise ratio (SNR).
- ◆ Full resolution @30fps (Normal / HDR). 4K2K @30fps (Normal / HDR) 1080p @60fps (Normal )
- ◆ Output video format of RAW10/8.
- ◆ Pixel binning readout and V sub-sampling function.
- ◆ Independent flipping and mirroring.
- ◆ CSI-2 serial data output (MIPI 2lane/4lane, Max. 1.3Gbps/lane, D-PHY spec. ver. 1.1 compliant)
- ◆ 2-wire serial communication.
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- ◆ Dynamic Defect Pixel Correction.
- ◆ Fast mode transition. (on the fly)
- ◆ Dual sensor synchronization operation.
- ◆ 4K bit of OTP ROM for users.
- ◆ Built-in temperature sensor.

**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size : Diagonal 5.867 mm (Type 1/3.06)
- ◆ Total number of pixels : 4224 (H) × 3192 (V) approx. 13.48 M pixels
- ◆ Number of effective pixels : 4224 (H) × 3144 (V) approx. 13.28 M pixels
- ◆ Number of active pixels : 4208 (H) × 3120 (V) approx. 13.13 M pixels
- ◆ Chip size : 5.990 mm (H) × 3.908 mm (V)
- ◆ Unit cell size : 1.12 μm (H) × 1.12 μm (V)
- ◆ Substrate material : Silicon

System block diagram



**Exmor RS**

\* Exmor RS is a trademark of Sony Corporation. The Exmor RS is a Sony's CMOS image sensor with high-resolution, high-performance and compact size by replacing a supporting substrate in Exmor R™ which changed fundamental structure of Exmor™ pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

## 1. General Description

The DW9763 is a single 10-bit DAC with 100mA output current sinking capability and embedded 8KByte eFlash memory. Designed for linear control of voice coil motors, the DW9763 is capable of operating voltage up to 3.3V.

The SAC (Smart Actuator Control) mode is applied to minimize the mechanical vibration. The SAC mode highly improves the actuator's settling time and tolerance coverage compared with conventional LSC (Linear Slope Control) mode. The DAC and eFlash are controlled via an I2C compatible serial interface.

The DW9763 incorporates with a POR (Power On Reset) circuit, power down mode. POR circuit gets to operate when VDD (supply power) turns on. The output current keeps 0mA until valid register value takes place. During the power down mode, it consumes current max.1uA.

The DW9763 is designed for auto focus and optical zoom for mobile camera, digital still camera, camcorders and other nano actuator applications.

### ■ Features

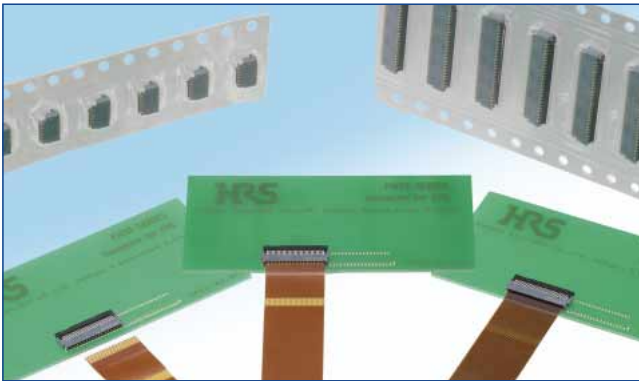
- 10 bit resolution current sinking of 100mA for VCM
- SAC (Smart Actuator Control) mode
- Supply voltage range (VDD) : 2.3V to 3.3V
- Fast mode I2C interface compatible (1.8V interface available)
- Power down mode
- Power on reset (POR)
- Embedded 8KByte eFlash memory
- Package : 8 pin WLCSP
- Package Size : 0.77mm X 1.75mm X 0.3mm

### ■ Applications

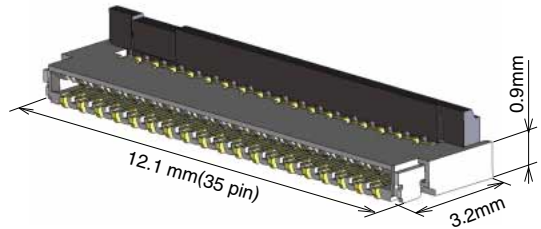
- Mobile camera
- Digital still camera
- Camcorder
- Web camera
- Nano actuator

# 0.3 mm pitch, 0.9 mm height, back flip type dual-sided FPC connector

## FH35C Series



### ●3.2 mm in depth



## ■Features

### 1.0.3 mm pitch, Dual-sided connector

This connector utilizes both a top and bottom contact and provides design flexibility.

### 2.Improved FPC retention force achieved through the use of our proprietary contact structure and a back flip actuator.

FPC retention force (in the horizontal direction) is about 2.5 times greater than similar products produced by other companies.

### 3.Supports high speed transmissions

By utilizing its excellent impedance characteristics, it is capable of supporting high speed transmissions. (Differential pairs of identical contacts allows for better transmission characteristics and eDP (ver1.3) and compatibility to MIPI(D-PHY) specifications.)

### 4.Delivered with actuator open

To reduce installation time and costs, the actuator is delivered in the open position and eliminates the need to open the actuator before FPC insertion.

### 5.Easy FPC Insertion

Equipped with tapered guides at the FPC insertions point, they help to create a smoother FPC insertion operation.

### 6.Compatible with 0.2mm thick FPC

The FH35C was designed to be used with 0.2 mm FPC. (Using the appropriate FPC will prevent deformation and problems that may occur during the insertion and mating processes.)

### 7.Bottom side protection

The bottom surface is over-molded and provides added protection to the contacts (no exposure). This allows the PCB space under the connector to be used for additional patterning.

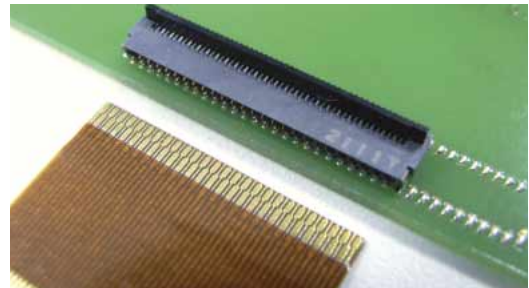
### 8.Halogen Free

Chlorine and bromine levels do not exceed the standard values as defined by IEC 61249-2-21. (Br: 900 ppm or less, Cl : 900 ppm or less, Br + Cl : 1,500 ppm or less)

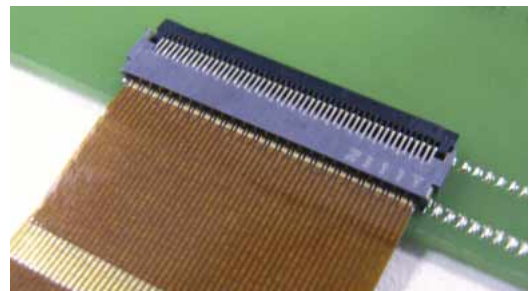
### 9.Compatible with Automatic Mounting

Tape-and-reel packaging is available for use with pick-and-place machines. Connectors are available on 5000 or 500 piece reels. (The outer diameter of an embossed reel is  $\phi$ 180mm)

### ●At Time of FPC Insertion

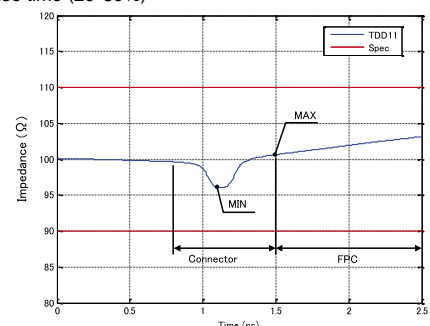


### ●Lock Completion State



### FH35C Differential Impedance

130ps rise time (20-80%)



## Product Specifications

Ratings	Current rating: 0.2 A (Note 1) Voltage rating: AC 30 Vrms	Operating temperature Range: -55 to +85°C (Note 2) Operating temperature Range: 90% or less of relative humidity (No dew condensation is allowed)	Storage temperature Range: -10 to +50°C (Note 3) Storage temperature Range: 90% or less of relative humidity (No dew condensation is allowed)
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With specifications compatible with FPC contacts     t = 0.2 ± 0.03 gold plating

Items	Specifications	Conditions
1. Insulation Resistance	No less than 50 MΩ	Measured at 100 V DC
2. Withstand Voltage	No flashover or breakdown	Conduct 90 V AC for one minute
3. Contact Resistance	100 mΩ MAX. * Including FPC conductor resistance	AC 20 mV MAX (1 KHz), 1 mA
4. Mating Cycles	Contact resistance: no more than 100 mΩ No breakage, cracks, or loosened parts	10 times
5. Vibration Resistance	No electric outage of 1 μs or greater Contact resistance: no more than 100 mΩ No breakage, cracks, or loosened parts	At the frequency of 10-55 Hz, half amplitude 0.75 mm, and 10 cycles in each of three axial directions
6. Shock Resistance	No electric outage of 1 μs or greater Contact resistance: no more than 100 mΩ No breakage, cracks, or loosened parts	Acceleration: 981 m/s <sup>2</sup> Duration: 6 ms, sine half-wave, 3 cycles in each of the 3 axis each in both directions
7. Humidity Resistance (Steady State)	Contact resistance: no more than 100 mΩ Insulation Resistance: 50 MΩ or more No breakage, cracks, or loosened parts	Left to stand for 96 hours at the temperature of 40°C and the humidity of 90% to 95%
8. Temperature Cycles	Contact resistance: no more than 100 mΩ Insulation Resistance: 50 MΩ or more No breakage, cracks, or loosened parts	Temperature: -55 → +15 to +35 → +85 → +15 to +35°C Time: 30 → 2 to 3 → 30 → 2 to 3 minutes 5 cycles with the above conditions
9. Solder Heat Resistance	No deformation in appearance or marked instability of contacts	Reflow: According to the Recommended Temperature Profile Manual soldering: 350 ± 10°C for 5 ± 1 sec.

(Note 1) Use at 70% of the current rating when all pins are energized with the stated current rating.

(Note 2) Temperature rise at the time of electrification is included.

(Note 3) The term "storage" refers to the long-term storage condition of unused products before mounting on the PCB.

The operating temperature and humidity ranges apply to non-energized state after PCB mounting.

(Note 4) The above specifications are representative of this series. Please refer to "drawing for approval" for official individual agreement.

## Materials

Part	Materials	Treatment	UL Regulation
Insulator	LCP	Gray	UL94V-0
	Polyamide resin	Black	
Contact	Phosphor bronze	Nickel barrier Gold plating	—
Metal fitting	Phosphor bronze	Pure tin reflow plating	

## Product Number Structure

Refer to the chart below when searching for the part number nomenclature.

Please select connectors listed in this catalog when placing orders.

The characteristics and specifications of the products described in this catalog are for reference only.

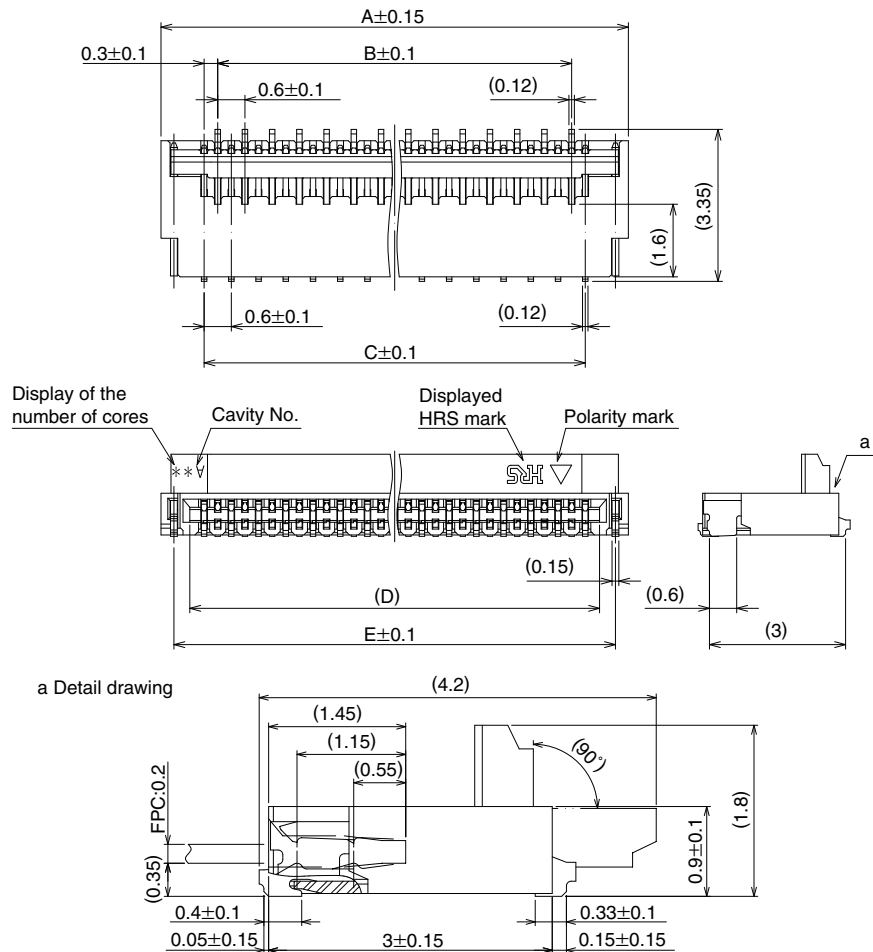
Please make sure to check the latest delivery specifications before the time of purchase.

**FH 35 C - 35S - 0.3 SHW (50)**

①      ②      ③                      ④                      ⑤                      ⑥                      ⑦

① Series Name: FH	⑥ Contact Form SHW: SMT horizontal staggered array mount type
② Series No.: 35	
③ C: dual-sided, halogen-free product	⑦ Specifications: (50): standard product (5000 connectors per reel) (99): 500 connectors per reel
④ Number of contacts : 9 to 51	
⑤ Contact Pitch: 0.3 mm	

## Connector Dimensions



- Note 1: The lead coplanarity of contact and reinforcing metal fitting is a MAX of 0.1 mm.  
 2: This product packaged on tape-and-reel. See the package specification diagram for details.  
 3: Dimensions may be changed for sink mark prevention due to improvement, etc.  
 In addition, black dots, etc., may occur in the mold resin but they have no effect on quality.  
 4: This product is halogen-free.  
 (Br content: 900 ppm or less; Cl content: 900 ppm or less; Br + CL total content: 1,500 ppm or less)

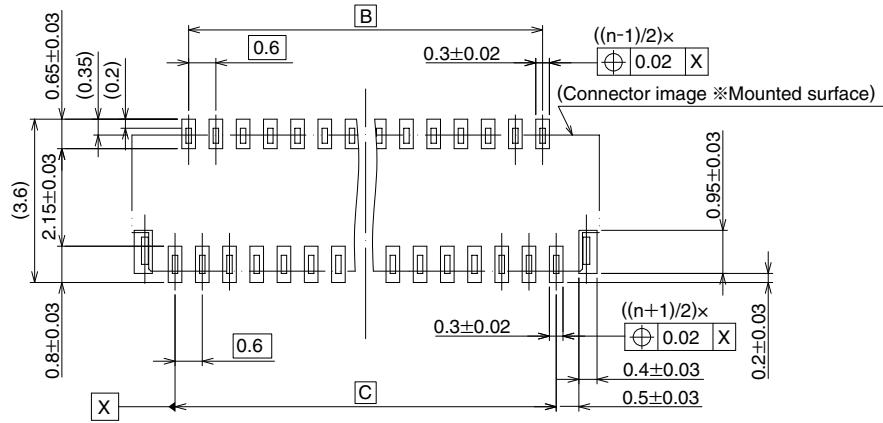
## Connector Dimension Table

Unit: mm

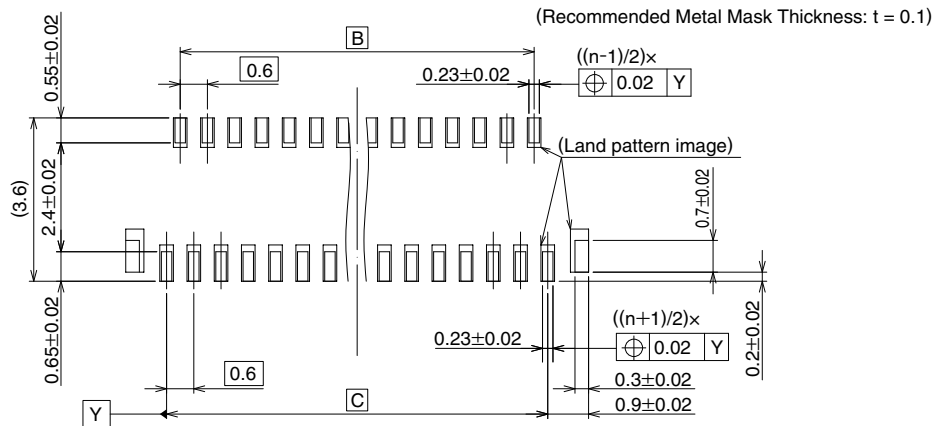
Product No.	HRS No.	The number of contacts	A	B	C	D	E
FH35C-9S-0.3SHW(50)	CL580-2910-5-50	9	4.3	1.8	2.4	3.03	3.73
FH35C-11S-0.3SHW(50)	CL580-2917-4-50	11	4.9	2.4	3	3.63	4.33
FH35C-13S-0.3SHW(50)	CL580-2925-2-50	13	5.5	3	3.6	4.23	4.93
FH35C-15S-0.3SHW(50)	CL580-2919-0-50	15	6.1	3.6	4.2	4.83	5.53
FH35C-17S-0.3SHW(50)	CL580-2916-1-50	17	6.7	4.2	4.8	5.43	6.13
FH35C-19S-0.3SHW(50)	CL580-2921-1-50	19	7.3	4.8	5.4	6.03	6.73
FH35C-21S-0.3SHW(50)	CL580-2922-4-50	21	7.9	5.4	6	6.63	7.33
FH35C-23S-0.3SHW(50)	CL580-2911-8-50	23	8.5	6	6.6	7.23	7.93
FH35C-25S-0.3SHW(50)	CL580-2912-0-50	25	9.1	6.6	7.2	7.83	8.53
FH35C-27S-0.3SHW(50)	CL580-2918-7-50	27	9.7	7.2	7.8	8.43	9.13
FH35C-31S-0.3SHW(50)	CL580-2923-7-50	31	10.9	8.4	9	9.63	10.33
FH35C-33S-0.3SHW(50)	CL580-2913-3-50	33	11.5	9	9.6	10.23	10.93
FH35C-35S-0.3SHW(50)	CL580-2926-5-50	35	12.1	9.6	10.2	10.83	11.53
FH35C-37S-0.3SHW(50)	CL580-2914-6-50	37	12.7	10.2	10.8	11.43	12.13
FH35C-39S-0.3SHW(50)	CL580-2915-9-50	39	13.3	10.8	11.4	12.03	12.73
FH35C-41S-0.3SHW(50)	CL580-2924-0-50	41	13.9	11.4	12	12.63	13.33
FH35C-45S-0.3SHW(50)	CL580-2909-6-50	45	15.1	12.6	13.2	13.83	14.53
FH35C-49S-0.3SHW(50)	—	49	16.3	13.8	14.4	15.03	15.73
FH35C-51S-0.3SHW(50)	CL580-2920-9-50	51	16.9	14.4	15	15.63	16.33

The products with no HRS No. are currently under planning. Please contact our sales representative for questions concerning the number of contacts.

## Recommended Land Dimensions



## Recommended Land and Metal Mask Dimensions

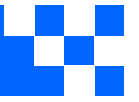


Note 5: 'n' represents the number of contacts.

## Recommended Land and Metal Mask Dimensions

Unit: mm

Product No.	HRS No.	No. of Contacts	B	C
FH35C-9S-0.3SHW(50)	CL580-2910-5-50	9	1.8	2.4
FH35C-11S-0.3SHW(50)	CL580-2917-4-50	11	2.4	3
FH35C-13S-0.3SHW(50)	CL580-2925-2-50	13	3	3.6
FH35C-15S-0.3SHW(50)	CL580-2919-0-50	15	3.6	4.2
FH35C-17S-0.3SHW(50)	CL580-2916-1-50	17	4.2	4.8
FH35C-19S-0.3SHW(50)	CL580-2921-1-50	19	4.8	5.4
FH35C-21S-0.3SHW(50)	CL580-2922-4-50	21	5.4	6
FH35C-23S-0.3SHW(50)	CL580-2911-8-50	23	6	6.6
FH35C-25S-0.3SHW(50)	CL580-2912-0-50	25	6.6	7.2
FH35C-27S-0.3SHW(50)	CL580-2918-7-50	27	7.2	7.8
FH35C-31S-0.3SHW(50)	CL580-2923-7-50	31	8.4	9
FH35C-33S-0.3SHW(50)	CL580-2913-3-50	33	9	9.6
FH35C-35S-0.3SHW(50)	CL580-2926-5-50	35	9.6	10.2
FH35C-37S-0.3SHW(50)	CL580-2914-6-50	37	10.2	10.8
FH35C-39S-0.3SHW(50)	CL580-2915-9-50	39	10.8	11.4
FH35C-41S-0.3SHW(50)	CL580-2924-0-50	41	11.4	12
FH35C-45S-0.3SHW(50)	CL580-2909-6-50	45	12.6	13.2
FH35C-49S-0.3SHW(50)	—	49	13.8	14.4
FH35C-51S-0.3SHW(50)	CL580-2920-9-50	51	14.4	15



## Cameras Applications



Automotive Driver Pilot



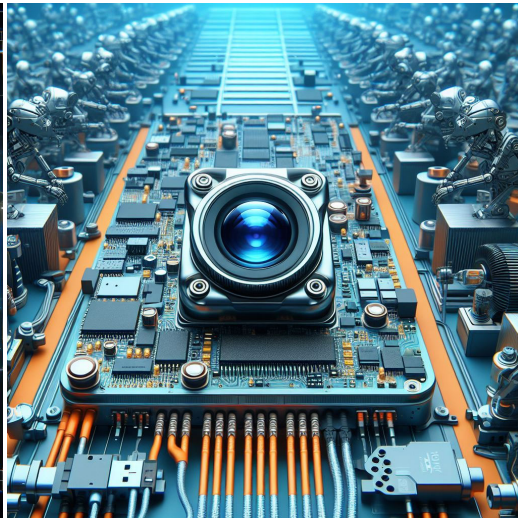
Live Streaming



Video Conference



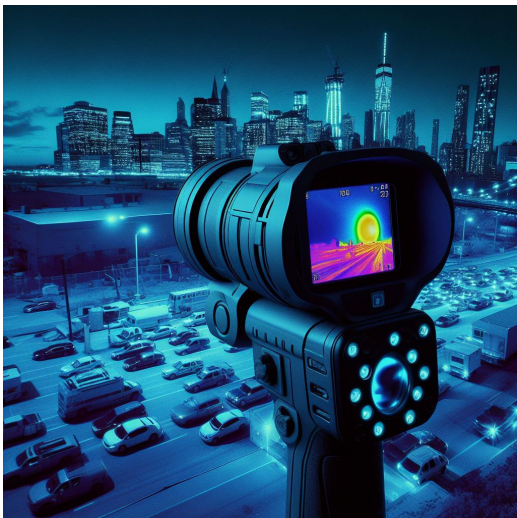
Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



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## Cameras Applications





## Camera Module Pinout Definition Reference Chart

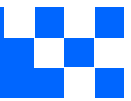
OmniVision	Sony	Samsung	On-Semi	Aptina	Himax	GalaxyCore	PixArt	SmartSens	Sensors
Pin Signal									
Description									
DGND	GND								
AGND									
PCLK	DCK								
XCLR	PWDN	XSHUTDOWN	STANDBY						
MCLK	XVCLK	XCLK	INCK						
RESET	RST								
NC	NULL								
SDA	SIO_D	SIOD							
SCL	SIO_C	SIOC							
VSYNC	XVS	FSYNC							
HREF	XHS								
DOVDD									
AFVDD									
AVDD									
DVDD									
STROBE	FSTROBE								
FSIN									
SID									
ILPWM									
FREX									
GPIO									
SLASEL									
AFEN									
<b>MIPI Interface</b>									
MDN0	DN0	MD0N	DATA_N	DMO1N					
MDP0	DP0	MD0P	DATA_P	DMO1P					
MDN1	DN1	MD1N	DATA2_N	DMO2N					
MDP1	DP1	MD1P	DATA2_P	DMO2P					
MDN2	DN2	MD2N	DATA3_N	DMO3N					
MDP2	DP2	MD2P	DATA3_P	DMO3P					
MDN3	DN3	MD3N	DATA4_N	DMO4N					
MDP3	DP3	MD3P	DATA4_P	DMO4P					
MCN	CLKN	CLK_N	DCKN						
MCP	CLKP	MCP	CLK_P	DCKN					
<b>DVP Parallel Interface</b>									
D0	DO0	Y0							
D1	DO1	Y1							
D2	DO2	Y2							
D3	DO3	Y3							
D4	DO4	Y4							
D5	DO5	Y5							
D6	DO6	Y6							
D7	DO7	Y7							
D8	DO8	Y8							
D9	DO9	Y9							
D10	DO10	Y10							
D11	DO11	Y11							



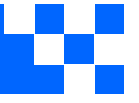
## Camera Reliability Test

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



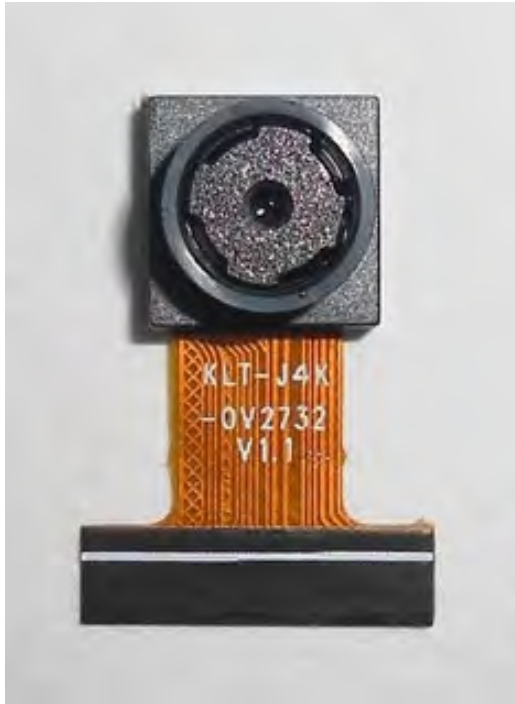


Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches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



## KLT Package Solutions

KLT Camera Module



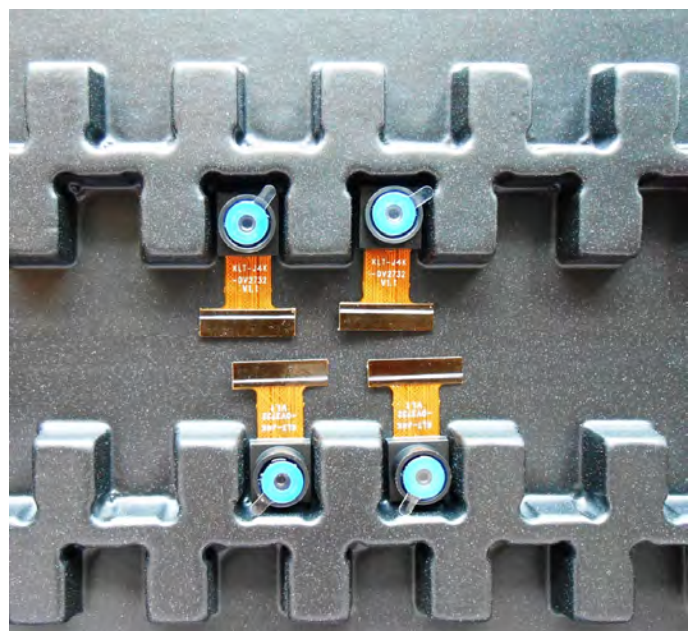
Complete with Lens Protection Film

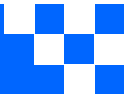


Tray with Grid and Space



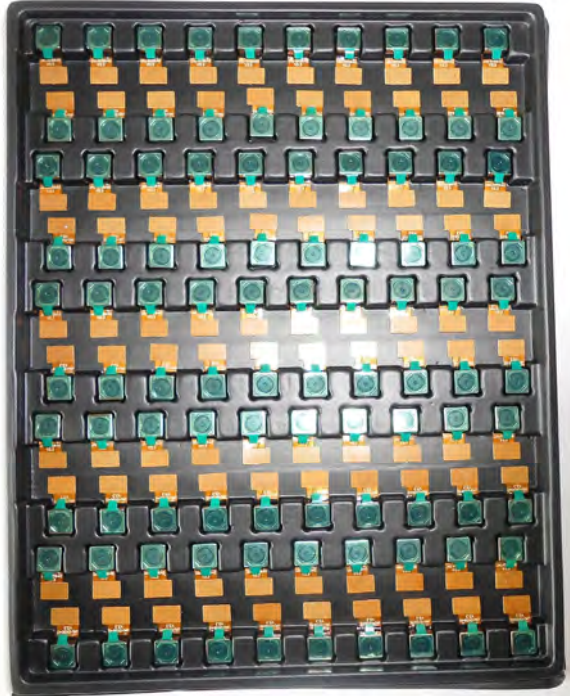
Place Cameras on the Tray





## Camera Modules Package Solution

Full Tray of Cameras



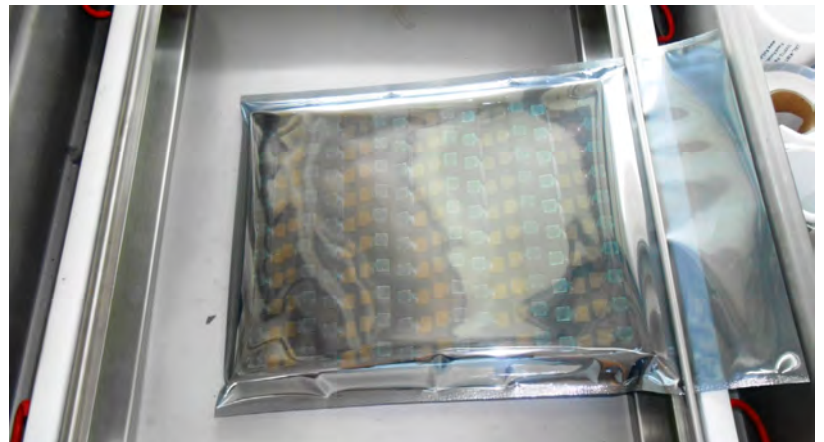
Cover Tray with Lid



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





## Large Order Package Solution

Place Foam Sheets Between Trays



Foam Sheets are Slightly Larger than Trays



Place Foam Sheets and Trays into Box



Foam Sheets are Tightly Fitting Box





## Small Order Package Solution

Place Foam Sheets and Trays into Small Box



Foam Sheets are Nicely Fitting the Small Box



Package in Small Box for Shipment



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



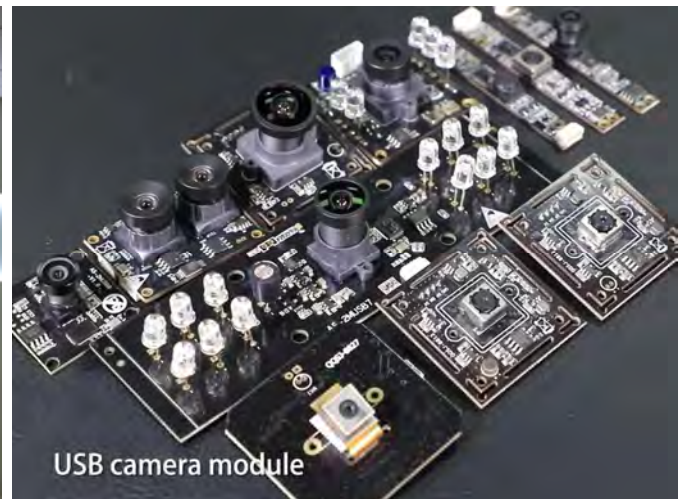


## Company Kai Lap Technologies (KLT)

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.



## 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](http://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.





# CMOS CAMERA MODULES



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## KLT Strength

### Powerful Factory



### Professional Service



### Promised Delivery



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