

KLT-5067-IMX686 V3.0**64MP Sony IMX686 MIPI Interface Auto Focus Camera Module**

Front View



Back View

Specifications

Camera Module No.	KLT-5067-IMX686 V3.0
Resolution	64MP
Image Sensor	IMX686
Sensor Type	1/1.73"
Pixel Size	0.8 μm x 0.8 μm
EFL	5.43 mm
F.NO	1.89
Pixel	9284 x 6944
View Angle	79.8° (DFOV)
Lens Dimensions	11.80 x 11.30 x 6.62 mm
Module Size	19.30 x 11.80 mm
Module Type	Auto Focus
Interface	MIPI C-PHY
Auto Focus VCM Driver IC	DW9800V
Lens Type	650nm IR Cut
Operating Temperature	-20°C to +85°C
Mating Connector	BM20B(0.8)-30DS-0.4V(51)

KLT-5067-IMX686 V3.0**64MP Sony IMX686 MIPI Interface Auto Focus Camera Module**

Top View



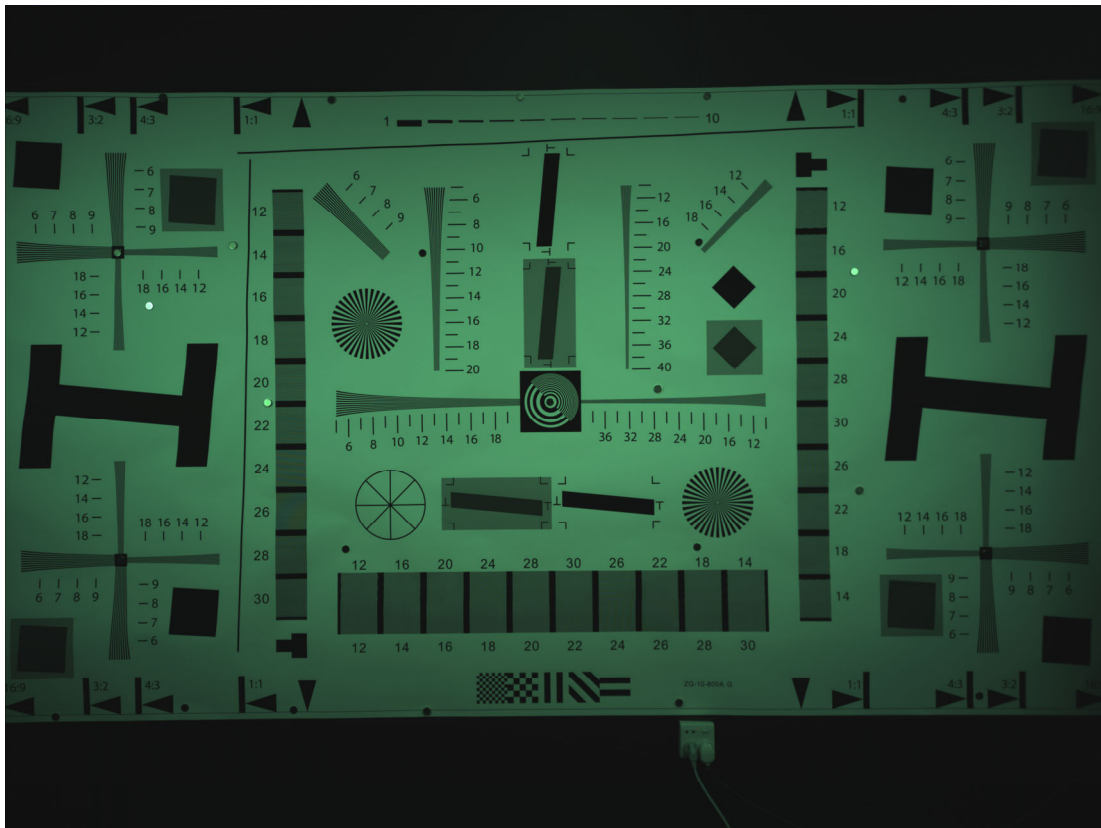
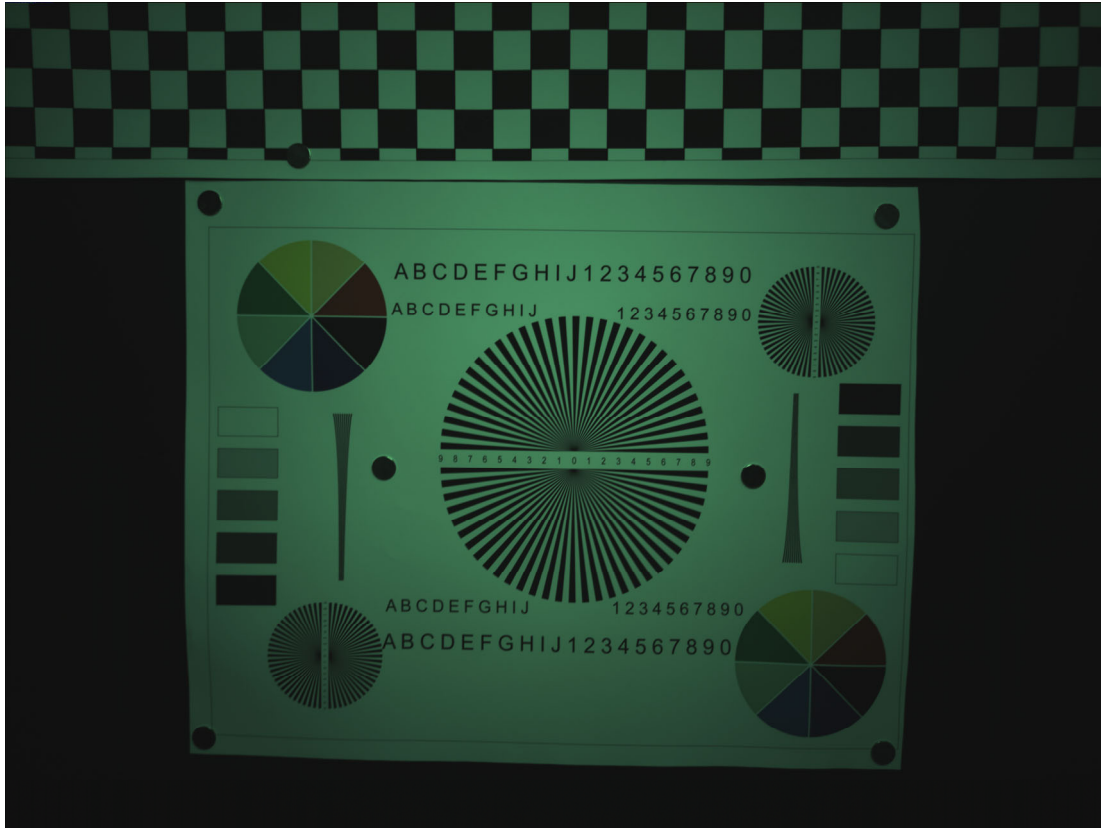
Side View

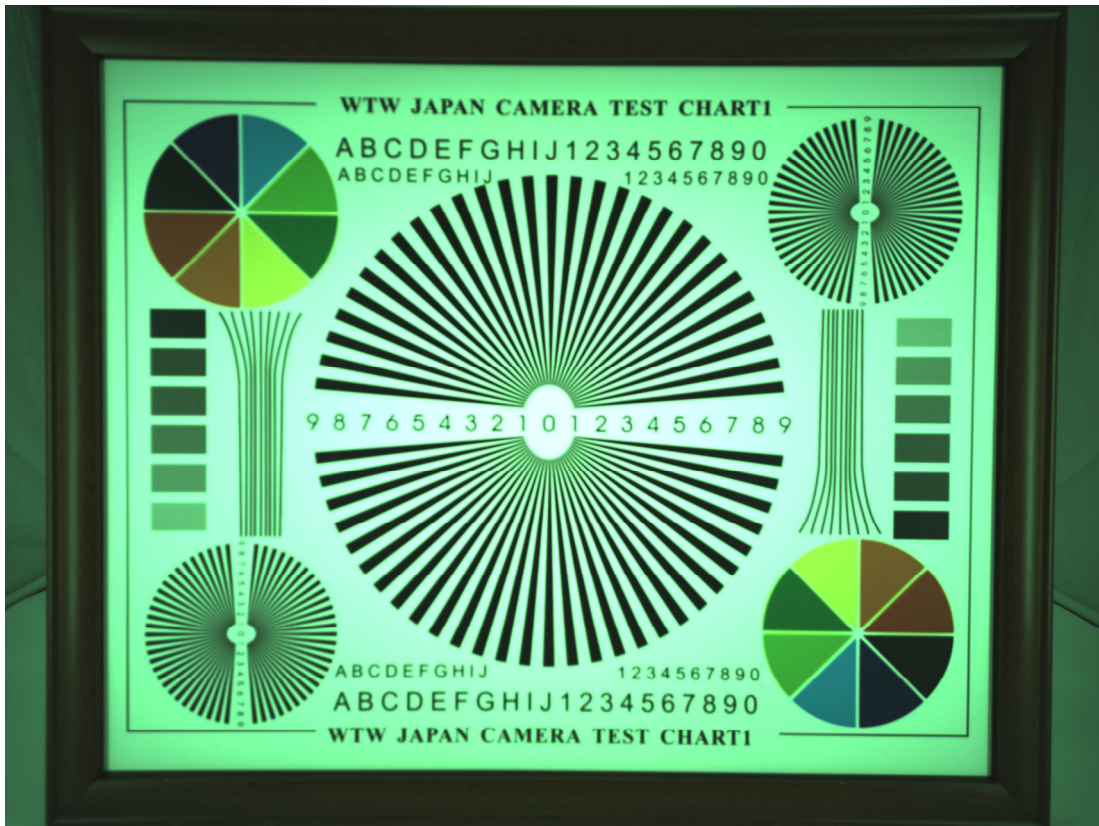
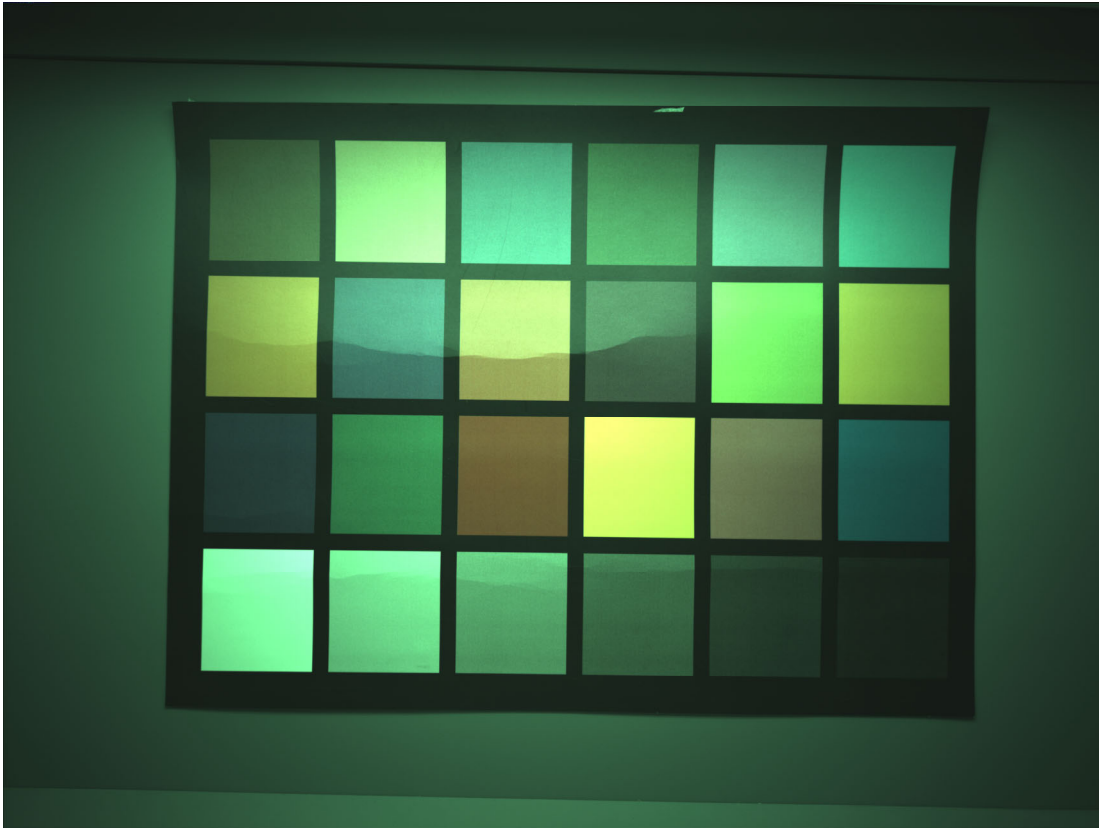


Bottom View



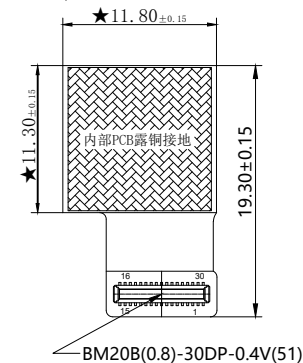
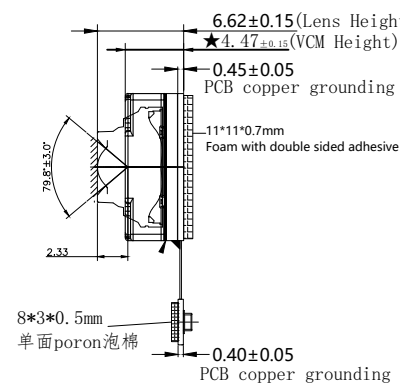
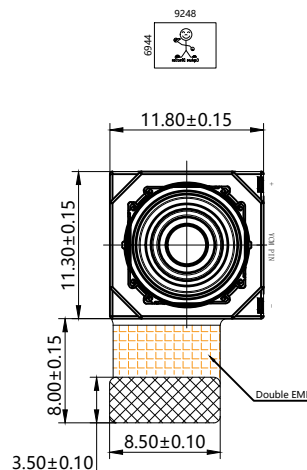
Mating Connector





RoHS	
0	SIGNAL
1	DVDD 1.05V
2	NC
3	AVDD2.8V
4	GND
5	XCLR
6	GND
7	MCN1C
8	D1P2A
9	GND
10	D2N0B
11	D0P0C
12	GND
13	D1N2B
14	D3P2C
15	NC
16	GND
17	MCP1B
18	D0N1A
19	GND
20	D2P0A
21	D3N
22	GND
23	MCLK
24	GND
25	SCL
26	SDA
27	NC
28	DOVDD 1.8V
29	GND
30	DVDD 1.05V

Version	Information
V1.0	First Version
V2.0	Change pin signal and connector
V3.0	Change pin signal



TOP VIEW

SIDE VIEW

BOTTOM VIEW

NOTE:

1.The device slave address:0x20;

Parameters:

1、 Sensor specification:

Image Sensor: IMX686

Pixel: $0.8\mu\text{m} \times 0.8\mu\text{m}$

Lens Type: 1/1.73

Important Voltage Description:

DVDD1.05V (external power supply);

2、 Lens specification:

FOV: 79.8°(D)

F/NO.: 1.89

TV distortion: $<1.5\%$

Composition: 7P+IR FILTER

IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By

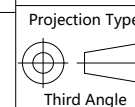
Kevin

Model Name:

KLT-5067-IMX686 V3.0

Checked By

Jacky



Unit:	
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mm

Date:	9/25/2024
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Sheet:
1 of 1

Version:	1/1
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Diagonal 9.251 mm (Type 1/1.73) 64Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

IMX686-AAJH5-C

General description and application

IMX686 is a diagonal 9.251 mm (Type 1/1.73) 64 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Sony's back-illuminated and stacked CMOS image sensor 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. It operates with four power supply voltages: analog 2.9 V and 1.8V, digital 1.1 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 Semiconductor Solutions Corporation 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 Semiconductor Solutions Corporation sales representative if you have any questions.

Functions and Features

- ◆ Back-illuminated and stacked CMOS image sensor
- ◆ Quad Bayer Coding (QBC) color filter arrangement
- ◆ Phase Detection Auto Focus (PDAF)
- ◆ High Frame Rate
 - 27fps@Full resolution (QBC Re-mosaic)
 - 30fps@QBC-HDR
 - 30fps@V2H2 QBC-HDR
 - 120fps@2x2 Adjacent Pixel Binning (16:9)
 - 240fps@2x2 Adjacent Pixel Binning V2H2(16:9)
- ◆ High signal to noise ratio (SNR)
- ◆ Dual sensor synchronization operation
- ◆ Built-in 2D Dynamic Defect Pixel Correction (DPC)
- ◆ Lens Shading Correction (LSC)
- ◆ Built-in temperature sensor
- ◆ Output video format of RAW10, RAW8, RAW14(QBC HDR without Local Tone Mapping)
- ◆ QBC Re-mosaic function
- ◆ QBC HDR function
- ◆ Two PLLs for independent clock generation for pixel control and data output interface
- ◆ CSI-2 serial data output
 - MIPI D-PHY 2lane/4lane, Max. 2.5Gbps/lane, D-PHY spec. ver. 1.2 compliant
 - MIPI C-PHY 1/2/3trio, Max 4.5Gbps/Trio, C-PHY spec. ver. 1.2 compliant
- ◆ 2-wire serial communication (Supports I²C "Fast mode", "Fast-mode Plus" and I3C)
- ◆ 5K bit of OTP ROM for users

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Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony Semiconductor Solutions Corporation cannot assume responsibility for any problems arising out of the use of these circuits.

Device Structure

◆ CMOS image sensor	
◆ Image size	: Diagonal 9.251 mm (Type 1/1.73)
◆ Number of effective pixels	: 9344 (H) × 7024 (V) approx. 65.6 M pixels
◆ Number of active pixels	: 9248 (H) × 6944 (V) approx. 64.2 M pixels
◆ Chip size	: 8.638 mm (H) × 6.460 mm (V)
◆ Unit cell size	: 0.80 μm (H) × 0.80 μm (V)
◆ Substrate material	: Silicon

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	notes
Supply voltage (analog1)	VANA1	-0.3 to +4.2	V	refer to VSS level
Supply voltage (analog2)	VANA2	-0.3 to +2.52	V	
Supply voltage (digital)	VDIG	-0.3 to +1.54	V	
Supply voltage (interface)	VIF	-0.3 to +2.52	V	
Input voltage (digital)	VI	-0.3 to +2.52	V	
Output voltage (digital)	VO	-0.3 to +2.52	V	
Guaranteed Operating temperature	TOPR	-20 to +85	°C	Tj
Guaranteed storage temperature	TSTG	-30 to +85	°C	Tj
Guaranteed performance temperature	TSPEC	0 to +60	°C	Tj

Recommended Operating Voltage

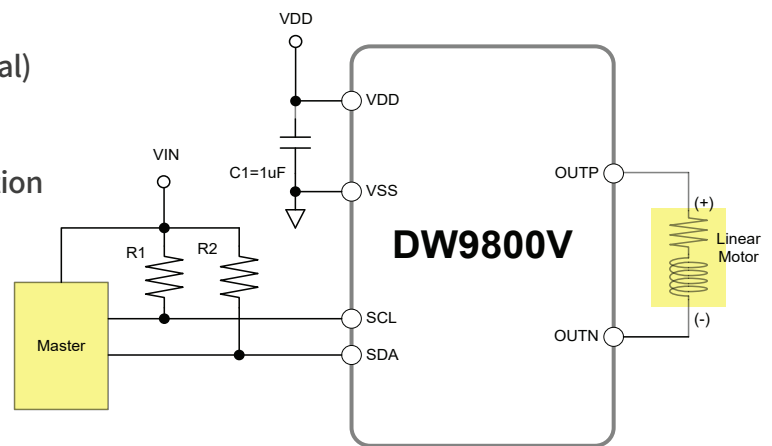
Item	Symbol	Ratings	Unit	notes
Supply voltage (analog1)	VANA1	2.9 ± 0.1	V	refer to VSS level
Supply voltage (analog2)	VANA2	1.8 ± 0.1	V	
Supply voltage (digital)	VDIG	1.1 ± 0.1	V	
Supply voltage (interface)	VIF	1.8 ± 0.1	V	

| DW9800V: Bi-Directional VCM Driver IC

Features

- Power Supply voltage (VDD) : 2.3V to 4.8V
- Typical $\pm 100\text{mA}$ output driving ($\pm 130\text{mA}$ optional)
- 1.8V Serial Interface (I2C Compatible)
- I2C Slave address change support by Factory Option
- Thermal Shutdown Function
- SAC™ (Smart Actuator Control) mode for Faster and accurate ringing control performance

Typical Application

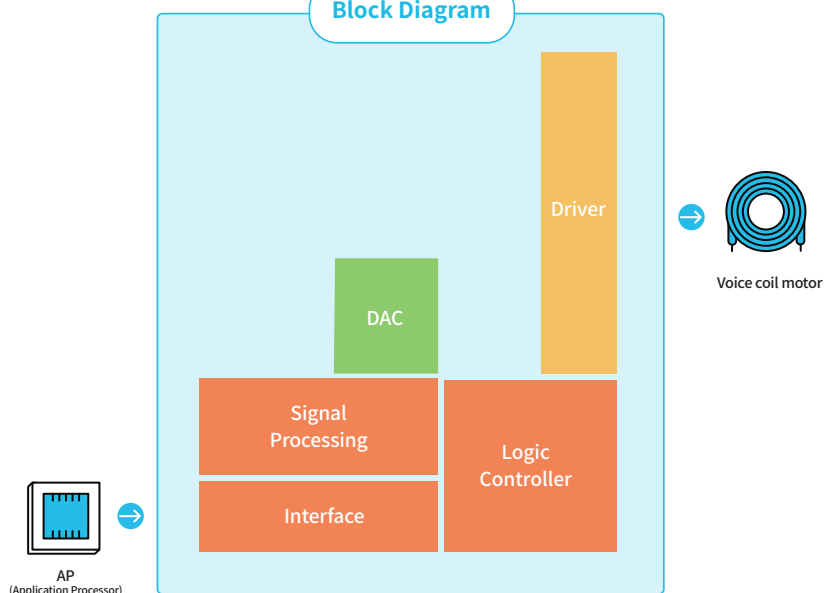


1) : The SAC™ (Smart Actuator Control) is registered trademark and DONGWOON ANATECH's own knowhow and patents.

Applications

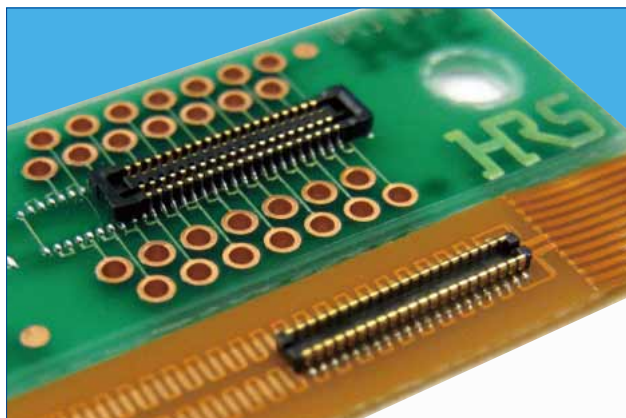
- Lens autofocus
- Optical zoom & shutters
- Camera phones
- Camera modules
- Digital still cameras
- Web/PC cameras

Block Diagram



0.4mm Pitch, 0.6 and 0.8mm Height, Board-to-Board and Board-to-FPC Connectors

BM20 Series



■Features

1. High density mounting capability

A space saving design that keeps the connector compact, but still maintains an adequate vacuum area (no less than 0.7mm wide).
Depth DS : 2.3mm DP : 1.78mm

2. Reliable contact performance

Even though the mated height is low, the BM20 still leads it class in maximum effective mating lengths for each mating height.

<Effective Mating Length>

Height 0.8mm : 0.2mm

Height 0.6mm : 0.15mm

The addition of the two point contact system adds more reliability to the contacts.

3. No restrictions to PCB pattern design for the 0.8 mm height connector *1

This series utilizes a thin wall to insulate the bottom surface of the connector and maintains an effective mating length of 0.2mm. This removes any restriction for PCB pattern layout design under the connector.

Note *1: There are some restrictions for the 0.6 mm height style.

4. Enhanced mating operations

The structure uses guide ribs to ease the mating process and offers a self alignment range of up to 0.3mm. A clear tactile click is used as an indicator to the user that the mating process was completed.

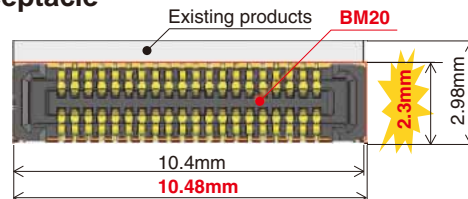
5. Drop and shock resistant structure

Dimples were designed into the contacts to increase their retention force and to absorb the shock delivered from a drop or other impact.

6. Debris resisting design

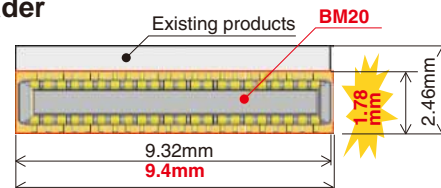
When mated, the connector's design covers the contacts which help to keep dust and other debris away from the contacts. The SMT leads are kept very close to the connector housing which also helps to prevent shorts caused by debris on the exposed contacts

■Receptacle



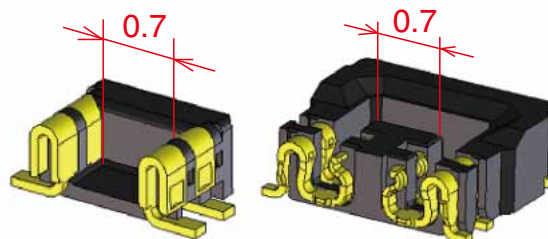
Existing products	BM20
2.98×10.4 = About 31.0mm ²	2.3×10.48 = About 24.1mm ²

■Header



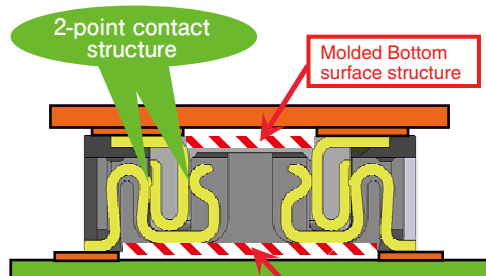
Existing products	BM20
2.46×9.32 = About 22.9mm ²	1.78×9.4 = About 16.7mm ²

Vacuum pick-up

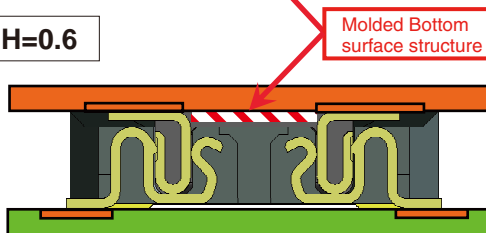


Mating diagram (cross section)

H=0.8



H=0.6



Product Specifications

Ratings	Rated Current	0.3A	Operating Temperature Range	- 35 ~ 85°C (Note 1)	Storage Temperature Range	- 10 ~ 60°C (Note 2)
	Rated Voltage	AC, DC 30V	Operating Humidity Range	20 ~ 80%	Storage Humidity Range	40 ~ 70% (Note 2)

Items	Specifications	Conditions
1. Insulation Resistance	Minimum of 50MΩ	Measured with DC 100V
2. Withstanding Voltage	No flashover or breakdown	Apply AC 100V for 1 minute
3. Contact Resistance	Maximum of 100mΩ	Measured with AC 20 mV, 1 kHz and 1 mA
4. Vibration Resistance	No electrical discontinuity of 1μs or greater	Frequency 10-55 Hz, half amplitude 0.75mm, 3 directions for 2 hours
5. Humidity Resistance	Contact resistance Maximum of 100mΩ Insulation resistance Minimum of 25mΩ	Left at temperature 40±2°C, humidity 90 to 95%, 96 hours
6. Temperature Cycles	Contact resistance Maximum of 100mΩ Insulation resistance Minimum of 50mΩ	(-55°C : 30 minutes → 5~35°C : 10 minutes → 85°C : 30 minutes → 5~35°C : 10 minutes) 5 cycles
7. Durability	Contact Resistance: maximum of 100mΩ	10 mating cycles
8. Soldering Heat Resistance	Should be no melting of resin parts that affects its performance	Reflow : according to the Recommended Solder Profile Hand solder : Soldering iron temperature 350°C, no more than 3 seconds.

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The term "storage" here refers to products stored for a long period prior to board mounting and use. The operating temperature and humidity range covers the non-energized condition of connectors after board mounting and the temporary storage conditions during transportation, etc.

Materials

Product	Component	Materials	Finish	UL Regulation
Receptacle	Insulator	LCP	Black	UL94V-0
Header	Contact	Phosphorous bronze	Gold plating	—————

Product Number Structure

Refer to this page when determining product specifications by model types. Please place orders with part numbers listed in this catalog. The characteristics and specifications of the product described in this catalog are reference values. Please make sure to check the latest delivery specifications at the time of product use.

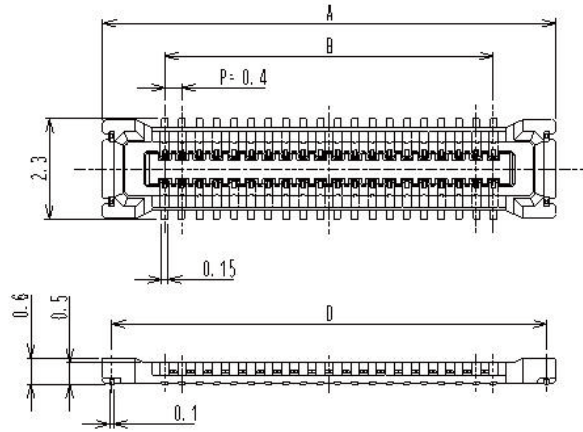
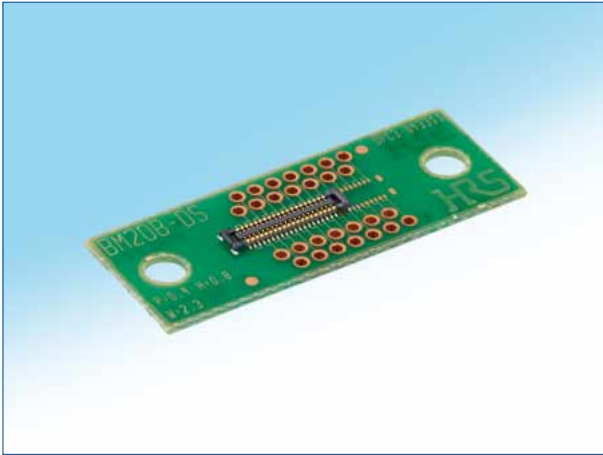
●Receptacle/Header

BM 20 # () - * DS - 0.4 V (51)**

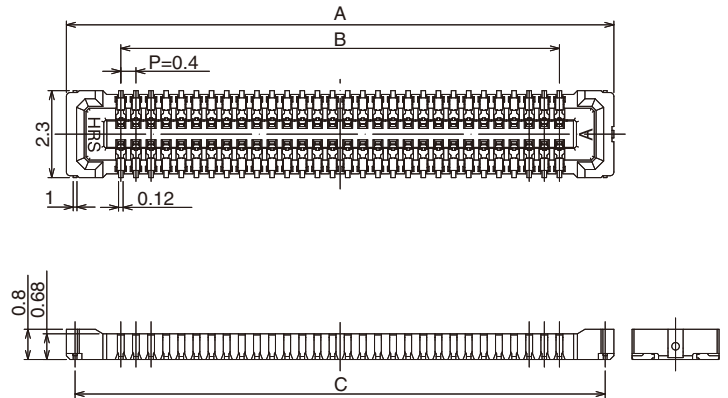
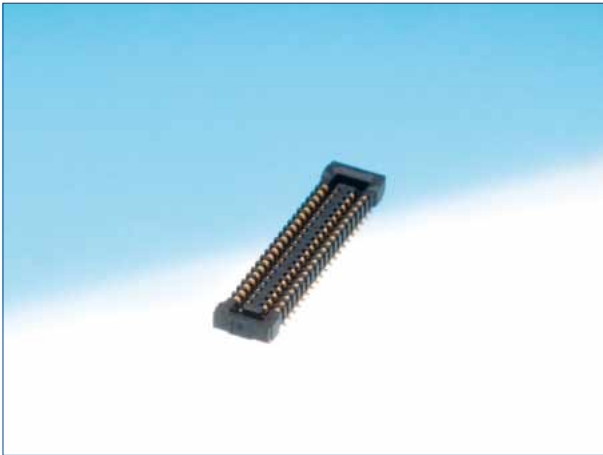
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Series Name : BM	⑥ Connector Type DS : Double row receptacle DP : Double row header
② Series No. : 20	⑦ Contact Pitch : 0.4mm
③ Shape Symbols B : With reinforcing metal fitting	⑧ Terminal Shape V : Vertical SMT
④ Stack height : 0.6mm, 0.8mm	⑨ Packaging (51) : Embossed tape package (8,000 pieces per reel)
⑤ No. of Contacts : Please refer to page 3 and after.	

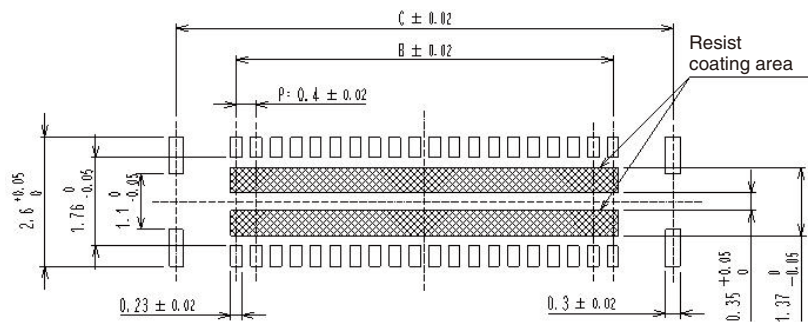
H=0.6mm receptacle



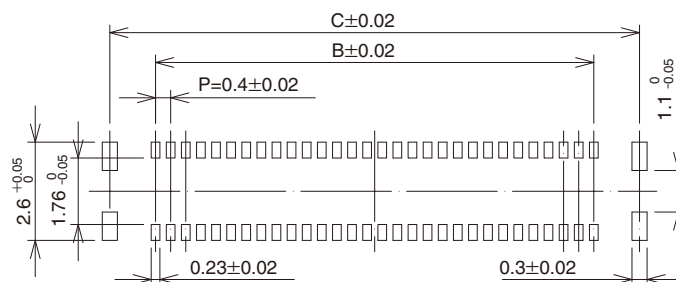
H=0.8mm receptacle



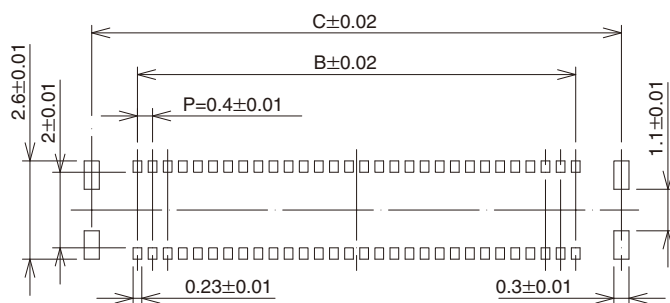
Recommended PCB layout [H= 0.6mm]



Recommended PCB layout [H= 0.8mm]



◆ Recommended metal mask size (Mask thickness 100 μm) [0.6 mm and 0.8 mm common]



Unit : mm

Part No.	HRS No.	No. of Contacts	A	B	C	D
BM20B(0.6)-10DS-0.4V(51)	0684-9308-8 51	10	4.48	1.6	4.02	4.06
BM20B(0.6)-20DS-0.4V(51)	0684-9309-0 51	20	6.48	3.6	6.02	6.06
BM20B(0.6)-24DS-0.4V(51)	0684-9310-0 51	24	7.28	4.4	6.82	6.86
BM20B(0.6)-30DS-0.4V(51)	0684-9311-2 51	30	8.48	5.6	8.02	8.06
BM20B(0.6)-34DS-0.4V(51)	0684-9312-5 51	34	9.28	6.4	8.82	8.86
BM20B(0.6)-40DS-0.4V(51)	0684-9313-8 51	40	10.48	7.6	10.02	10.06
BM20B(0.6)-50DS-0.4V(51)	0684-9314-0 51	50	12.48	9.6	12.02	12.06
BM20B(0.6)-60DS-0.4V(51)	0684-9315-3 51	60	14.48	11.6	14.02	14.06

Part No.	HRS No.	No. of Contacts	A	B	C
BM20B(0.8)-10DS-0.4V(51)	0684-9008-4 51	10	4.48	1.6	4.02
BM20B(0.8)-16DS-0.4V(51)	0684-9041-0 51	16	5.68	2.8	5.22
BM20B(0.8)-20DS-0.4V(51)	0684-9009-7 51	20	6.48	3.6	6.02
BM20B(0.8)-24DS-0.4V(51)	0684-9010-6 51	24	7.28	4.4	6.82
BM20B(0.8)-30DS-0.4V(51)	0684-9011-9 51	30	8.48	5.6	8.02
BM20B(0.8)-34DS-0.4V(51)	0684-9020-0 51	34	9.28	6.4	8.82
BM20B(0.8)-40DS-0.4V(51)	0684-9012-1 51	40	10.48	7.6	10.02
BM20B(0.8)-50DS-0.4V(51)	0684-9013-4 51	50	12.48	9.6	12.02

Note 1 : This product is sold by full reel quantities of 8,000 pieces per reel. Please place orders in full reel quantities.

Note 2 : This connector is NOT polarized.

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



Cameras Applications

your BEST camera module partner



IMAGING DEVICES



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

Camera Reliability Test

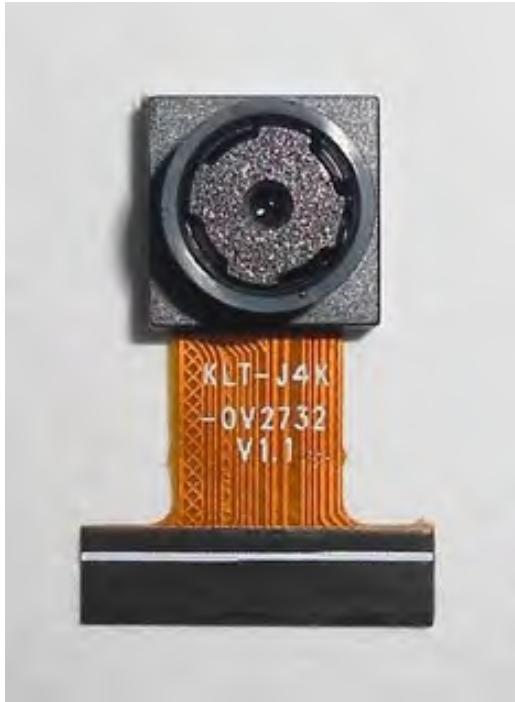
Reliability Inspection Item			Testing Method	Acceptance Criteria
Category		Item		
Environmental	Storage Temperature	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 96 Hours	Temperature Chamber	No Abnormal Situation
	Operation Temperature	High 60°C 24 Hours	Temperature Chamber	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



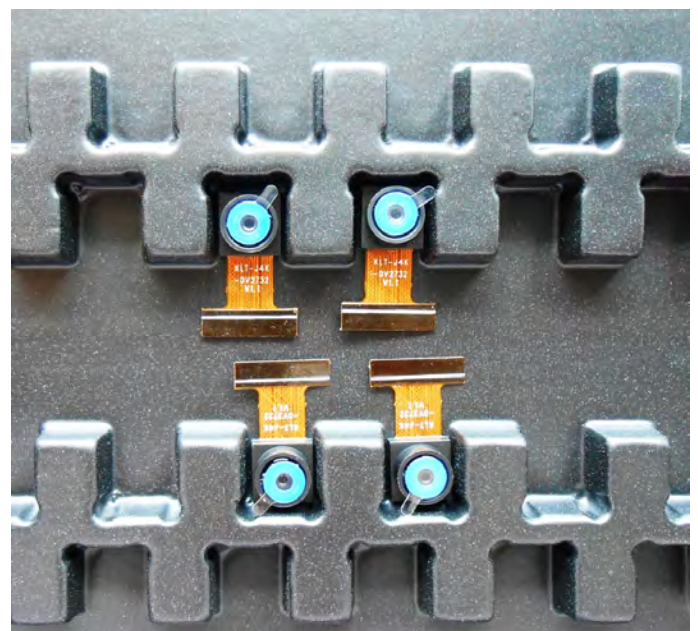
Complete with Lens Protection Film



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



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

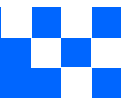


Connectors Box Ready for Shipment





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.



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.



www.KaiLapTech.com sales@KaiLapTech.com Tel: (852) 6908 1256 Fax: (852) 3017 6778



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KLT Strength

Powerful Factory



Professional Service



Promised Delivery



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