



HAMPO-KX2-OV13850 V1.0
13MP OmniVision OV13850 MIPI Interface M12
Fixed Focus Camera Module



Front View



Back View

Specifications

Camera Module No.	HAMPO-KX2-OV13850 V1.0
Resolution	13MP
Image Sensor	OV13850
Sensor Type	1/3.06"
Pixel Size	1.12 um x 1.12 um
EFL	2.30 mm
F.NO	2.50
Pixel	4224 x 3136
View Angle	170.0°(DFOV)
Lens Dimensions	13.70 x 13.70 x 20.92 mm
Module Size	40.05 x 22.00 mm
Module Type	Fixed Focus
Interface	MIPI
Auto Focus VCM Driver IC	None
Lens Model	HAMPO-LENS-MJ7005A
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
Mating Connector	DF30FC-30DS-0.4V



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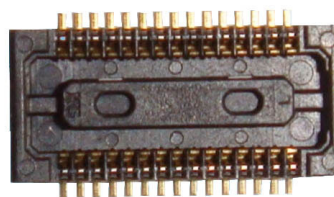
Top View



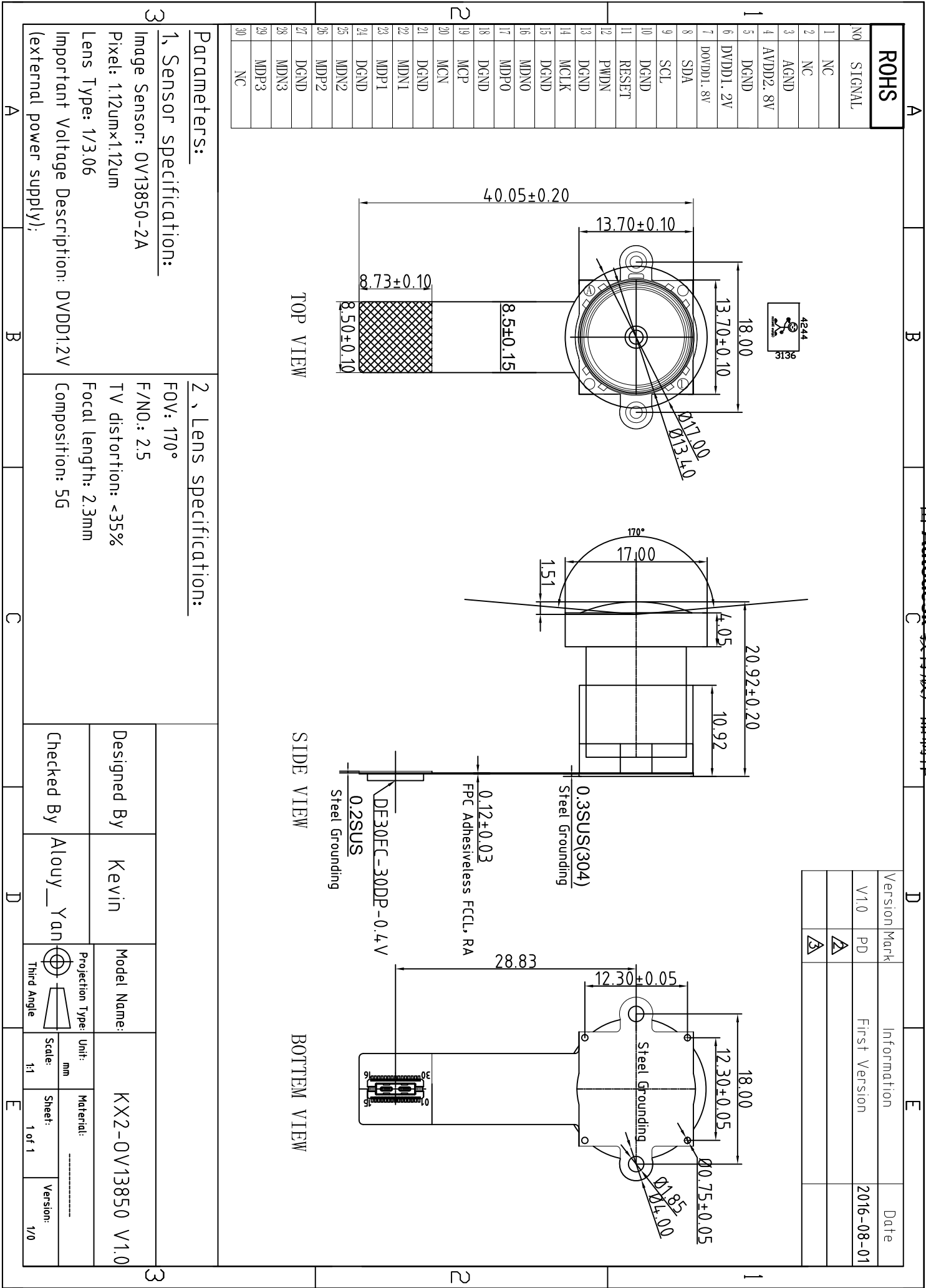
Side View



Bottom View



Mating Connector

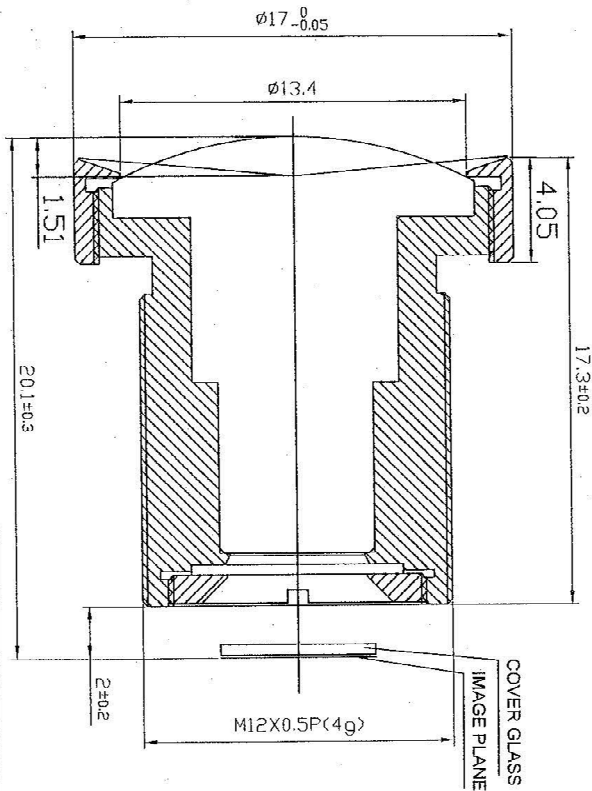




HAMPO-LENS-MJ7005A

SPECIFICATION

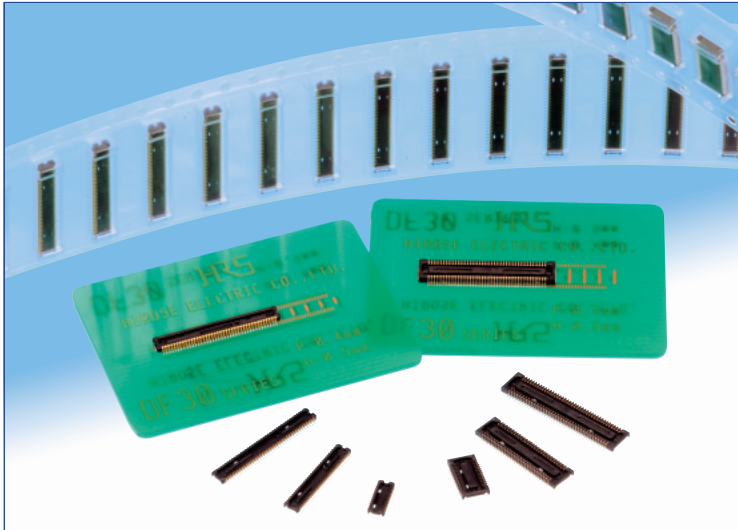
1. FOR 1/3" SENSOR
2. IMAGE HEIGHT $\phi 6.0$
3. EFL=2.3mm
4. WORKING F/NO.=2.5
5. BFL=4.15mm
6. FOV=170°
7. DISTORTION=35%
8. RELATIVE ILLUMINATION=66.5%($\gamma=1$)
9. CONSTRUCTION: 5G
10. THREAD: M12X0.5P
11. IR FILTER 650 \pm 10nm



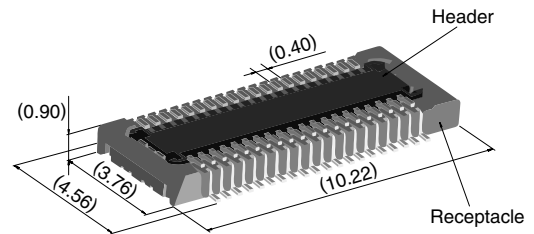
①	修改记录	姓名	日期	单位	比例	图形符号	材料	规格	日期
②	REVISION RECORD	NAME	DATE	UNIT	SCALE	DRAWING NO.	MATERIAL	REV.	DATE
③									
④									
⑤									

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

DF30 Series



Extremely small size



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.

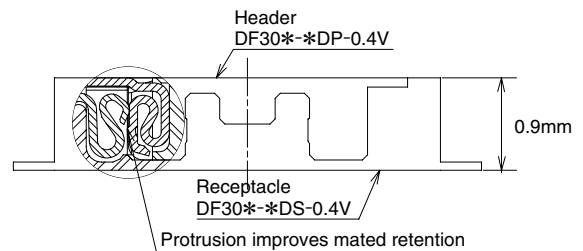
Applications

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

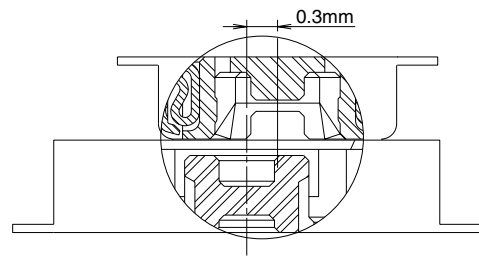
Low profile

Increased mated retention

High contact reliability



Self alignment



■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)
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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	————

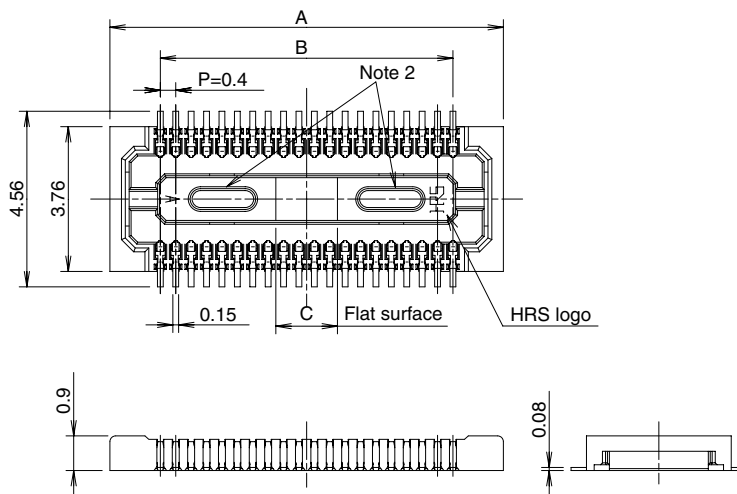
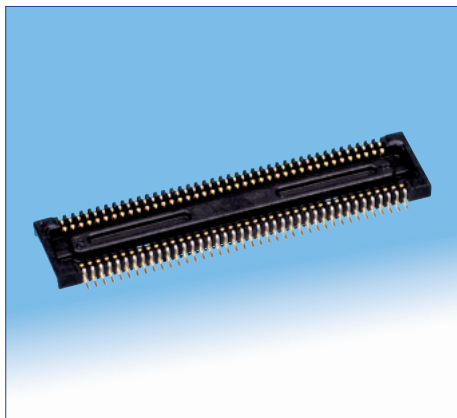
■Ordering information

●Receptacles and Headers

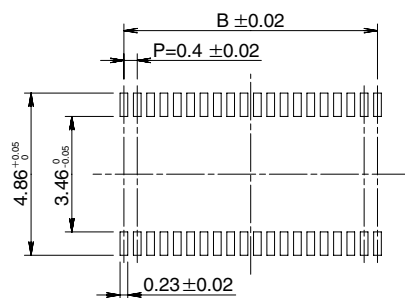
DF30 **FC** - ***** **DS - 0.4** **V** **(**)**

① 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)



◆Recommended PCB mounting pattern



Recommended solder paste thickness: 120 μ m

[Specification number] -**, (**)

(81): Embossed tape packaging (5,000 pieces per reel)

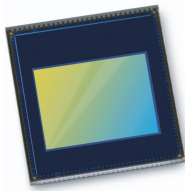
* Tolerances non- accumulative.

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.



OV13850 13MP product brief



available in
a lead-free
package

Power-Efficient 13-Megapixel Image Sensor with Best-In-Class Performance for High-End Smartphones and Tablets

The OV13850 is a high performance PureCel™ 13-megapixel CameraChip™ sensor that delivers best-in-class high- and low-light performance, as well as dramatically reduced power consumption for smartphones and tablets.

The OV13850 sensor offers a number of performance enhancements, including improved full-well capacity (FWC) and sensitivity for industry-leading high- and low-light performance. It also offers a 40 percent reduction in power consumption compared to our previous generation sensor, making the OV13850 ideally suited for feature-rich mobile devices.

The 1/3.06-inch OV13850 supports an active array of 4224 x 3136 pixels (13.2-megapixels) operating at 30 frames per second (fps) for zero shutter lag and can seamlessly transition between recording video and capturing still images. Additionally, the sensor supports 4K2K ultra-high definition video at 30 fps with full-horizontal field of view (FOV) and electronic image stabilization (EIS), as well as high frame rate 1080p HD video at 60 fps with EIS to enable high quality videos.

The OV13850 fits into an industry standard 8.5 x 8.5 x 5 mm module.

Find out more at www.ovt.com.

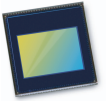
Applications

- Cellular Phones
- PC Multimedia
- Tablets

Product Features

- PureCel™ image sensor
- 1.12 μm x 1.12 μm pixel
- optical size of 1/3.06"
- 31.2° CRA for <6 mm z-height
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- support for image sizes: 13.2MP (4224x3136), 10MP (16:9 - 4224x2376), 4K2K (3840x2160), EIS 1080p (2112x1188), EIS 720p (1408x792), and more
- 13.2MP at 30 fps
- two-wire serial bus control (SCCB)
- strobe output to control flash
- 8 kbits of embedded one-time programmable (OTP) memory
- two on-chip phase lock loops (PLLs)
- programmable controls: gain, exposure, frame rate, image size, horizontal mirror, vertical flip, cropping, and panning
- image quality controls: defect pixel correction, automatic black level calibration, lens shading correction, and alternate row HDR
- built-in temperature sensor
- suitable for module size of 8.5 x 8.5 x <6 mm

OV13850



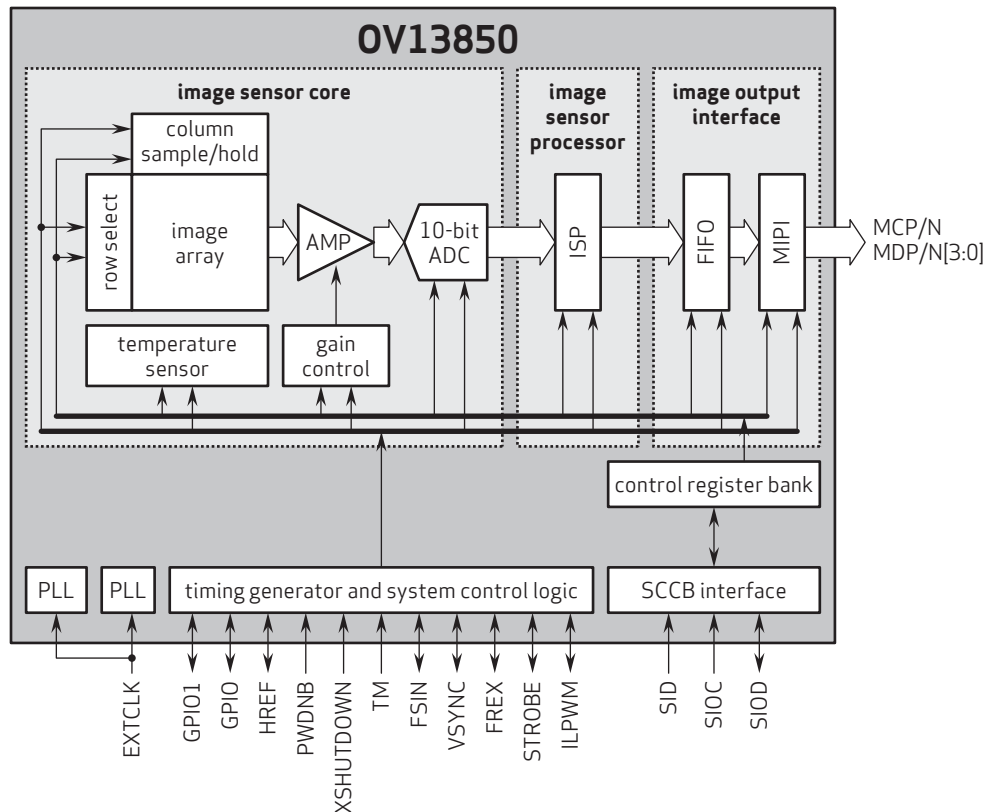
Ordering Information

- OV13850-G04A
(color, chip probing, 200 μm backgrinding, reconstructed wafer with good die)

Product Specifications

- active array size: 4224 x 3136
- power supply:
 - core: 1.14 - 1.26V (1.2V nominal)
 - analog: 2.6 - 3.0V (2.8V nominal)
 - I/O: 1.7 - 3.0V (1.8V or 2.8V nominal)
- power requirements:
 - active: 223 mW
 - standby: 300 μW
 - XSHUTDOWN: 1 μW
- temperature range:
 - operating: -30°C to +85°C junction temperature
 - stable image: 0°C to +60°C junction temperature
- output interfaces: up to 4-lane MIPI serial output
- output formats: 10-bit RGB RAW
- lens size: 1/3.06"
- lens chief ray angle: 31.2°
- input clock frequency: 6 - 64 MHz
- maximum image transfer rate: 30 fps
- scan mode: progressive
- pixel size: 1.12 μm x 1.12 μm
- image area: 4815 μm x 3678.3 μm
- die dimensions: 6210 μm x 5517 μm

Functional Block Diagram



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OmniVision



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 Low -20°C 0.5 Hours Cycling in 24 Hours	Temperature Chamber	No Abnormal Situation
Physical	Drop Test (Free Falling)	Without Package 60cm	10 Times on Wood Floor	Electrically Functional
		With Package 60cm	10 Times on Wood Floor	Electrically Functional
	Vibration Test	50Hz X-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Y-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Z-Axis 2mm 30min	Vibration Table	Electrically Functional
	Cable Tensile Strength Test	Loading Weight 4 kg 60 Seconds Cycling in 24 Hours	Tensile Testing Machine	Electrically Functional
Electrical	ESD Test	Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional
		Air Discharge 4 KV	ESD Testing Machine	Electrically Functional
	Aging Test	On/Off 30 Seconds Cycling in 24 Hours	Power Switch	Electrically Functional
	USB Connector	On/Off 250 Times	Plug and Unplug	Electrically Functional





Camera Inspection Standard

Inspection Item		Inspection Method	Standard of Inspection
Category	Item		
Appearance	FPC/ PCB	Color	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

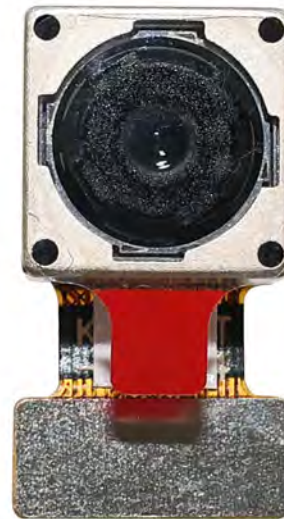


HAMPO Package Solutions

Hampo Camera Module



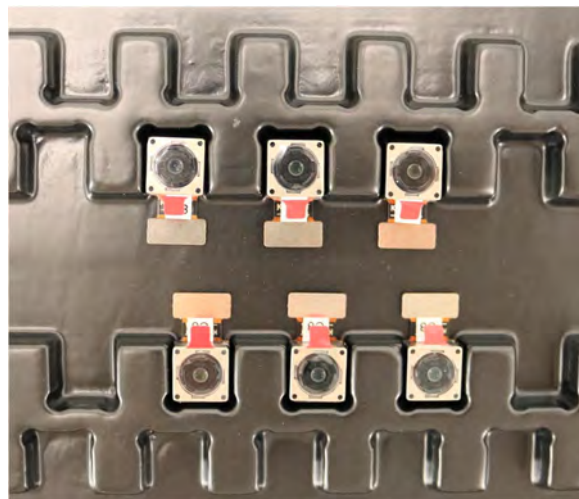
Complete with Lens Protection Film



Tray with Grid and Space



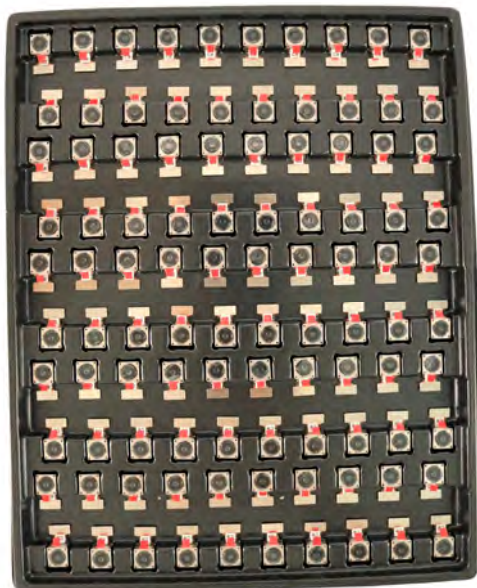
Place Cameras on the Tray



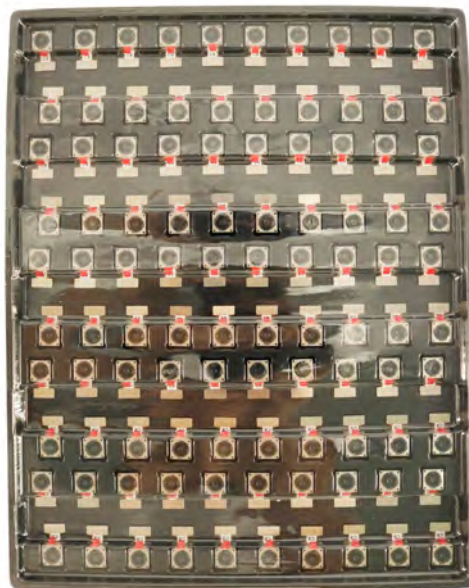


Camera Modules Package Solution

Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag



Vacuum the Anti-Static Bag





Camera Modules Package Solution

Sealed Vacuum Anti-Static Bag with Labels

1. Model and Description 2. Quantity 3. Manufacturing Date Code 4. Caution





Large Order Package Solution

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





An open, empty cardboard box with a white interior lining. The box is shown from a top-down perspective, with the lid flaps open and folded outwards. The interior is lined with a white material, possibly foam or paper, which is visible as a flat surface. The box is set against a plain white background.

HAMPO

HAMPO Model No.
HAMPO M6A12 (HMSM-V18)
HSRM, SMP Interface
Auto Focus, 70-8 Degree

DATE IN CHINA

Tray

Tray 1 of 1
300 PIECES
Production Date
20 August 2022
Date Code
2234 (Week 34, 2022)



Sample Order and Connector Package Solution

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





Company HAMPO

Dongguan Hampo Electronic Technology Co., Ltd. was established in 2015, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. Hampo is occupying 150,000 square feet automated plants with 500 employees of annual throughput 180,000,000 units cameras.

Hampo 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. Hampo 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

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





Hampo Strength

Powerful Factory



Professional Service



Promised Delivery

