Product Specification

Product: InnoCAM_DCM_OV8856PDAF

Product Part Number: INV-OV8856FF-8MP

Revision: Rev 1.0

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REVISION HISTORY

Revision	Description of change	Changed by	Date
1.0	Initial Draft	Jamie Lynn	02/22/2024

APPROVAL

Company	Name	Signature	Date
InnoWave Design LLC	Tony Reed		02/22/2024
InnoWave Design LLC	Jamie Lynn		02/23/2024

Contents

1. General

The INV-OV8856FF-8MP has the Omnivision OV8856 which is a new 1/4-inch 8 megapixel PureCel® sensor designed for front- and rear-facing camera applications in mainstream mobile devices. Built on advanced 1.12-micron pixel architecture, the extremely compact OV8856 offers industry-leading image quality and improved performance when compared with previous-generation 8 megapixel image sensors. The 1/4-inch OV8856 leverages OMNIVISION's PureCel® pixel architecture to capture full-resolution 8 megapixel images and video at 30 frames per second (fps), and 1080p high-definition (HD) video at 60 fps. The power-efficient OV8856 sensor also supports interlaced high dynamic range (iHDR) for clear images and video in high- and low-light conditions. Using a high-speed four-lane MIPI interface, the OV8856 can output full-resolution, 8 megapixel 30 fps video over two MIPI lanes without requiring any data compression.

Specifications

Sensor Make and Model	Omnivision OV8856
Sensor Type	CMOS
Resolution	8MP
Active array size	3264 x 2448 pixels
Pixel Size	1.12um x 1.12um
Module Size	7.5x6.5x3.88mm
Optical size	1/4"
Output Format	10-bit RGB RAW data
Chroma	Color
Image Area Size	Diagonal 3678um x 2767um
Substrate material	Silicon
Frame Rate	Full @30fps
Sensor CRA	32.9 degrees for <5mm Z-height
Power Supply	Core - 1.14-1.26V (1.2V Nominal) Analog - 2.6-3.0V (2.8 Nominal) I/O - 1.7-1.9V (1.8V)
Power Requirements	Active – 150mW Standby – 0.8 uW XSHUTDN - 1 uW
Input Clock Frequency	6 - 27 MHz
Guaranteed Temperature Ranges	Operating -30°C to +85°C Stable Image - 0°C to +60°C
Lens Manufacturer	Kingti Optical
Lens Model	DP0863B-10
Lens Type	Fixed Focus
Field of View (FOV) degrees	Vertical 61.4 Horizontal 76.6 Diagonal 89
EFL	2.23mm

Distortion (TV)	<1.5%
Focus Range	TBD

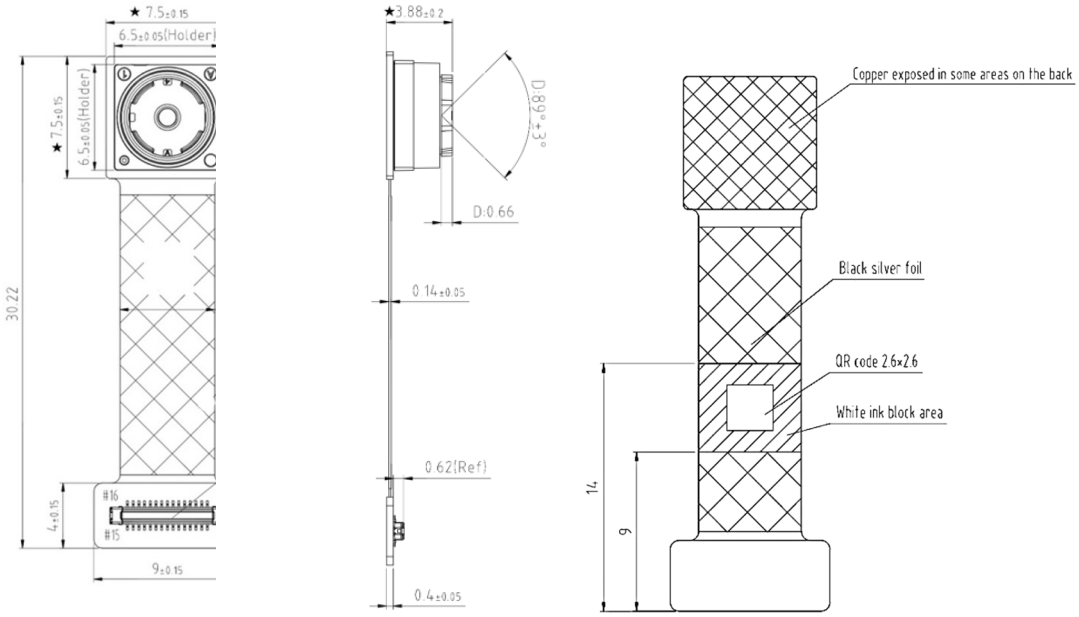
Table 1: Specifications

1.1. Sensor Features

- 1.12 µm x 1.12 µm pixel
- Optical size of 1/4"
- 32.9° CRA for less than 5 mm Z-height
- Programmable controls for: frame rate, mirror and flip, cropping, windowing
- Supports images sizes: 8MP (4:3, 3264×2448), 8MP (16:9, 3264×1836), EIS 1080p (2112×1188), 1080p (1920×1080), EIS 720p (1408×792), and more
- 8MP at 30 fps (720 Mbps/4-lane or 1.44 Gbps/2-lane)
- Two on-chip phase lock loops (PLLs)
- Two-wire serial bus control (SCCB)
- 8k bits of embedded one-time programmable (OTP) memory
- Image quality control: Defect pixel correction, Automatic black level calibration, Lens shading correction, Alternate row HDR
- Suitable for module size of 8.5 x 8.5 x ~4 mm

1.2. Layout

Figure 1: camera module assembly layout



1	MCLK
2	DGND
3	NC
4	RESET
5	NC
6	FSN
7	AVDD
8	AGND
9	DVDD
10	NC
11	NC
12	SDA
13	SCL
14	DGND
15	MDN0
16	MDP0
17	MDN1
18	MDP1
19	DGND
20	MCN
21	MCP
22	DGND
23	MDN2
24	MDP2
25	MDN3
26	MDP3
27	DGND
28	NC
29	NC

2.1. Recommended Operation Voltage

Item	Symbol	Ratings	Unit	notes
Supply voltage (analog)	VANA	2.8 ± 0.1	V	refer to VSS level
Supply voltage (digital)	VDIG	1.2 ± 0.1	V	
Supply voltage (interface)	VIF	1.8 ± 0.1	V	

Table 4: Recommended operation voltage

2.2. Operating Temperature

The camera module shall be fully functional when ambient temperature is between -30°C to 85°C with image quality remaining stable. Test duration is 24 hours.

2.3. Storage Temperature

The camera module shall withstand storage temperatures between -30°C to 70°C. Test duration is 48 hours.

2.4. Humidity

The camera module shall withstand humidity at or below 90% RH under non-condensing conditions for 24 hours.

2.5. Thermal Shock

The camera module shall withstand the following temperatures (with humidity off) -30°C to 70°C
20 min cycles (10 min dwell, 5 min ramp, 10 min dwell)

2.6. High Temperature Test

60C, humidity off, 24 hours

2.7. Low Temperature Test

-20C, humidly off, 24 hours

Stable image is -30°C to 70°C junction temperature. The sensor functions but image quality may be noticeably different at temperatures outside of stable image range. Image quality remains stable between 0°C to 50°C.

3. Reliability Requirements

3.1. Drop Test

The camera module shall withstand a 1.2m Drop in packaging onto Concrete (12 drops) Random Positions

3.2. Random Vibration

The camera module shall withstand vibration of the following conditions
Frequency range： 50Hz
Amplitude：2mm Duration 10 minutes for each position
Test all 3 axes (X, Y, Z)

3.3. Salt Fog Test

Condition: 5%nacl solvent Test duration： 24H

3.4. ESD (Electronic Discharge)

The camera module shall withstand Electrostatic Discharge of
8KV Contact Discharge
12KV Air Discharge
10 Times for a Second

4. Product Performance Verification

To verify the camera module performance, the following tests will be conducted at either the factory during production or as an initial qualification characterization in either the factory laboratory or at the InnoWave laboratory.

4.1. Electrical Parameters

Parameter	Test Frequency
Current consumption – Standby	Initial Qualification
Current consumption – Idle	Initial Qualification
Current consumption – Viewfinder	Initial Qualification
Current consumption – Capture	Initial Qualification

Table 5: Electrical parameter measurements

4.2. Image Test Parameters

Parameter	Test Frequency
Thermal Shock	Initial Qualification
Humidly	Initial Qualification
High Temperature Test	Initial Qualification
Low Temperature Test	Initial Qualification
Drop Test	Initial Qualification
Random Vibration Test	Initial Qualification
Salt Fog Test	Initial Qualification
ESD Test	Initial Qualification

Table 6: Image parameter measurements

4.3. Mechanical Parameters

Parameter	Test Frequency
X Dimension (mm)	Initial Qualification
Y dimension (mm)	Initial Qualification
Z Dimension (mm)	Initial Qualification

Table 7: Mechanical parameter measurements

4.4. Environmental and Reliability Test Parameters

Parameter	Test Frequency
Thermal Shock	Initial Qualification
Humidly	Initial Qualification
High Temperature Test	Initial Qualification
Low Temperature Test	Initial Qualification
Drop Test	Initial Qualification
Random Vibration Test	Initial Qualification
Salt Fog Test	Initial Qualification
ESD Test	Initial Qualification

Table 8: Environmental and Reliability parameter measurements

5. Product Identification TBD

All modules will be marked with an identification number using laser marking

6. Packaging

The package will prevent damage to the components during transport and will be suitable for electrostatic-sensitive devices. The single camera modules shall be delivered in a reusable tray of anti-static plastic material. Several cameras shall be packed in one tray.
The tray has separate holders for each camera module.

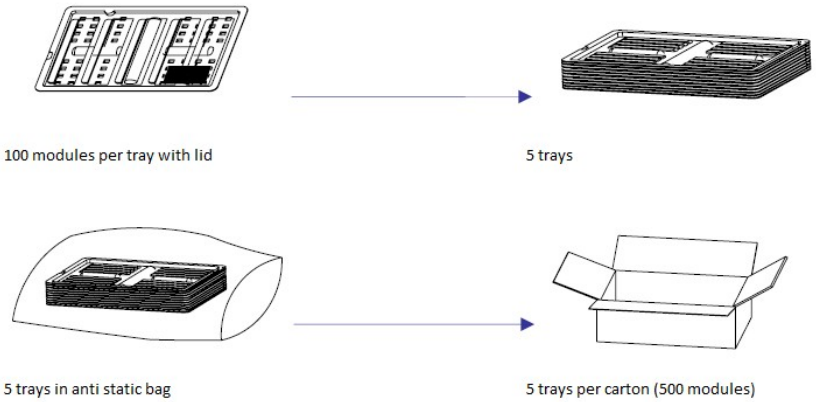


Figure 3: Packaging Example