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Product Specification

Product: InnoCAM_DCM_IMX415

Product Part Number: INV-IMX415-8MP

Revision: Rev 1.0

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INV-IMX415- 8MP

REVISION HISTORY

Revision	Description of change	Changed by	Date
1.0	Initial Draft	Jamie Lynn	06/27/2025
1.1	Rev 1.1 – New Lens	William Tran	07/21/2025

APPROVAL

Company	Name	Signature	Date
InnoWave Design LLC	Jamie Lynn		06/27/2025
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1. General

The IMX415 is a diagonal 6.4 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.46 M effective pixels. This chip operates with analog 2.9 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time. (Applications: Surveillance cameras, FA cameras, Industrial cameras)

1.1. Specifications

Sensor Make and Model	Sony IMX415 (RGB)
Sensor Type	CMOS
Resolution	8.29MP
Active array size	3840(H) x 2160(V) pixels
Pixel Size	1.45um x 1.45um
Optical Format	1/2.8" (diagonal $\approx$ 6.43 mm)
Size	26.5 x 26.5mm
Chroma	Color (RGB Bayer, STARVIS)
Substrate material	Silicon
Frame Rate	60.3 fps @12-bit; 90.9 fps @10-bit (rolling shutter)
Input Voltage	Analog: 2.8–2.9 V; Digital: 1.1 V; I/O: 1.8 V
Input Clock Frequency	24 / 27 / 37.125 / 72 / 74.25 MHz
Operating Temperature Range	–30 °C to +85 °C
Field of View (FOV) degrees	D=129°, H=108°, V=57°
Aperture (F#)	1.1 $\pm$ 10%
TV Distortion	<-20%
Focus Range	1.13m~3.45m (at 1.7m)
Lens Size	1/2.8" 2G5P+IR (650nm)



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Environment Requirements:

2.1. Operating Temperature

The camera module shall be fully functional when ambient temperature is between -20°C to 60°C with image quality remaining stable. Test duration is 24 hours.

2.2. Storage Temperature

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

2.3. Humidity

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

2.4. 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)

2.5. High Temperature Test

60C, humidity off, 24 hours

2.6. 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. Salt Fog Test

Condition: 5%nacl solvent Test duration: 24H

3.3. 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
Humidity	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

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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

All modules will be marked with an identification number using laser marking or bar code label.

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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.

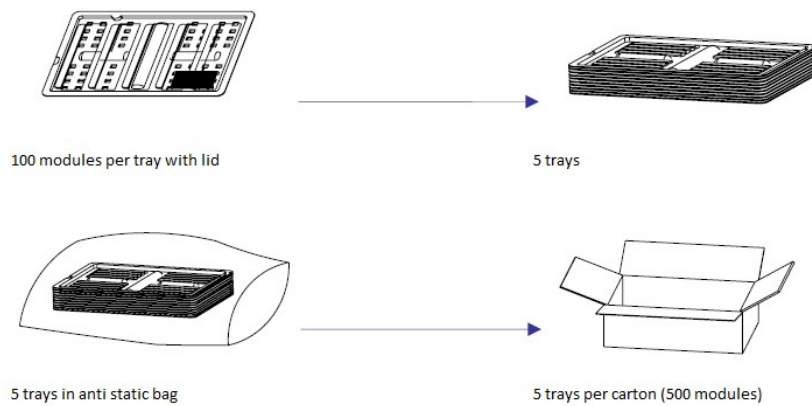


Figure 3: Packaging Example