SHENZHEN SINOSEEN TECHNOLOGY

SAMPLE APPROVAL SPECIFICATION

Customer：_____

Description: 100W CMOS Compact Camera Module

Model Number: SNS12144-V1.0

Submission Date：2025-05-24

Approval:

SUPPLIER CONFIRMATION	Department	Engineer	Quality inspector	Approve
	Signature	Liu	Chen	Lee

CUSTOMER CONFIRMATION	Department	Structure Appearance	Electronics	Approve
	Signature			

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1. Overall performance parameters

➢ Product Introduction

The OV9734 (color) and OV9234 (b&w) PureCel® image sensors are low voltage, high-performance 1/9-inch 720p CMOS image sensors that provide the full functionality of a single chip, 720p (1280x720) and VGA (640x480) camera. They provide full-frame, sub-sampled and cropped images in various formats via the control of the Serial Camera Control Bus (SCCB) interface.

The OV9734/OV9234 has an image array capable of operating at up to 30 frames per second (fps) in 720p resolution and 45 fps in VGA resolution with complete user control over image quality, formatting and output data transfer. Some image processing functions, such as exposure control, defective pixel canceling are programmable through the SCCB interface. In addition, OmniVision image sensors use proprietary sensor technology to improve image quality by reducing or eliminating common lighting/electrical sources of image contamination, such as fixed pattern noise, smearing, etc., to produce a clean, fully stable, color image.

➢ Specifications and characteristics

total height：3.6±0.2mm

base size：⌀ 4±0.1mm

image size：1280*720

IR anti infrared interference filter：650 IR

➢ Chip parameters

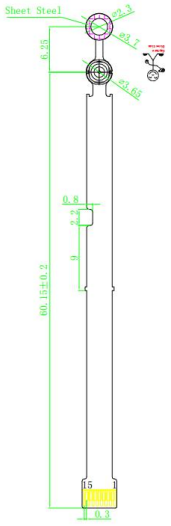
- **active array size:** 1280 x 720
- **power supply:**
  analog: 2.6 ~ 3.0V (2.8V normal)
  core: 1.2VDC ± 5%
  I/O: 1.8V
- **power requirements:**
  active: 69 mW
  XSHUTDN: 0.9 µW
- **temperature range:**
  operating: -30°C to 85°C junction temperature (see **table 7-2**)
  stable image: 0°C to 50°C junction temperature (see **table 7-2**)
- **output formats:** 10-bit Raw RGB
- **lens size:** 1/9"
- **lens chief ray angle:** 32.1° (see **figure 9-2**)
- **input clock frequency:** 6 ~ 27 MHz (see **table 7-5**)
- **scan mode:** progressive
- **maximum image transfer rate:** (see **table 2-2**)
- **sensitivity:** 585 mV/Lux-sec
- **shutter:** rolling shutter
- **max S/N ratio:** 36.4 dB
- **dynamic range:** 68.4 dB @ 16x gain
- **maximum exposure interval:** 798 x t_{ROW}
- **pixel size:** 1.4 µm x 1.4 µm
- **dark current:** 2e^-/sec @ 50°C junction temperature
- **image area:** 1819.58 µm x 1033.34 µm
- **die dimensions:** 2502 µm x 1692 µm (COB), 2552 µm x 1742 µm (RW) (see **section 8** for details)

2. Product drawing

Pad No.	Pad Name
1	VCC_3V3
2	SDA
3	SCL
4	LED+
5	RESET
6	GND
7	MCP
8	MCN
9	GND
10	MDP1/NC
11	MDN1/NC
12	GND
13	MDP0
14	MDN0
15	GND

Date	Rev.	Sym.	Revisions	Signed
2025-01-02	V1.0		NEW	

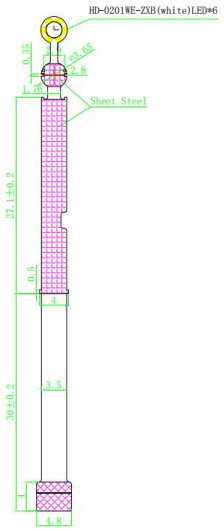
Top view



Side view



Bottom view



NOTE:unmarked dimension torlerance is ±o.1mm

Sensor I2C address:0x6C

Lens		Sensor	
EFL	1.2±5%mm	Chip Type	0V9734
F.NO	2.6±5%	Array Size	1280*720
View.Angle	D:90° H:81° V:52° ±3°	AVDD	2.8V
Distortion	<2%	DOVDD	1.8V
Element	3P	DVDD	1.2V

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		PROJECT		DRAW	LJH	DATE	2025-03-29
UNIT	mm	MODEL#	SNS12144-V1.0	AUDIT		DATE	VERSION
SCALE	1:1			APPROVE		DATE	V1.0

Pad No.	Pad Name
1	VCC_3V3
2	SDA
3	SCL
4	LED+
5	RESET
6	GND
7	MCP
8	MCN
9	GND
10	MDP1/NC
11	MDN1/NC
12	GND
13	MDP0
14	MDN0
15	GND

Date	Rev.	Sym.	Revisions	Signed
2025-01-02	V1.0		NEW	

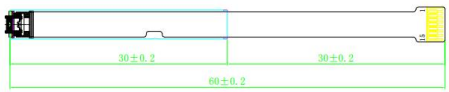
Side view



Front view



Top view



NOTE:unmarked dimension torlerance is ±o.1mm

Sensor I2C address:0x6C

Lens		Sensor	
EFL	1.2±5%mm	Chip Type	0V9734
F.NO	2.6±5%	Array Size	1280*720
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3. Product appearance specifications

Appearance				
#	Item	Requirements	Testing method	Unqualified classification
1	Module appearance	There is no dirt on the surface of the module, no scratches visible to the naked eye, and no impurities in the plastic	8X magnifier	A
2	lens	When inspecting under the light of 800±100 Lux intensity head-up and 45-degree reflected light, there should be no visible scars or dirt.	8X magnifier	A
3	Thread glue	The dispensing length is 1/3-1/2 of the circumference, and the glue should not overflow to the lens end face and the lens base	8X magnifier	A
4	Sealant	Fill the sealant evenly between the base and the PCB without gaps or thickness,Uneven phenomenon, there must be no glue overflowing the edge of the FPC to cause the appearance size to exceed the standard	8X magnifier	A
5	PCB	1) The surface is free from dirt and the printed characters are clear; 2) The length of the edge burr is less than 1mm, the width is less than 0.3mm; 3) The length of the edge notch is less than 1mm, and the width is less than 0.1mm. There are no more than 2 places per edge	45Xmicroscope (Continuous zoom)	A
Dimensions				
#	Item	Requirements	Testing method	Unqualified classification
1	Height	Meet the requirements of the drawings	Digital caliper	A
2	Length	Meet the requirements of the drawings	Digital caliper	A
3	Width	Meet the requirements of the drawings	Digital caliper	A

4. Product image specifications

Optical performance inspection requirements				
#	Test items	Requirements	Testing method	Unqualified classification
1	Dust	Under the white field, acquire the image, and visually observe the entire screen without any visible foreign objects.	Test fixture. Small light box. 6500K white backlight	A
2	imaging direction	Meet the requirements of the drawings	Test Fixture	A
3	Dead & Wound Pixel	1) Under dark field: The total number of bright spots is less than 400 pixels; the clustered bright spots of 2 adjacent pixels are less than 20; there is no clustered bright spot of more than 3 pixels. 2) Under the white field: the total number of dark spots is less than 400 pixels; the clustered dark spots of 2 adjacent pixels are less than 20; there is no clustered dark spot of more than 3 pixels.	Test software small light box (6500K white backlight)	A
4	Resolution	100W pixels: The center is not less than 350LW/PH	MTF test procedure	A
5	FOV	D:90° H:81° V:52°±3°	Test fixture, field of view angle standard board	A
6	Shading	The four corners are 90% away from the center. The average brightness of the test field is at least 45% of the brightness of the center test field; the brightness of each corner is more than 35% of the center brightness (the sampling frame size is 40*40 pixels, and the sensor vignetting compensation function is not turned on).	Test software, small light box (3400Lux, 6500K white backlight)	A
7	Color	The error of color reproduction is not more than 20%	Test software Color checker card	A
8	TV distortion	Pincushion distortion (positive number) or barrel distortion (negative number) are not more than 1%	Test software ISO12233 standard board	A
9	Grayscale	The brightness difference between two adjacent gray scales must be less than 8	Test software, gray scale target board	A
10	CA	Less than 0.5	Test software ISO12233 standard board	A
11	Tensional	Not less than 0.5 kgf .cm	Torque wrench	A
12	Thrust	Not less than 20 N	Thrust gauge	A

Classification of unqualified products:

A) Severely unqualified: the batches determined by the inspection are unqualified or cause economic losses of the University of Education, unqualified direct image product quality, main functions, performance technical indicators, etc., indicated by the letter A

B) General unqualified: Refers to the unqualified product that can meet the following conditions at the same time. It is indicated by the letter B. I) does not affect the appearance quality of the final product; II) does not affect the technical performance of the final product; III) the raw material or the final product does not Affect the processing or assembly of the next process

5. Product sampling plan

#	Test items	Sampling frequency	Testing method	Remarks
Imaging and Reliability Project				
1	Dust	Each batch N=5, C=0	Same as production	Production inspection project
2	imaging direction	Each batch N=5, C=0	Test Fixture	Production inspection project
3	Dead & Wound Pixel	Each batch N=5, C=0	Same as production	Production inspection project
4	Resolution	Each batch N=5, C=0	MTF test procedure	Production inspection project
5	FOV	Each batch N=5, C=0	Test fixture, field of view angle standard board	QA sampling items for full inspection and evaluation items in the sample stage
6	Image uniformity	Each batch N=5, C=0	Test software, small light box (3400Lux, 6500K white backlight)	Production inspection project
7	Dispersion	Each batch N=5, C=0	Test software, Color checker card	QA sampling items for full inspection and evaluation items in the sample stage
8	TV distortion	Each batch N=5, C=0	Test software, ISO12233 standard	QA sampling items for full inspection and evaluation items in the sample stage
9	Grayscale	Each batch N=5, C=0	Test software, gray scale target board	QA sampling items for full inspection and evaluation items in the sample stage
10	Reliability test	Sample trial production stage: Sampling plan: 2PCS/per production batch, acceptance level 0/1 Production stabilization stage: Sampling plan: 5PCS per project/month, acceptance level 0/1		
Appearance				
1	Module appearance	AQL=1.0	See with eyes	Production inspection project
2	Lens	AQL=1.0	8X magnifier	Production inspection project
3	Thread glue	AQL=1.0	8X magnifier	Production inspection project
4	Sealant	AQL=1.0	8X magnifier	Production inspection project
5	FPC	AQL=1.0	See with eyes	Production inspection project
6	Golden finger	AQL=1.0	See with eyes	Production inspection project
7	Reinforcing steel plate	AQL=1.0	See with eyes	Production inspection project
8	Double-sided tape	AQL=1.0	See with eyes	Production inspection project
Dimensions				
1	Height	AQL=1.0	Same as production	Production inspection project
2	Length	AQL=1.0	Same as production	Production inspection project
3	Width	AQL=1.0	Same as production	Production inspection project
4	Thread torque	Each batch N=5, C=0	Torque wrench	QA sampling items
5	Base thrust	Each batch N=5, C=0	Thrust gauge	QA sampling items

6. Product reliability specification

#	Test items	Conditions and requirements	Test equipment
1	Low temperature storage	Temperature -40℃, test 48H, then take it out and place it at room temperature for 2H test	Low temperature box + computer
2	Low temperature operation	Temperature -30℃, open the product image test 48H	Low temperature box + computer
3	High temperature storage	Temperature 70℃, test 48H, then take it out and place it at room temperature for 2H test	High temperature box + computer
4	High temperature operation	Temperature 60℃, open product image test 48H	High temperature box + computer
5	Aging test	Open the product image at room temperature, test 36H to see if the image is abnormal	computer
6	Connector plugging	Connector plugging	Workbench + computer
7	Static test	Carry out ±6KV contact discharge and ±8KV air discharge at the copper-exposed grounding position of the product. The positive and negative discharge points are each discharged 10 times, once per second, and the interval between the two discharges is 1 second.	ESD discharge equipment + computer
8	Free drop test (After packaging)	Pack the product, then place the product at a height of 150CM, drop it freely to the ground, and then test to check the image	Oak floor + computer
9	Vibration test (After packaging)	Fix the product on the test bench, 10Hz～100Hz～10Hz, amplitude 2mm, XYZ three directions, vibrate for 2 hours, then test and check the image	Vibration test bench + computer
1. After the product has undergone various reliability tests, the size, appearance, torque, and optical performance all meet the product requirements. 2. Test conditions: Illumination: Small light box 1500±10%LUX Large light box 6000±10%LUX Color temperature：4400±150K			PC test software MODULE test platform

7. Product packaging and precautions

1. Products should be strictly based on product characteristics to formulate corresponding packaging standards and follow them to ensure that the products meet the requirements of anti-static, moisture-proof, shock-proof, mildew-proof and other related quality assurance requirements during the specified use and storage period.
2. The outer packaging of the product should be marked: supplier's name, logo, product model, internal quantity, production date, batch number and order number.

The packaging and packing plan is based on customer requirements, the specific details are negotiated by both parties, and the sealed sample shall prevail

