

# Content

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## 1. Key Specifications

This approval sheet contains the general information of MJY5OAF-F3M-V1 camera module. It contains the key features of the module as well as the information for the quality inspection and reliability test purposes.

The Camera module MJY5OAF-F3M-V1 is a high performance and highly- integrated camera solution for mobile application where low power consumption and small size are utmost importance.

The OV5640 (color) image sensor is a low voltage, high-performance, 1/4-inch 5 megapixel CMOS image sensor that provides the full functionality of a single chip 5 megapixel (2592x1944) camera using OmniBSI technology in a small footprint package. It provides full-frame, sub-sampled, windowed or arbitrarily scaled 8-bit/10-bit images in various formats via the control of the Serial Camera Control Bus (SCCB) interface.

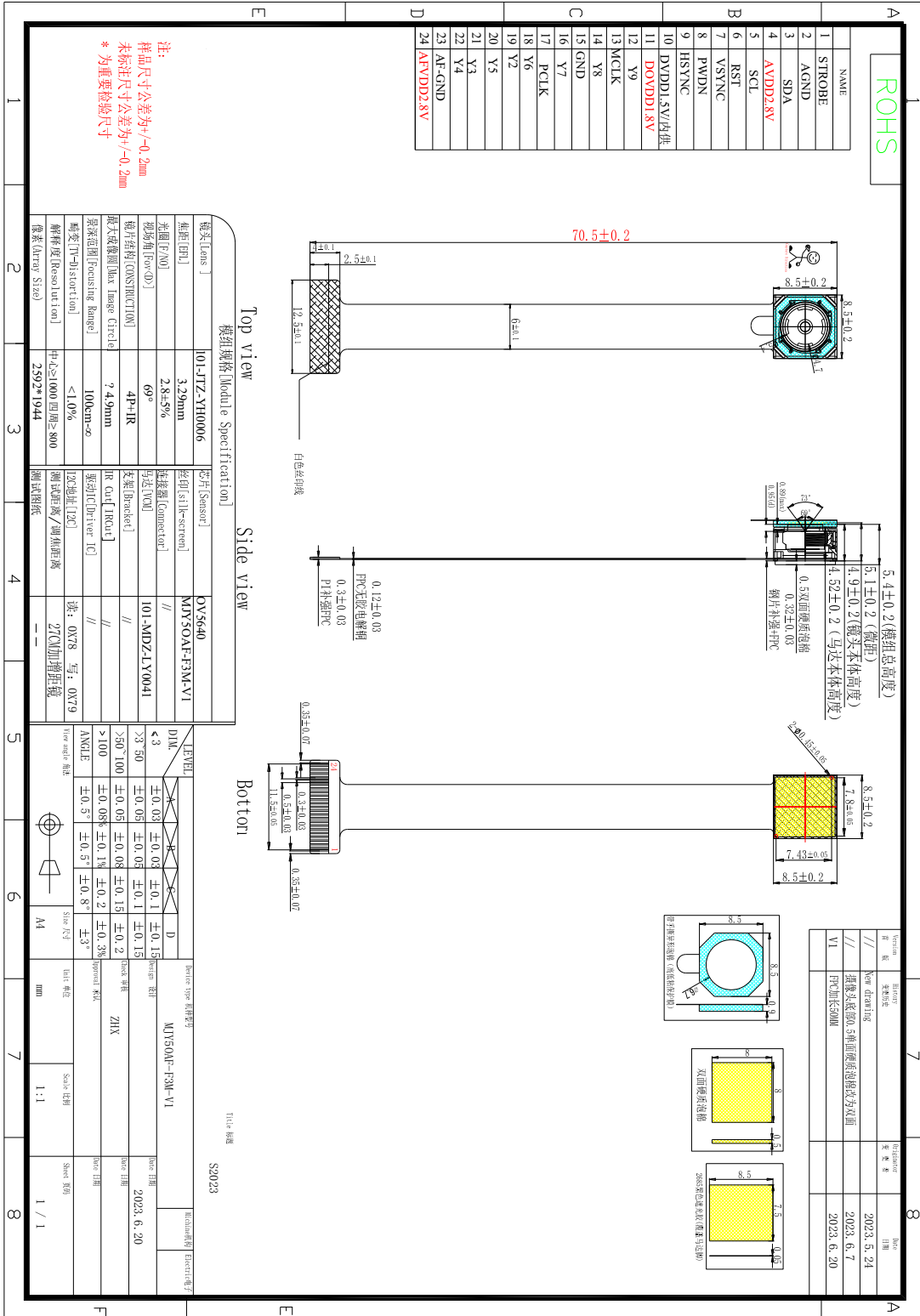
The OV5640 supports both a digital video parallel port and a serial MIPI port.

### Technical Specifications

Optical Format	1/4 inch
Pixel Size	1.4 $\mu\text{m}$ x 1.4 $\mu\text{m}$
Active Array Size	2592*1944
Output formats	8-/10-bit RGB RAW output
Power Requirements	Active: TBD standby: TBD
Dynamic range	TBD
Power Supply	core: 1.5V $\pm$ 5% (with embedded 1.5V regulator) analog: 2.6 ~ 3.0V (2.8V typical) I/O: 1.8V / 2.8V
Dark Current	TBD
Sensitivity	TBD
Guaranteed storage temperature	0°C to 50°C
Guaranteed Operating temperature	-30°C to 70°C
maximum image transfer rate	QSXGA (2592*1944) : 15fps 1080p: 30fps 1280*960: 45fps 720p: 60fps

VGA (640\*480) : 90fps  
 QVGA (320\*240) : 120fps

## 2. Camera Module Configuration



### 3. 外观规格 (Appearance Specification)

外观			
序号 S/N.	检验项目 inspection item	要求 requirement	检验方法 Inspection method
1	模组外观 Module appearance	模组表面无脏污、无肉眼可见划伤, 无影响成像杂质 The surface of the module is free of dirt, visible scratches, and impurities that affect imaging	20-30cm目测 20-30cm visual inspection
2	镜片 lens	在800±100Lux强度的光下平视、45度反射光检查时, 不可有肉眼可见伤痕或脏污 When inspecting under 800 ± 100Lux intensity light and 45 degree reflected light, there should be no visible scars or dirt to the naked eye	20X 放大镜 20X magnifying glass
3	螺纹胶 Lens glue	点胶长度为周长的1/3-1/2, 胶不可溢到镜头端面和镜头底座 The dispensing length should be 1/3-1/2 of the circumference, and the glue should not overflow onto the lens end face and lens base	20X 放大镜 20X magnifying glass
4	密封胶 sealant	在底座与FPC之间均匀充满密封胶, 不可有间隙、无厚薄不均的现象, 不可有胶溢出FPC边缘导致外形尺寸超标的现象 Evenly fill the sealant between the base and FPC, without any gaps or uneven thickness, and there should be no glue overflowing from the edge of the FPC, resulting in the appearance size exceeding the standard	20X 放大镜 20X magnifying glass
5	柔板 (FPC)	1) 表面无脏污、印刷字体清晰; 2) 边缘毛刺长度小于1mm, 宽度小于0.3mm; 3) 边缘缺口长度小于1mm, 宽度小于0.1mm 每棱边不多于2处, 不许有向内撕裂状尖角 1) No dirt on the surface and clear printing font; 2) Edge burrs with a length of less than 1mm and a width of less than 0.3mm; 3) The length of the edge gap is less than 1mm, and the width is less than 0.1mm. There should be no more than 2 points on each edge, and there should be no inward tearing sharp corners	45X显微镜 (连续变焦) 45X microscope (Continuous zoom)
6	连接器 Connector	1) 外观不可有异物附着、油污、变色等缺陷; 2) 不允许有缺锡、少锡现象, 不允许有连焊现象; 3) PIN脚光亮、平整, 不允许有翘起现象 1) The appearance should not have defects such as foreign objects adhering, oil stains, discoloration, etc; 2) No shortage or shortage of tin is allowed, and no continuous welding is allowed; 3) The PIN pin is bright and flat, and no warping is allowed	45X显微镜 (连续变焦) 45X microscope (Continuous zoom)

7	补强钢板 Steel sheet	1) 表面不可有脏污、生锈、有触感划痕; 2) 定位柱超出板面高度 $\leq 0.1\text{mm}$ 1) The surface must be free of dirt, rust, or tactile scratches; 2) The height of the positioning column exceeding the board surface is $\leq 0.1\text{mm}$	目视 visual
8	双面胶 Double Sided Adhesive Tape	粘贴方向正确, 粘贴不可超出钢板边缘, 无突起, 双面胶保护膜撕下时不可有胶脱离、变形、破损现象 The pasting direction shall be correct, and the pasting shall not exceed the edge of the steel plate without protrusions. When the Double-sided tape protective film is removed, there shall be no adhesive separation, deformation, or damage	目视 visual

**外形尺寸 Overall dimension**

序号 S/N.	项目 item	要求 requirement	检验方法 Inspection method
1	高度Height	符合图纸要求 Comply with drawing requirements	数显卡尺 Digital Caliper
2	长度length	符合图纸要求 Comply with drawing requirements	数显卡尺 Digital Caliper
3	宽度width	符合图纸要求 Comply with drawing requirements	数显卡尺 Digital Caliper

序号 S/N.	检验项目 inspection item	要求 requirement	检验方法 Inspection method
1	污点 (Dust)	白场下, 获取图像, 目测全画面不允许有可见异物存在 In the white area, take the image and visually check the whole picture. No visible foreign matter is allowed	测试夹具. 小灯箱. 6500K 白色背光 Test fixtures - Small light boxes - 6500K white backlight
2	成像方向 (Imaging direction)	符合图纸要求 Comply with drawing requirements	工装/测试夹具 Tooling/test fixture
3	坏点与集束型坏点 (Dead & Wound Pixel)	1) 暗场下: 总亮点数小于400pixel; 2个相邻pixel的集束型亮点小于20; 无3个pixel以上集束型亮点。 2) 白场下: 总暗点数小于400pixel; 2个相邻pixel的集束型暗点小于20; 无3个pixel以上集束型暗点。 1) In the dark field: the total number of bright points is less than 400 pixels; 2 adjacent pixels	测试软件 小灯箱 (6500K 白色背光) Test software small lightbox (6500K white

		with clustered highlights less than 20; There are no more than 3 clustered highlights with pixel sizes. 2) In the white field: the total number of dark spots is less than 400 pixels; 2 adjacent pixels with clustered dark spots less than 20; No more than 3 pixel clustered dark spots.	backlight)
4	分辨率 (Resolution)	中心 Center :> 1000 TV Lines 边角 Corner :> 800 TV Lines	MTF 测试程序 testing program EIA CHART
5	像面均匀度 (Shading)	四角距离中心90%试场处亮度均值, 至少达到中心试场亮度的45%以上; 每个角的亮度达到中心亮度的35%以上 The average luminance at the four Angular distance 90% away from the center of the test site shall be at least 45% of the central test site luminance; The brightness of each corner reaches over 35% of the center brightness	测试软件、 小灯箱 (3400Lux, 6500K 白色背光) Testing software  Small light box (3400Lux, 6500K white backlight)
6	色差 (Color)	对色彩还原误差不大于20% The error of color restoration shall not be greater than 20%	测试软件 testing software Color checker
7	几何失真 (TV distortion)	枕形失真(正数)或桶形失真(负数)均不大于1% Pillow distortion (positive number) or barrel distortion (negative number) shall not be greater than 1%	测试软件 testing software ISO12233标板
8	灰阶 (Grayscale)	相邻可分辨的两灰阶亮度差值必须小于8 The brightness difference between two adjacent distinguishable gray scales must be less than 8	测试软件 testing software 灰阶标板 Gray scale standard plate
9	色散 (CA)	小于0.5 Less than 0.5	测试软件 testing software ISO12233标板
10	螺纹扭力 (Torsional)	不小于0.65 kgf.cm Not less than 0.65 KGF cm	扭力计 torsion meter
11	底座推力 (Thrust)	不小于2 kgf Not less than 2 KGF	推力计 Thrust meter

## 5. 样品报告 (Sample Plan)

序号 S/N.	检验项目 inspection item	抽样频率 sampling frequency	检验方法 Inspection method	备注/描述 Remarks / description
<b>成像和可靠性项目 Imaging and reliability items</b>				
1	污点(Dust)	每批N=10, C=0 Each batch N=10, C=0	与生产相同 Same as production	生产全检项目Production full inspection project
2	成像方向 (imaging direction)	每批N=10, C=0 Each batch N=10, C=0	测试夹具Test fixture	生产全检项目Production full inspection project
3	坏点与集束型坏点 (Dead & Wound Pixel)	每批N=10, C=0 Each batch N=10, C=0	与生产相同 Same as production	生产全检项目Production full inspection project
4	分辨率 (Resolution)	每批N=10, C=0 Each batch N=10, C=0	MTF测试程序 Test program	生产全检项目Production full inspection project
5	视场角 (FOV)	每批N=10, C=0 Each batch N=10, C=0	测试夹具、视场角标板Test fixtures, field of view corner markers	样品阶段全检评估项目QA抽检 项目Sample stage full inspection evaluation
6	像面均匀度 (Shading)	每批N=10, C=0 Each batch N=10, C=0	测试软件、小灯箱3400Lux, 6500K白色背光Test software, small light box 3400Lux, 6500K white backlight	样品阶段全检评估项目QA抽检 项目Sample stage full inspection evaluation
7	色散(CA)	每批N=10, C=0 Each batch N=10, C=0	测试软件 (testing software)、Color checker card	样品阶段全检评估项目QA抽检 项目Sample stage full inspection evaluation
8	几何失真(TV distortion)	每批N=10, C=0 Each batch N=10, C=0	测试软件 (testing software)、ISO12233标板	样品阶段全检评估项目QA抽检 项目Sample stage full inspection evaluation
9	灰阶 (Grayscale)	每批N=10, C=0 Each batch N=10, C=0	测试软件 (testing software)、灰阶标板 (Gray scale standard plate)	样品阶段全检评估项目QA抽检 项目Sample stage full inspection evaluation
10	可靠性试验 (Reliability test)	样品试制阶段: 抽样计划: 2PCS/每生产批次, 允收水准0/1 生产稳定阶段: 抽样计划: 每项目5PCS /每月, 允收水准0/1 Sample trial production stage: Sampling plan: 2PCS per production batch, acceptance level 0/1  Production stability stage: Sampling plan: 5 PCS per project per month, allowable acceptance level 0/1		
<b>外观项目 Appearance items</b>				
1	模组外观Module appearance	AQL=0.65 正常	8X放大镜magnifying glass	生产全检项目Production full inspection project

2	镜片 lens	AQL=0.65 正常	8X放大镜magnifying glass	生产全检项目 Production full
3	螺纹胶 Thread adhesive	AQL=0.65 正常	8X放大镜magnifying glass	生产全检项目 Production full inspection project
4	密封胶 sealant	AQL=0.65 正常	8X放大镜magnifying glass	生产全检项目 Production
5	FPC	AQL=0.65 正常	45X显微镜 (连续变焦) microscope (continuous zoom)	生产全检项目 Production full inspection project
6	连接器 connector	AQL=0.65 正常	45X显微镜 (连续变焦) microscope (continuous zoom)	生产全检项目 Production full inspection project
7	补强钢板 reinforced steel plate	AQL=0.65 正常	目视 visual	生产全检项目 Production full inspection project
8	双面胶 double-sided tape	AQL=0.65 正常	8X放大镜magnifying glass	生产全检项目 Production full inspection project
<b>外形尺寸 Overall dimension</b>				
1	高度 high	AQL=0.65 正常	与生产相同 Same as production	生产全检项目 Production full
2	长度 length	AQL=0.65 正常	与生产相同 Same as production	生产全检项目 Production full
3	宽度 width	AQL=0.65 正常	与生产相同 Same as production	生产全检项目 Production full
4	螺纹扭力 torque	每批 N=10, C=0 Each batch N=10, C=0	扭力搬手 Torsion handle	QA抽检项目 Sampling items
5	底座推力 thrust	每批 N=10, C=0 Each batch N=10, C=0	推力计 Thrust meter	QA抽检项目 Sampling items

## 6. 可靠性规范 (Reliability Specification)

序号 S/N.	检验项目 inspection item	条件及要求 Conditions and requirements	试验设备 test equipment
1	低温储存 low temperature storage	-30°C, 48hours 升降温时间各 30min 30 °C, 48 hours for 30 minutes each	低温箱 cryostat
2	低温运行 Low temperature operation	-30°C, 48hours 升降温时间各 30min 20 °C, 48 hours for 30 minutes each	低温箱 cryostat
3	高温储存 high temperature storage	80°C, 48hours 升降温时间各 30min 80 °C, 48 hours for 30 minutes each	高温箱 High temperature box



4	高温运行 High temperature operation	70°C, 48hours 升降温时间各 30min 70 °C, 48 hours for 30 minutes each	高温箱High temperature box
5	高温高湿储存High temperature and humidity storage	60°C, 80%RH, 72hours 升降温时间各 30min 60 °C, 80% RH, 72 hours each with 30 minutes of temperature rise and fall time	高温恒湿箱High temperature and constant humidity box
6	高温高湿运行High temperature and high humidity operation	40°C, 80%RH, 72hours 升降温时间各 30min 30 minutes each for 40 °C, 80% RH, and 72 hours of temperature rise and fall	高温恒湿箱High temperature and constant humidity box
7	冷热冲击试验 Thermal Shock	-30°C) →80°C (各 30min) 高低温互相转换时间小于 10 分钟 Total: 10cycles 30 °C → 80 °C (30 minutes each) High and low temperature conversion time less than 10 minutes Total: 10 cycles	低温箱/高温箱Low temperature box/high temperature box
8	自由跌落测试 (包装后) Free Drop test (With packaging)	高度 height 100cm, 10 次	橡木地面 Oak floor
9	振动试验 (包装后) vibration test (With packaging)	10Hz~200Hz~10Hz, 振幅 2mm, XYZ 三个方向, 振动 30min 10Hz~200Hz~10Hz, amplitude 2mm, vibration in three directions of XYZ for 30min	振动试验台 Vibration test bench
10	静电试验 (断电模式下) Static electricity test (In power off mode)	2KV, 空气放电 接触放电 220V 2KV, air discharge contact discharge 220V	静电测试仪 Electrostatic tester

1. 产品经过可靠性各项测试后，尺寸、外观、扭矩力、光学性能均符合产品要求。

2. 测试条件:

照度: 小灯箱 1500±10%LUX 大灯箱 6000±10%LUX

色温: 4400±150KAfter

1. various reliability tests, the product meets the product requirements in terms of size, appearance, torque, and optical performance.

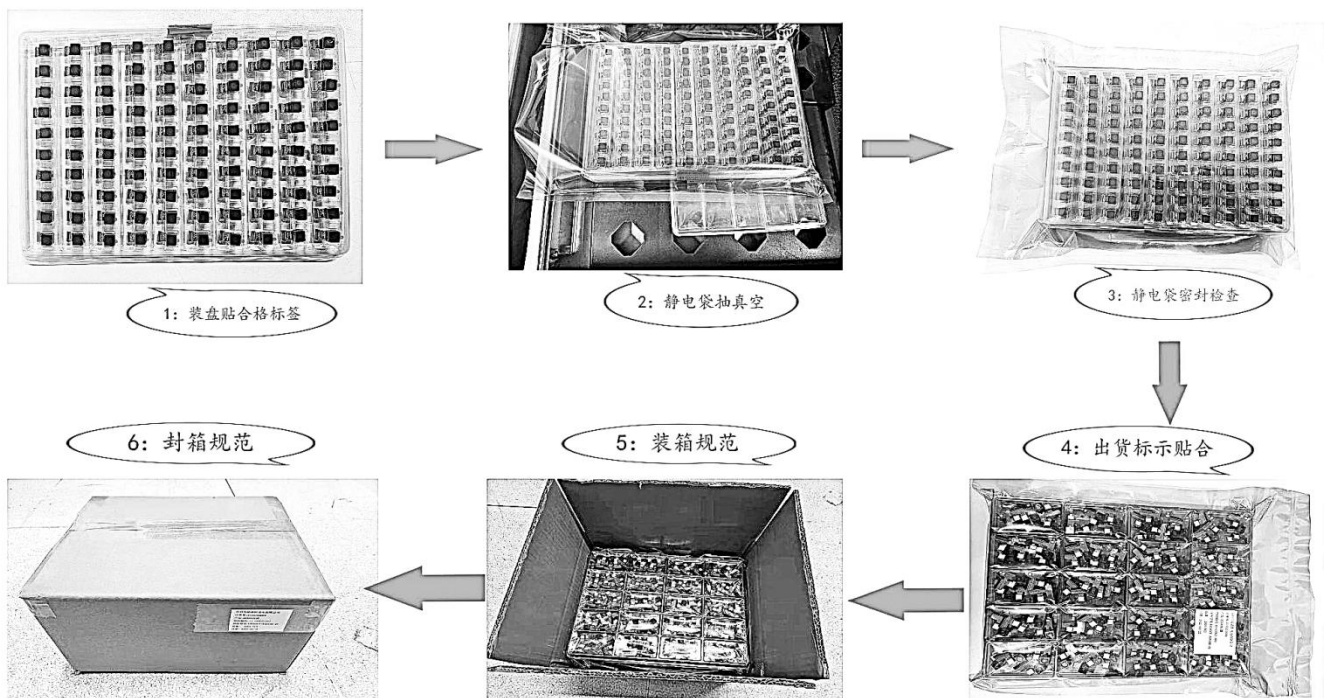
2. Test conditions:

Illuminance: Small light box 1500 ± 10% LUX Large light box 6000 ± 10% LUX

Color temperature: 4400 ± 150K

PC  
测试软件Testing  
software  
MODULE测试平台  
testing platform

## 7. 包装规范 (Packaging Specification)



### 产品防护 / Product protection

#### 1. 运输要求/ Transportation requirements

1.1 在运输过程中要注意防压、防潮、防腐蚀。// In the transport process should pay attention to prevention, moisture-proof, anti-corrosion.

1.2 在装卸过程中要轻拿轻放。// In the process of loading and unloading to should take put down gently.

2. 存储要求/ Storage requirements:

2.1 环境温度0°C~30°C, 湿度20%~70%// The environment temperature 0 °C ~ 30 °C, humidity 20% ~ 70%.

2.2 密封无灰尘, 无腐蚀// Seal no dust, no corrosion.

2.3 无重物挤压// No weight pressing.

2.3 产品保质期为1年 (未开封) // Product warranty for one year (unopened).

3. 注意事项/The matters needing attention:

3.1 开封后的产品在不使用时, 要及时密封好, 注意防潮, 防尘, 防静电。// Products when not in use after opening, should timely seal, note moistureproof, dustproof and anti-static.

3.2 产品为精密光学产品在组装时注意防尘, 不可污染产品, 注意机械物件不可损伤产品。// Assemble products for precision optical products in pay attention to the dust, not contaminated products, pay attention to the mechanical objects do not damage the product.

3.3 在组装过程中要注意操作方法, 避免损伤产品。// Production in the assembly process must pay attention to the operation method, to avoid damage to the product.

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