



Camera module

机种型号 Model:TL_MINI_F28_V1

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1. 目的 (Purpose)

为了全面地描述技术合作中所指的技术规格，通常需要由一整套文件予以表示。作为其中的一部分，本技术规格规定了摄像头模组应达到的特定技术规格，对于该型号货品具有约束力。

For a comprehensive description of technical cooperation referred to the technical specifications, usually a set of documents required by the express. As one part of the technical specifications of the provides camera modules should meet the specific technical specifications for the goods model binding.

2. 特征和规格 Features and General Specifications

2.1 模组基本规格 Camera Basic Specification

项目 Item	规格 Specification	注释 Remarks
Sensor	1/4" inch	CMOS
有效像素 Active array size	2M	1936(H) x1086(V)
接口类型 Connect Type	MIPI	
模组类型 Interface Type	FF	
可视角 View angle	120°(OPT)	
景深范围 Depth of filed	0.1m~INF	
调焦距离 Focus Distance	150cm	
模组尺寸(长 x 宽 x 高) Module Dimension (length x width x height)	25.9mmx8mmx12mm	
Pin 输出 Pin Output	20Pin	



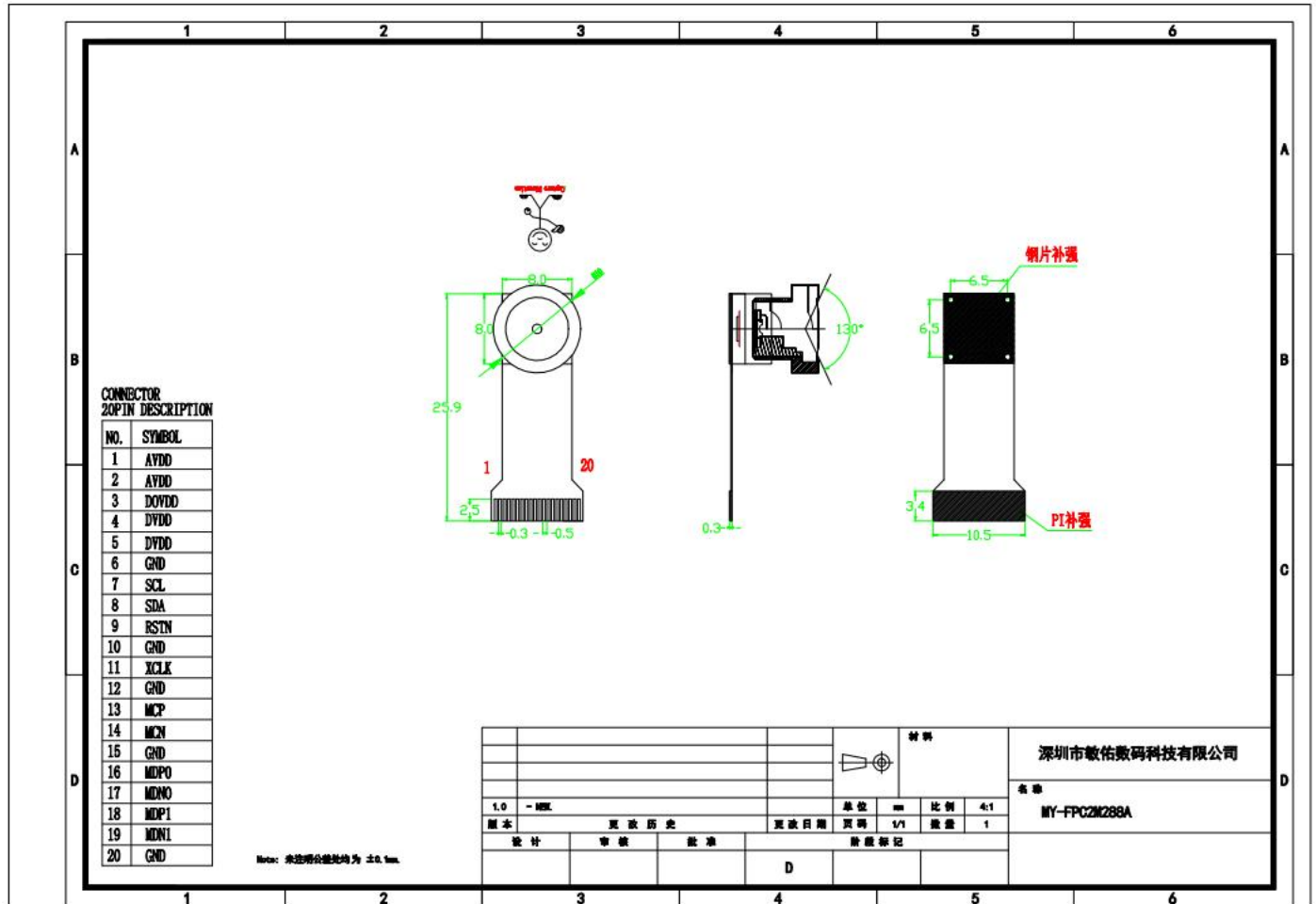
2.2 关键部件规格 Key Component Specification

项目 Item	关键参数 Key parameter	规格 Specification
Sensor	型号 Type	CMOS
	光学尺寸 Optical size	1/4" inch
	有效像素 Active Array Size	1936(H) x1086(V)
	像素尺寸 Pixel Size	2.2μm x 2.2μm
	最大帧率 MAX Frame Rate	30fps@Full size
	快门 Shutter Type	Electronic Rolling shutter
	CRA	12° (linear)
	运行温度范围 Operation temperature range	-20℃~70℃
Lens	型号 Type	XL-5080-A1
	光圈 F/NO	2.5
	可视角 FOV(Field of View)	120°(OPT)
	结构 Construction	4E+IR
	图像失真 TV-Distortion	<-88%
	滤光片 IR Filter	650nm
	EFL	2.0mm
	TTL	11.78±0.2mm
	螺纹参数 Barrel Thread	M7*P0.35mm



3. 模组规格及电气性能 Test Requirement and Electric characteristic

3.1 模组 2D



3.2 Pin 定义 Pin Description

引脚	名称	引脚类型	功能定义
1	AVDD	Supply	Analog supply voltage.
2	AVDD	Supply	Analog supply voltage.
3	DOVDD	Supply	Digital I/O supply voltage
4	DVDD	Supply	Digital core supply voltage. With embedded 1.5V regulator
5	DVDD	Supply	Digital core supply voltage. With embedded 1.5V regulator
6	GND	Power	GND
7	SCL	Input	Serial interface clock input
8	SDA	I/O	Serial data, pull to DOVDD with a 4.3k Ω resistor
9	RSTN	Input	System synchronize reset when driven low, it resumes normal operation with all configuration register set to factory default
10	GND	Power	GND
11	XCLK	Input	Master clock input
12	GND	Power	GND



13	MCP	Output	MIPI clock (+)
14	MCN	Output	MIPI clock (-)
15	GND	Power	GND
16	MDP0	Output	MIPI data<0>(+)
17	MDN0	Output	MIPI data<0>(-)
18	MDP1	Output	MIPI data<1>(+)
19	MDN1	Output	MIPI data<1>(-)
20	GND	Power	GND

4.外观 Appearance Dimension

5. 功能检验标准 (Function inspection criteria)

5.1 功能定义:

1. 摄像头模组电气性能、图像质量。(Electrical properties , the quality of image.)

5.2 检验方法:(Inspection methods)

1. 人员: 外观检查人员需经过培训并且辨色能力正常,其视力应达到 1.0 以上(矫正后达到 1.0 以上亦可),辨色能力应可通过标准测试。

Staff: The appearance of the inspectors to be trained and the capacity of normal color vision, Its vision to achieve more than 1.0 (after correction can also be reached more than 1.0), Color vision capability should be available through standard tests.

2. 工具: 连接电脑, 用 Amcap 测试软件检测图像。

Tool: Connect the computer, Testing images with Amcap software.

3. 距离和时间: 观察距离为 60cm, 观察时间为每个面 3 ~ 5 秒。

Distance and Time: Observation distance: 60cm,

Observation time for each surface: 3 ~ 5seconds

4. 检验环境: 外观检验应在不刺目的荧光灯下检查, 其最低照度应在 100 尺烛光亮度以上, 或者是 60W 日光灯,

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1. 5m 距离下检验。

Test condition: Visual inspection should be conducted under anti-glare fluorescent lamp with min 100 feet candela luminance, or under 60 watt fluorescent lamp of 1.5m distance.

5.3 接受标准 (Accept criteria)

1. 图像无花屏、彩屏、变色。(The image has no mess, color screen and discoloration.)
2. 无白点、黑点、脏污、暗角。(There is no white spot, black spot, dirt or dark angle in the image.)
3. 图像清晰，四周清晰度一致。(The image is same clear on all corners)

6. 外观检验标准 (Visual inspection criteria)

6.1. 外观表面定义:(The appearance of the definition)

1. 摄像头模组的外观 (Camera module appearance)

6.2 检验方法:(Test methods)

1. 人员：外观检查人员需经过培训并且辨色能力正常, 其视力应达到 1.0 以上(矫正后达到 1.0 以上亦可), 辨色能力应可通过标准测试。

Staff: The appearance of the inspectors to be trained and the capacity of normal color vision, Its vision to achieve more than 1.0 (after correction can also be reached more than 1.0), Color vision capability should be available through standard tests.

2. 距离和时间：观察距离为 30 ~ 40cm, 观察时间为每个表面 3 ~ 5 秒。

Distance and Time: Observation distance: 30 ~ 40cm,
Observation time for each surface: 3 ~ 5seconds

3. 检验环境：外观检验应在不刺目的荧光灯下检查, 其最低照度应在 100 尺烛光亮度以上, 或者是 60W 日光灯,

1. 5m 距离下检验。

Test condition: Visual inspection should be conducted under anti-glare fluorescent lamp with min 100 feet candela luminance, or under 60 watt fluorescent lamp of 1.5m distance.

4. 观察角度：观察角度在 40° ~ 50°之间。

Observation angle: Observation angle between 40° ~ 50°.

6.3 接受标准 (Accept criteria)

1. 清洁程度：部件必须无污点、无尘、无油脂及无其它污迹。由于运输材料造成的污迹如果能够吹去或抹去则是可以接受的。

The degree of Cleanliness : Components must not stain, clean, no grease and other stains. Because of s s stains caused by the transport of materials can erased , it is acceptable.

2. 装配表面：需装配的零部件应避免有划痕、凿痕、凹痕、弯折、破裂、压痕、擦伤或其它因不当装配所引起的缺陷。

Assembly surface: Assembly of parts and components required to have scratches should be avoided, dent, bend, break down, Indentation, scratches or other improper assembly defects.



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7. 可靠性测试 (Reliability Test)

项目 Items	条件 Condition	规格 Specification
高温实验 High Temperature Test	温度(Temp): 70℃ 时间(Time): 48H	无异常 No abnormal
低温实验 Low Temperature Test	温度(Temp): -20℃ 时间(Time): 48H	无异常 No abnormal
湿度实验 Humidity Test	温度(Temp): 60℃ 湿度(Humidity): 80-85% 时间(Time): 24H	无异常 No abnormal
镜头座拉力实验 Cable Tensile Strength Test	荷重: 4KG 持续时间: 60 秒	无异常 No abnormal
跌落测试 (整箱) Drop Test	高(High): 60CM 一角三边六面 木板上	电性能正常 Electric normal
震动测试 (单体) Vibration Test	1. 震动机的震动频率调至 50Hz; Vibration machine vibration frequency to 50Hz 2. 震动幅度 Vibration amplitude 1.5MM; 3. 震动时间 Vibration time 30 Minutes	电性能正常 Electric normal
拔插实验 USB connector	回数: 50 回	电性能正常 Electric normal

8. 包装要求(Packing Request)

- 1、产品应严格根据产品特点制定相应的包装标准并遵照执行，以保证产品规定使用和储存期内，达到防静电、防湿、防震、防霉、防野蛮装卸等标志及相关保质要求。

Products should be strictly in accordance with the characteristics of the development of the corresponding Product packaging standards and in compliance with the implementation, guarantee the use and storage of products during the period, reaching anti-static, moisture, shock-proof, mildew, anti-barbaric handling related signs and shelf-life requirements.

- 2、产品外包装上应标明：供方名称/标志、产品型号规格、内装数量、生产日期/批号和定单号。

Product packaging should be marked: Supply-side name/logo, Product Model specifications, containing the number, production date / batch number and order number.

- 3、包装及装箱方案依据客户要求，由双方协商具体细节，以封样为准。

Packaging and packing programs based on customer requirements, specific details of consultations by both parties, to finished products as the standard.



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9. 其它 (Others)

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The recognition of the need to change the book recognized by both parties, either party to amend a separate as null and void.

2. 本承认书在客户收到的七个工作日内，必须签章返回，逾期视为默认。

Admit in the book the customer received within seven working days, must return signature, late regarded as the default.