CMOS MT9M112 Camera Module

1/4-Inch 1.3MP Color Camera Module Datasheet

Rev 1.0, Dec 2018

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1 Introduction

This camera module uses Aptina Image sensor MT9M112 which is a SXGA-format, single-chip camera CMOS digital color image sensor. This device combines the 2.8μm image sensor core with fourth-generation digital image flow processor technology from Aptina Imaging. It captures high-quality color images at SXGA resolution.

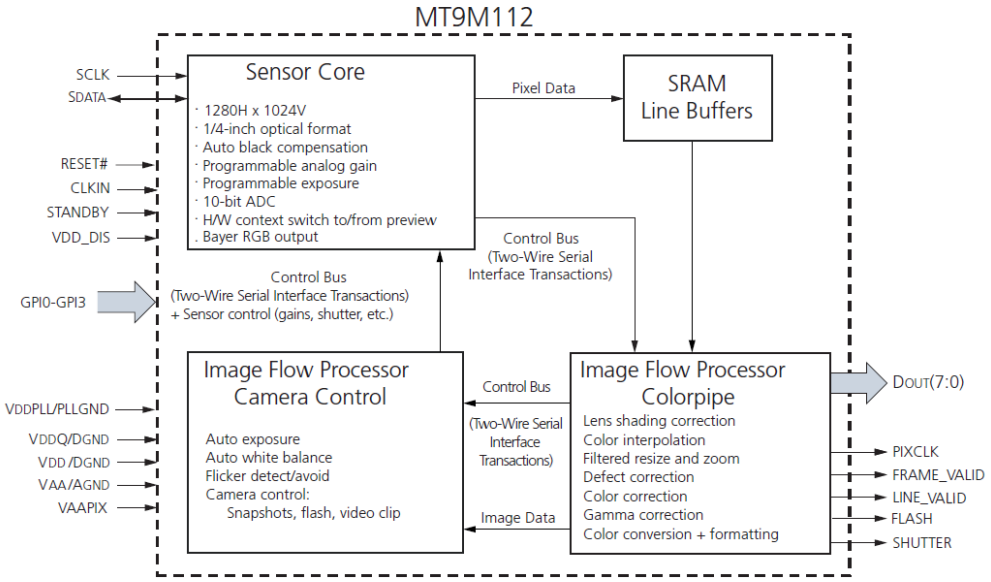
2 Features

- Optical size 1/4 inch
- Resolution 1280x1024
- Onboard regulator, only single 3.3V supply needed
- Standard 0.1inch (2.54mm) pin pitch header connector
- Ultra low-power, low cost CMOS image sensor
- Superior low-light performance
- 15 fps at full resolution
- On-die Image Flow Processor (IFP) performs sophisticated processing: color recovery and correction, sharpening, gamma, lens shading correction, on-the-fly defect correction
- Image decimation to arbitrary size with smooth, continuous zoom and pan
- Automatic exposure, auto white balance(AWB) auto black compensation(ABR), auto flicker avoidance, auto color saturation, and auto defect identification and correction
- ITU_R BT.656 (YCbCr), YUV, 565RGB, 555RGB, and 444RGB output data formats

3 Key Specifications

Parameter	Value
Optical format	1/4-inch (5:4)
Active imager size	3.58mm(H) x 2.87mm(V) 4.59mm diagonal
Active pixels	1280H x 1024V
Pixel size	2.8μm x 2.8μm
Optical lens	EFL 6mm, F NO. 2.0
Output format	YUV, RGB565/555/444
Shutter type	Electronic rolling shutter (ERS)
Maximum data rate/ master clock	27 MPS/54 MHz
Frame rate	15 fps at full resolution, 30 fps in preview mode (640 x 512)
Interface	8bit DVP
Responsivity	1.0V/lux-sec (550nm)
Power consumption	170mW at 15 fps, full resolution 100mW at 30fps, preview mode
Operating junction temperature	-30°C to +70°C
Size	34x33mm

4 Block Diagram



Note: Each of the general purpose input only signals (GPI0–GPI3) must be connected to either DGND or VDDQ for low-power consumption and reliable operation

5 Application

- Cellular phones
- PDAs
- Toys
- Machine Vision
- Other battery-powered products

6 Pin Definition

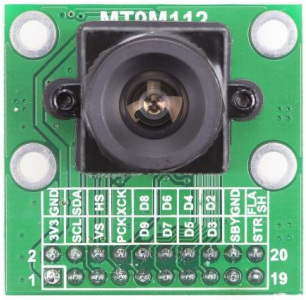


Table 1 P1 Connector Pin Definition

Pin No.	PIN NAME	TYPE	DESCRIPTION
1	VCC	Power	3.3V Power supply
2	DGND	Ground	Power ground
3	SCL	Input	SCCB serial interface clock input
4	SDA	I/O	SCCB serial interface data I/O
5	VSYNC	Output	Active High: Frame Valid; indicates active frame
6	HREF	Output	Active High: Line/Data Valid; indicates active pixels
7	PCLK	Output	Pixel Clock output from sensor
8	XCLX	Output	Master Clock into Sensor
9	D9	Output	Pixel Data Output 9 (MSB)
10	D8	Output	Pixel Data Output 8
11	D7	Output	Pixel Data Output 7
12	D6	Output	Pixel Data Output 6
13	D5	Output	Pixel Data Output 5
14	D4	Output	Pixel Data Output 4
15	D3	Output	Pixel Data Output 3
16	D2	Output	Pixel Data Output 2 (LSB)
17	STANDBY	Output	Multifunctional signal to control device addressing, power-down, and state functions (covering output enable function).
18	DGND	Ground	Power ground
19	STR	Output	Active HIGH: controls external mechanical shutter.
20	FLASH	Output	Flash output control

7 Mechanical Dimension