



Raspberry Pi Spy Camera Module

1/4-Inch 5-Megapixel Module Datasheet

Rev 1.0, Feb 2015

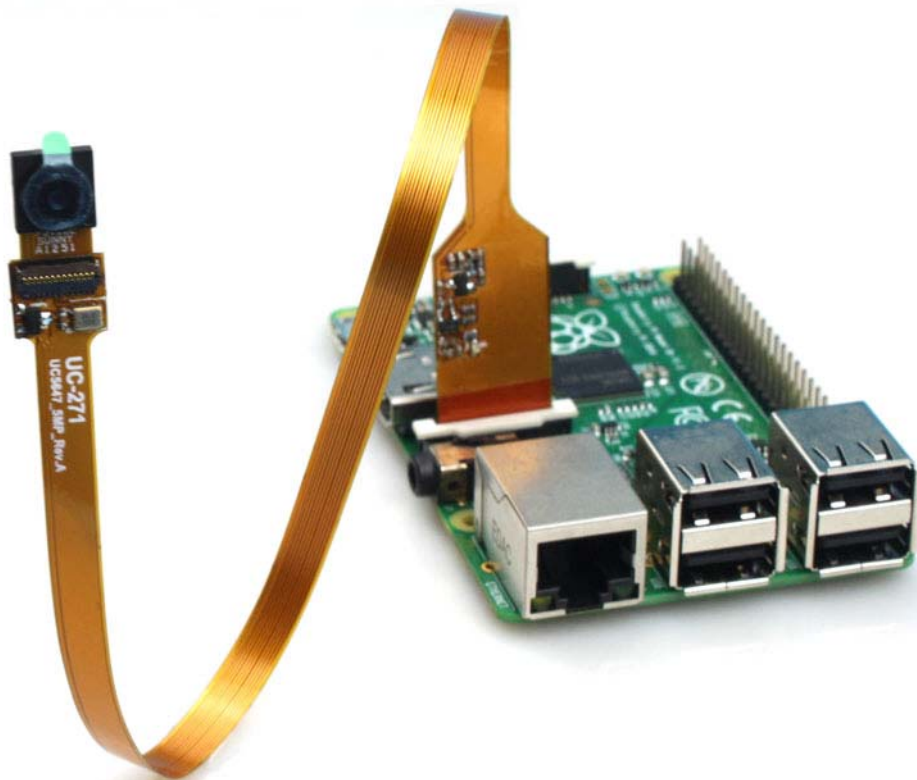


Table of Contents

1	Introduction	2
2	Block Diagram	2
3	Features	3
4	Key Specifications	3
5	Application	4
6	Pin Definition	5
7	Mechanical Dimension	5

1 Introduction

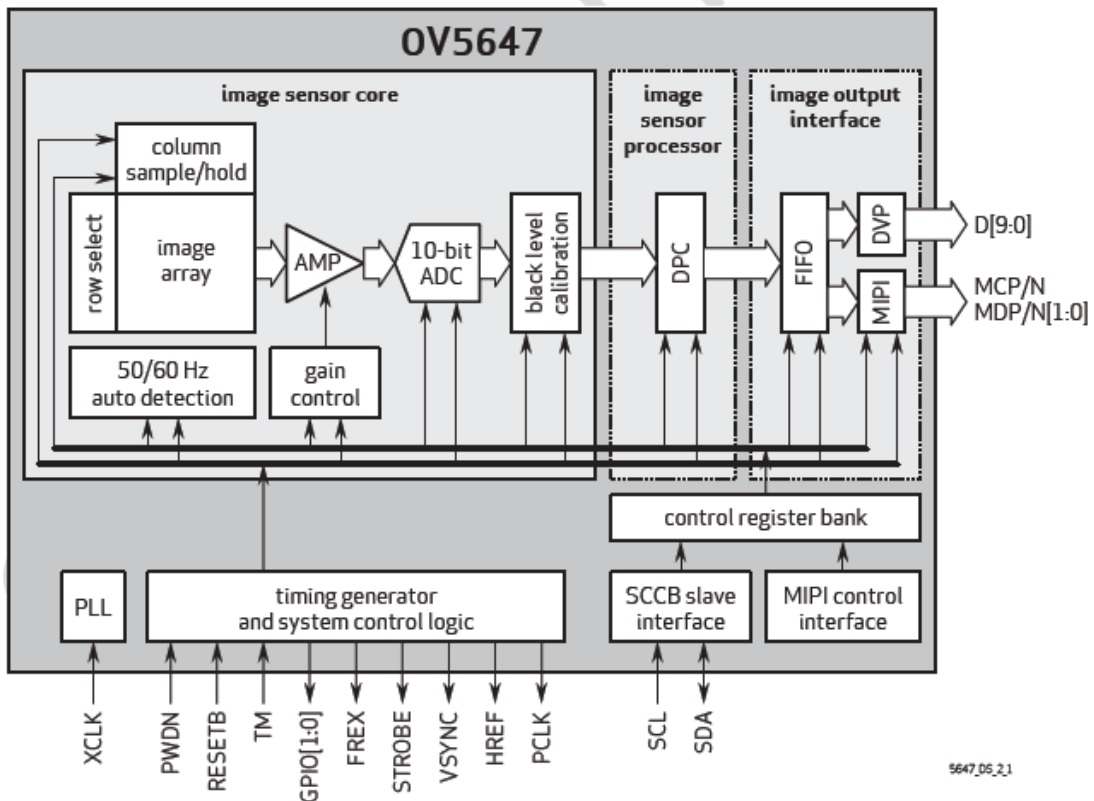
In order to meet the increasing need of Raspberry Pi compatible camera modules. The ArduCAM team now released another add-on spy camera module for Raspberry Pi series boards which is fully compatible with official one.

The board itself is tiny, at around 300mm x 16mm. The neck width of the camera module is 6mm, this highlight making it perfect for endoscope, spy surveillance or other applications where size and image quality are important. It connects to Raspberry Pi by way of a short ribbon cable. The camera is connected to the BCM2835/BCM2836 processor on the Pi via the CSI bus, a higher bandwidth link which carries pixel data from the camera back to the processor. This bus travels along the ribbon cable that attaches the camera board to the Pi.

The sensor itself has a native resolution of 5 megapixel, and has a fixed focus lens onboard. In terms of still images, the camera is capable of 2592 x 1944 pixel static images, and also supports 1080p30, 720p60 and 640x480p60/90 video.

It attaches to Raspberry Pi by way of one of the two small sockets on the board upper surface. This interface uses the dedicated CSI interface, which was designed especially for interfacing to cameras. The CSI bus is capable of extremely high data rates, and it exclusively carries pixel data. The camera is supported in the latest version of Raspbian, Raspberry Pi's preferred operating system.

2 Block Diagram



Note: Raspberry Pi camera module only support MIPI interface, it doesn't support DVP interface.

3 Features

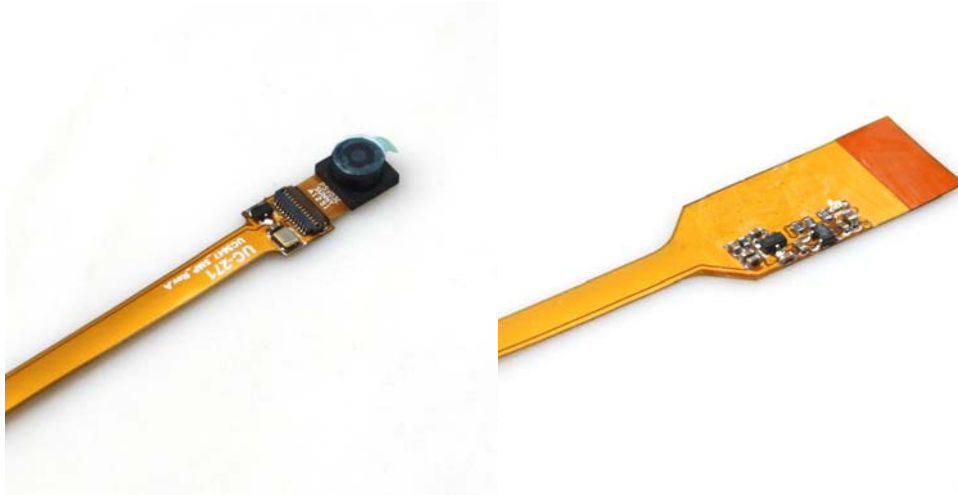
- High-Definition video camera for Raspberry Pi Model A/B/B+ and Raspberry Pi 2
- 5MPixel sensor with Omnivision OV5647 sensor in a fixed-focus lens
- Integral IR filter
- Angle of View: 54 x 41 degrees
- Field of View: 2.0 x 1.33 m at 2 m
- Full-frame SLR lens equivalent: 35 mm
- Fixed Focus: 1 m to infinity
- Still picture resolution: 2592 x 1944
- Max video resolution: 1080p
- Max frame rate: 30fps
- Size: 300 x 16 mm flex cable, neck wide is 6mm

4 Key Specifications

- **active array size:** 2592 x 1944
- **power supply:**
 - core: 1.5V \pm 5% (with embedded 1.5V regulator)
 - analog: 2.6 ~ 3.0V (2.8V typical)
 - I/O: 1.7V ~ 3.0V
- **power requirements:**
 - active: TBD
 - standby: TBD
- **temperature range:**
 - operating: -30°C to 70°C (see [table 8-2](#))
 - stable image: 0°C to 50°C (see [table 8-2](#))
- **output formats:** 8-/10-bit RGB RAW output
- **lens size:** 1/4"
- **lens chief ray angle:** 24° (see [figure 10-2](#))
- **input clock frequency:** 6~27 MHz
- **S/N ratio:** TBD
- **dynamic range:** TBD
- **maximum image transfer rate:**
 - QSXGA (2592 x 1944): 15 fps
 - 1080p: 30 fps
 - 960p: 45 fps
 - 720p: 60 fps
 - VGA (640 x 480): 90 fps
 - QVGA (320 x 240): 120 fps
- **sensitivity:** TBD
- **shutter:** rolling shutter / global shutter
- **maximum exposure interval:** 1968 x t_{ROW}
- **pixel size:** 1.4 μ m x 1.4 μ m
- **well capacity:** TBD
- **dark current:** TBD
- **fixed pattern noise (FPN):** TBD
- **image area:** 3673.6 μ m x 2738.4 μ m
- **die dimensions:** 5520 μ m x 4700 μ m

5 Application

- Cellular phones
- PDAs
- Toys
- Other battery-powered products
- Can be used in all Raspberry Pi platforms



6 Pin Definition

Pin No.	PIN NAME	TYPE	DESCRIPTION
1	DGND	Ground	Power ground
2	CAM_D0_N	Output	MIPI data lane0 negative output
3	CAM_D0_P	Output	MIPI data lane0 positive output
4	DGND	Ground	Power ground
5	CAM_D1_N	Output	MIPI data lane1 negative output
6	CAM_D1_P	Output	MIPI data lane1 positive output
7	DGND	Ground	Power ground
8	CAM_C_N	Output	MIPI clock negative output
9	CAM_C_P	Output	MIPI clock positive output
10	DGND	Ground	Power ground
11	POWER_EN	Input	Camera module power enable active high
12	LED_EN	Input	Enable LED
13	SCL	Input	Two-Wire Serial Interface Clock
14	SDA	Bi-directional	Two-Wire Serial Interface Data I/O
15	+3.3V	POWER	3.3v Power supply

7 Mechanical Dimension

