



OV9281 MIPI Camera Module
1MP Monochrome Global Shutter Standalone
Camera Datasheet

Rev 1.0, Jun 2019



Table of Contents

1 Introduction.....2
2 Key Specifications3
3 Block Diagram.....3
4 Application.....4
5 Pin Definition.....4
6 Mechanical Dimension.....5
7 Lens Options.....5

1 Introduction

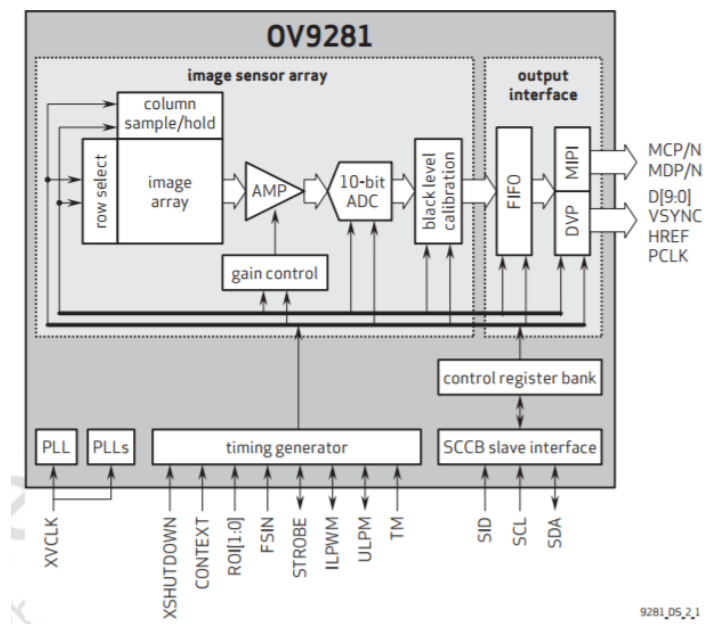
The Arducam monochrome (B&W) global shutter 1280x800 resolution OV9281 MIPI camera module is mainly designed for embedded systems which has MIPI CSI-2 camera interface like Raspberry Pi, Freescale i.MX6, Nvidia Jetson TX1/TX2/Nano, and other FPGA or DSP boards. This camera is based on 1/4-inch Omnivision OV9281 image sensor which adopts OmniPixel3-GS technology to provide full-frame, sub-sampled, and windowed 8/10-bit MIPI images, and capable of operating at up to 60fps in full resolution at 2-lane MIPI bus with complete user control over image quality. The global shutter technology allows to reduce or eliminate unwanted image artifacts, which occur with traditional rolling shutter image sensors as a result of motion during image capture. The sensor's global shutter and excellent low-light sensitivity allow it to be used for any application that needs gesture detection, head and eye tracking, and depth and motion detection. The camera is widely used in industrial bar code scanning.

Leveraging the industry's smallest global shutter pixel, with 2-lane MIPI output the OV9281 is capable of capturing 1280x800 resolution video at 120 frames per second (fps), VGA (640x480) at 180fps, QVGA (320x240) at 210 fps with binning, and QQVGA (160x120) at 400 fps with binning and skipping. The OV9281's high frame rates make it an ideal solution for low-latency machine vision applications.

2 Key Specifications

Parameter	Typical Value
Sensor	Monochrome global shutter OV9281
Pixel Size	3 μm x 3 μm
Active array size	1280 x 800
Optical Size	1/4 inch
Default Lens	M27280M07S
EFL	2.8 mm
F.NO	2.8
FOV	75° Horizontal
Build-in IR cut filter	None
Focusing Range	30cm ~ infinite (manually adjustable)
Output interface	2-lane MIPI serial output
Output formats	8/10-bit BW RAW
Maximum image transfer rate	1280 x 800@120 fps
Board Size	40mm x 40mm

3 Block Diagram



4 Application

- Industrial Bar Code Scanning
- Security
- High dynamic range imaging
- Unattended surveillance
- Stereo vision
- Machine vision

5 Pin Definition

The OV9281 pin out is listed below. The mating connector part number is 51049-03001-001 from Aces electronics.

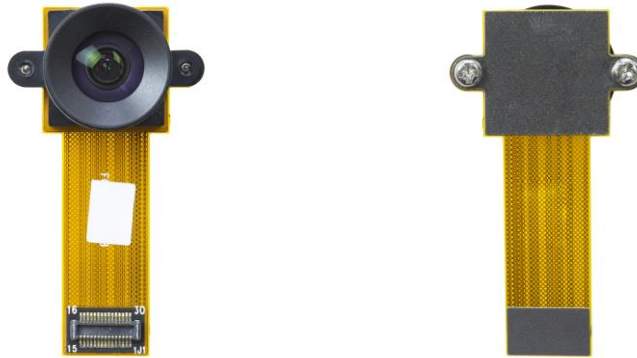


Table1 Connector Pin Definition

Pin No.	PIN NAME	Pin No.	PIN NAME
1	NC	16	MDP2
2	NC	17	MDN2
3	DVDD_1.2V	18	DGND
4	AGND	19	MCP
5	AVDD_2V8	20	MCN
6	DGND	21	DGND
7	SIOC	22	MDP1
8	SIOD	23	MDN1
9	XSHUTDOWN	24	DGND
10	FSIN/VSNC	25	XCLK
11	DGND	26	DGND
12	DGND	27	NC
13	NC	28	DOVDD_1V8
14	DGND	29	DGND
15	DGND	30	NC

