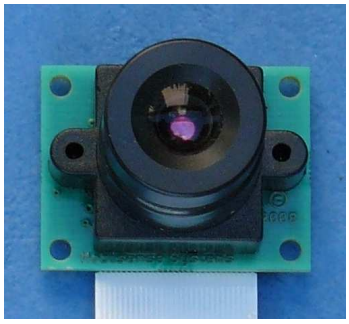
MOBISENSE SYSTEMS ®

Omnivision® OV7720 camera module

MBS7720

- ***VGA (640 x 480) CMOS image sensor***
- ***YUV422 or RGB output formats***
- ***Low power, small size, low weight***
- ***M12x0.5 lens mount***
- ***Digital parallel interface with FFC 30 pins***
- ***Low cost***



Actual size 26 x 20mm (1 x 0.8")

General description

MBS7720 camera module includes Omnivision® OV7720 sensor. The OV7720 CameraChip™ image sensor is a high-performance 1/4inch single-chip VGA camera and image processor that performs under low voltage conditions. It excels in low light situations and can operate within a wide temperature range.

OV7720 sensor features

- High sensitivity for low light operation
- Standard SCCB interface
- Output support for Raw RGB, RGB (GRB422, RGB565/555/444) and YCbCr422 formats
- Support VGA, QVGA and any size scaling down from CIF down to 40x30
- VarioPixel® method for subsampling
- Automatic image control functions including: AEC, AGC, AWB, ABF and ABLC
- Image quality controls including color saturation, hue, gamma, sharpness and anti-blooming
- ISP includes noise reduction and defect correction
- Lens shading correction
- Saturation level auto adjust (UV adjust)
- Edge enhancement level auto adjust
- De-noise level auto adjust
- Frame synchronization capability

MBS7720 features

- Parallel output, power and I2C on FFC 30 pins 0.5mm pitch: D<9:0>, HREF, VSYNC, PCLK, XCLK, SDA, SCL
- Alternate signal and ground lines and series resistors on parallel output preserve signal integrity over "long" FFC.
- High retention FFC connector (FCI VLL series)
- Test pad for frame synchronization (FSIN input)
- Single 3.3V supply.
- M12x0.5 lens mount for wide lens choice.
- **Full Video for Linux Two (V4L2) support on MBS270 XScale boards**.

Applications

- Vision guidance
- Machine vision
- Video surveillance
- Superior performance for image compression (YUV format) and color image processing.

Key specifications

OV7720 Sensor

Optical format	1/4-inch
Active imager size	3984µm x 2952µm
Array size	640H x 480V
Pixel size	6.0 x 6.0µm
Output format (8-bit)	YUV/YCrCb422 RGB565/555/444 GRB422 Raw RGB data (8/10bits)
Shutter type	Rolling shutter, progressive scan
Maximum data rate master clock	26.6 Mp/s 26.6 MHz
Full resolution	640 x 480
Frame rate	60 fps (at full resolution)
ADC resolution	10-bit column-parallel
Sensitivity	3.0 V/lux-sec
S/N Ratio	50dB
Dynamic range	60dB
Electronic exposre	Up to 510:1 for selected fps
Operating temperature	–20℃ to +70℃

Connectivity

FFC 30pins	Power, 10 bits parallel video data out, I2C, sensor clock
Test pads	Ground, 5V and FSIN

Power

Supply	3.3V ±0.3V
Consumption	120mW typical (60fps VGA, YUV)
Standby	<100µW

Mechanical

PCB dimensions	26 x 20mm (1 x 0.8")
Height without lens	28mm (1.1")
Weight without lens	5g
Lens weight	5-6g for most lenses

Ordering Information

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Omnivision® OV7720 camera module

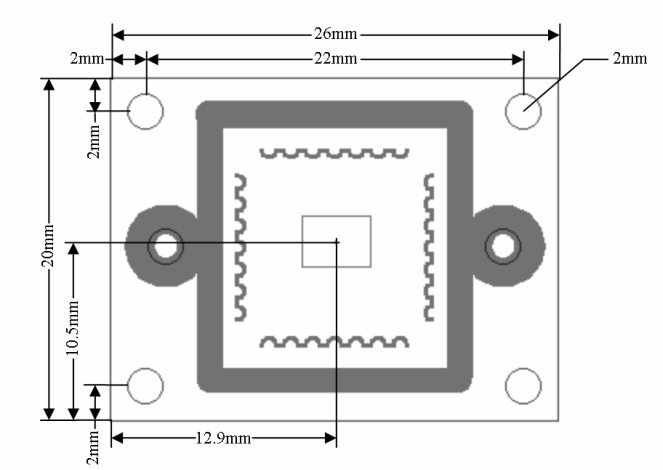
MBS7720

X1 connector pinout (FCI 10051922-3010ELF)

Pin	Signal name	Type	Level
1	+5V	Power[1]	5V
2	SDA	Open Drain[2]	0V / 3.3V
3	SCL	Open Drain[2]	0V / 3.3V
4	GND	Power	0V
5	D3	Output[4]	0V / 3.3V
6	GND	Power	0V
7	D5	Output[4]	0V / 3.3V
8	GND	Power	0V
9	D4	Output[4]	0V / 3.3V
10	GND	Power	0V
11	PCLK	Output	0V / 3.3V
12	GND	Power	0V
13	D7	Output[4]	0V / 3.3V
14	HREF	Output	0V / 3.3V
15	GND	Power	0V
16	D0	Output[4]	0V / 3.3V
17	GND	Power	0V
18	VSYNC	Output	0V / 3.3V
19	D6	Output[4]	0V / 3.3V
20	GND	Power	0V
21	XCLK	Input[3]	0V / 3.3V
22	GND	Power	0V
23	D2	Output[4]	0V / 3.3V
24	GND	Power	0V
25	D8	Output[4]	0V / 3.3V
26	GND	Power	0V
27	D1	Output[4]	0V / 3.3V
28	GND	Power	0V
29	D9	Output[4]	0V / 3.3V
30	3.3V supply	Power	3.3V

[1] When connected to MBS270, this pin level is 5V but nothing is connected to it on this module except a testpad.
[2] When connected to MBS270, pull up resistors are provided. Pull-up resistors must be provided when connecting to alternate host.
[3] There is no oscillator on-board. User must provide clock. When connected to MBS270, this pin is connected to CIF_MCLK pin.
[4] When connected to MBS270, 8 MSBs (D<9:2>) are connected to CIF_DD<7:0> for 8 bits operation. D1 (resp. D0) is connected to CIF_DD9 (resp. CIF_DD8) for 10 bits operation.

Mechanical drawing



Ordering information

Reference	Description
MBS7720	Camera module with OV7720 sensor, f=6mm IR cut lens and 100mm (4") long FFC cable.

Options	Description
-L50	50mm (2") long FFC.
-L150	150mm (6") long FFC.
-L200	200mm (8") long FFC.
-E	Enhanced version: high quality optics (industrial and scientific applications).

Append option code to product reference.

Lenses:
A wide choice of lenses is available: standard or high quality, IR-cut or IR pass, etc. Please contact us for specific needs.
contact@mobisensesystems.com