**General Description**

The C329 is a colour VGA camera module which performs JPEG compression and can be attached to a host via an SPI interface. Users can send a Snapshot command from the host in order to capture an image. The image is then compressed by the host and stored in and internal buffer and transferred to the host through the SPI port. The C329 uses a 1/4" OmniVision VGA sensor with an 8-bit YcbCr interface and 3.8 V/(Lux Sec) sensitivity. The OV529 Serial bridge contains an Embedded JPEC CODEC and controller chip that can compress and transfer image data from the Camera Sensor to an external device. The OV529 performs all imaging function like white balance, downsizing and compressed image storage. A Serial EEPROM provides the program code that gives the OV529 it's interface and command set.

C329-SPI-CAMERA-BOARD
## (lens sold seperately)
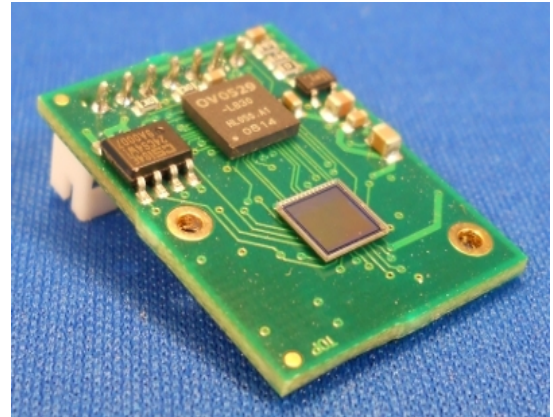
Features

- Small Size, 20x28mm
- Adjustable resolution resolution, Max VGA
- 3.3V operation
- Low Power consumption 64mA active
- SPI Interface with Hold
- Power Saving Mode
- Multiple lens options
- Multiple interface options (UART version available)
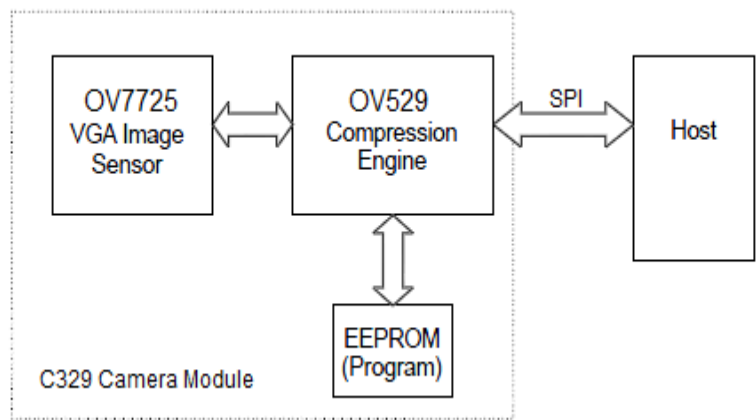
System Block Diagram

Following lenses are optionally available:

f2.2mm F2.5 Lens & Holder (No IR cut filter) (BB221)
f2.5mm F2.0 Lens & Holder (No IR cut filter (BB289)
f3.6mm F2.0 Lens & Holder (No IR cut filter) (BB232)
f3.6mm F2.0 Lens & Holder (With IR cut filter) (BB291)
f4.63mm F2.8 Lens & holder (With IR cut filter) (BB220)
f6.0mm F1.6 Lens & Holder (No IR cut filter) (BB224)
f6.0mm F1.6 Lens & Holder (With IR cut filter) (BB270)
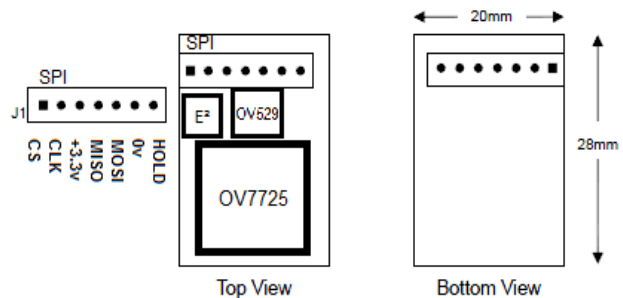
C329-SPI board Layout and Serial Interface

Please see our web site for the complete user manual.

SPI Interface

Timing Options and CLK

The SPI interface consists of MOSI (Master Out Slave In), MISO (Master In Slave Out), CLK and CS. In the OV529 there is the addition of HOLD which when H indicates to the Master that the OV529 isn't ready and should hold off the next transaction. The CS signal allows multiple devices to be attached to the SPI bus. When CS is L the OV529 is selected. Data on MISO will be clocked out on the falling edge of CLK and data on MOSI will be clocked in on the rising edge of CLK. (It is possible to select both clock edges, this will require a hardware change that must be ordered specifically. It is recommended to use the above scenario if at all possible)
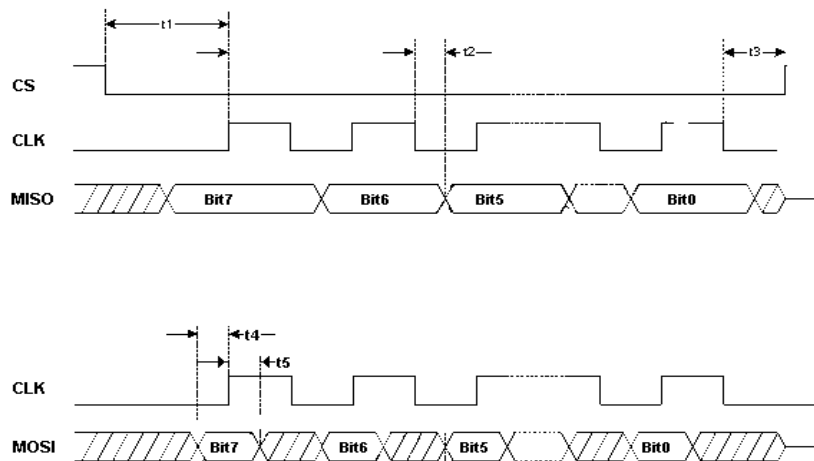
(unit: ns)

	Min	Typ	Max	Description
t1	200			Chip enable setup time
t2	10		12	MISO hold time
t3	12			Chip enable hold time
t4	12			MOSI setup Time
t5	12			MOSI hold time

Figure 3 – SPI Timing

Command Set

The C329-SPI module supports the following commands:

Command	Cmd Token	Parameter 1	Parameter 2	Parameter 3	Parameter 4
INITIAL	FFFFFF01h	00h	Colour Type	Preview Res.	Compres. Res
GET PIC	FFFFFF04h	Pic. Type	00h	00h	00h
SNAPSHOT	FFFFFF05h	Snapshot Type	00h	00h	00h
RESET	FFFFFF08h	Reset Type	00h	00h	00/FFh
POWER OFF	FFFFFF09h	00h	00h	00h	00h
DATA	FFFFFF0Ah	Data Type	Length Byte 0	Length Byte 1	Length Byte 2
SYNC	FFFFFF0Dh	00h	00h	00h	00h
ACK	FFFFFF0Eh	Cmd Token	ACK counter	00h	00h
NAK	FFFFFF0Fh	00h	NAK counter	Err. Number	00h

QUALITY	FFFFFF10h	Quality Level	00h	00h	00h