

Electronic Hub ESP32-CAM Module User Manual

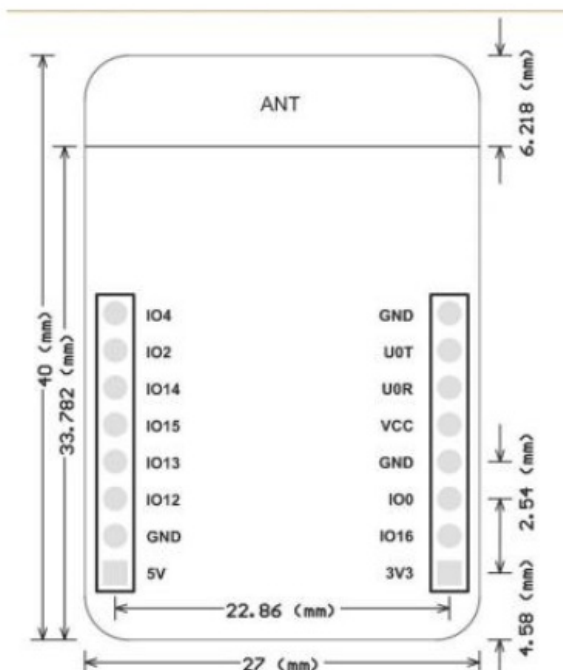
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ESP32-CAM Module

User Manual



1. Features

Tiny 802.11b/g/n Wi-Fi

- Adopt low consumption and dual core CPU as an application processor
- Main frequency reaches up to 240MHz and computer power reaches up to 600 DMIPS
- Built-in 520 KB SRAM built-out 8MB PSRAM
- Support UART/SPI/I2C/PWM/ADC/DAC port
- Support OV2640 and OV7670 camera with built-in photoflash
- Support uploading picture via WiFi
- Support TF card
- Support multiple sleep modes
- Embed Lwip and FreeRTOS
- Support STA/AP/STA+AP working mode
- Support Smart Config/AirKiss smartconfig
- Support serial local upgrade and remote firmware upgrade FOTA

2. Description

ESP32-CAM has the most competitive and tiny camera module of the industrial.

As the most tiny system, it can work independently. Its size is 27*40.5*4.5mm and its deep-sleep current can reach 6mA at least.

It can be widely applied to many IoT applications like household smart devices, industrial wireless control, wireless monitoring , QR wireless identification, wireless positioning system signals and other IoT applications, also a really ideal choice.

In addition, with DIP sealed package, it can be used by inserting into board, so as to improve rapid productivity, provide high reliability connection method and convenience for all kinds of IoT applications hardware.

3. Specification

Module Model	ESP32-CAM
Sealed package	DIP-16
Size	27*40.5*4.5 (±0.2) mm
SPI Flash	Default as 32Mbit
RAM	Interior 520KB+ exterior 8MB PSRAM
Wi-Fi	802.11 b/g/n
Support Interface	UART、SPI、I2C、PWM
Support TF Card	Up to 4G
IO Port	9 Pcs
Serial Rate	Default as 115200 bps
Picture Output Format	JPEG(only OV2640),BMP,GRAYSCALE
Spectrum Range	2400 ~2483.5MHz
Antenna Form	On-board PCB antenna , increase 2dBi
Transmit Power	802.11b: 14±3 dBm (@11Mbps) 802.11g: 14±3 dBm (@54Mbps) 802.11n: 14±3 dBm (@MCS7)
Reception Sensitivity	CCK, 1 Mbps : -90dBm CCK, 11 Mbps: -85dBm 6 Mbps (1/2 BPSK): -88dBm 54 Mbps (3/4 64-QAM): -70dBm MCS7 (65 Mbps, 72.2 Mbps): -67dBm

Power Consumption	Turn off flash light:180mA@5V Turn on flash light and adjust the brightness to the maximum:310mA@5V Deep-sleep: the lowest power consumption reaches 6mA@5V Modern-sleep: the lowest is 20mA@5V Light-sleep: the lowest is 6.7mA@5V
Safety	WPA/WPA2/WPA2-Enterprise/WPS
Power Supply Range	4.75-5.25V
Working Temperature	-20 °C ~ 70 °C
Storage environment	-40 °C ~ 125 °C , < 90%RH
Weight	10g

4. Picture Output Format Rate of ESP32-CAM Module

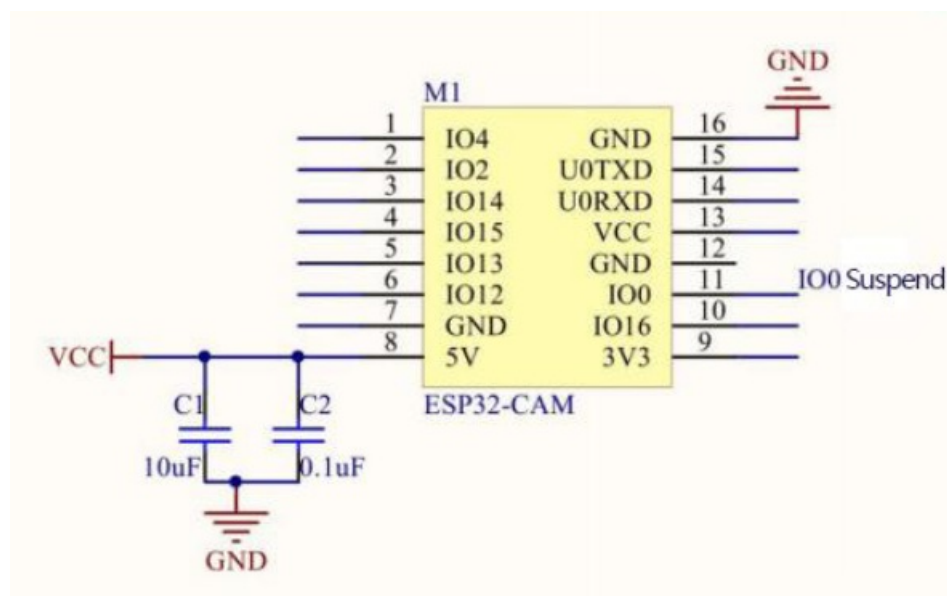
Format Size	QQVGA	QVGA	VGA	SVGA
JEG	6	7	7	8
BMP	9	9	-	-
GRAYSCALE	9	8	-	-

Test environment: Camera model: OV2640 XCLK:20MHz, module sends picture to browser via WIFI

5. PIN Description

CAM	ESP32	SD	ESP32
D1	PIN5	CLK	PIN14
D2	PIN18	CMD	PIN15
D3	PIN19	DATA0	PIN2
D4	PIN21	DATA1/photo flash	PIN4
D5	PIN36	DATA2	PIN12
D6	PIN39	DATA3	PIN13
D7	PIN34		
XCLK	PIN35		
PCLK	PIN0		
VSYNC	PIN22		
HREF	PIN25		
SDA	PIN23		
SCL	PIN26		
POWER PIN	PIN27		
	PIN32		

6. Minimal system diagram



7. Contact us

Website www.ai-thinker.com

Tel 0755-29162996

Email: support@aithinker.com

FCC warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is

no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

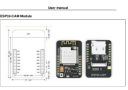
Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body

Documents / Resources

	<p>Electronic Hub ESP32-CAM Module [pdf] User Manual ESP32-CAM, Module, ESP32-CAM Module</p>
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References

- [Ai-Thinker Co., Ltd](#)