Smart AI Camera Module Specification

v1.0

Model：HUB 8735 ultra

1. HUB 8735 ultra module introduction

Overview

The HUB 8735 ultra is a highly integrated Smart AI camera module with built-in low power dual band Wi-Fi 802.11 a/b/g/n and Bluetooth specification 5.1. The high resolution 1080P camera image can transmit immediately with low latency via high performance Wi-Fi. This module included powerful NPU AI computing engine to accelerate AI model processing, and can be widely used in various IoT application need image processing, (like image recognition, face recognition…), suitable for smart home, industrial smart control, smart retail, health care or automotive electronics markets.

With the small size design of this module, it can easily fit into the product space.. A variety of pre-trained AI models will be supported directly in the module so it can be quickly applied to each kind of applications.

Applications

- IOT (Internet of things)
- IOV (Internet of vehicles)
- Home automation
- E-home gateway
- Industrial control system
- IP camera
- Long-term care
- Others

2. HUB 8735 ultra module specification

● Functions Specification

Function	Description
Processor	32bi t low power ARM processor with up to 500MHz clock
Camera Input	1080P camera module
Audio Input	Built-in high sensitivity digital microphone
Storage	Support Micro SD memory card
Connectivity	Wi-Fi 2.4GHz/5GHz Bluetooth BLE 5.1 Wireless video streaming
Video Encoder	H.264/265
AI Models	Provide multiple pre-trained AI models
UART Control	Provide UART commands for external host control
Native Develop	Support Arduino IDE development
USB-C Interface	USB Download、Debug USB OTG
LED	Camera Flash LED
I/O board	Easy to expand the IO functions by new requirement 1. Speaker output 2. IMU sensor 3. Add temperature, humidity sensor…etc.
Environment	1. Operation temperature : 0 ~ 60℃ 2. Storage temperature : -20 ~ 85 ℃

● Physical Characteristics

Parameter	Specification
MCU	ARM v8M 500MHz
Wi-Fi Features	802.11 a/b/g/n
Wi-Fi frequency band	2.4GHz/5GHz
Bluetooth Low Energy	BLE 5.1
Bluetooth frequency band	2.4Ghz-2.48GHz
Main digital interface	UART

PIO control	GPIO
Dimension	53mm x 27mm x 8.8mm

- Control Interface

Interface	Signals
UART	RX, TX
SPI	MOSI, MISO, SCL, CS
I2C	SCL, SDA

- Protocol

Protocol	Type
AT Command	Module setting, proprietary command

- Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.
Power supply voltage	4.75V	5V	5.25V
I/O voltage	3.135V	3.3V	3.465V

- Power requirement

Parameter	Max.
Peak Supply Current	350mA

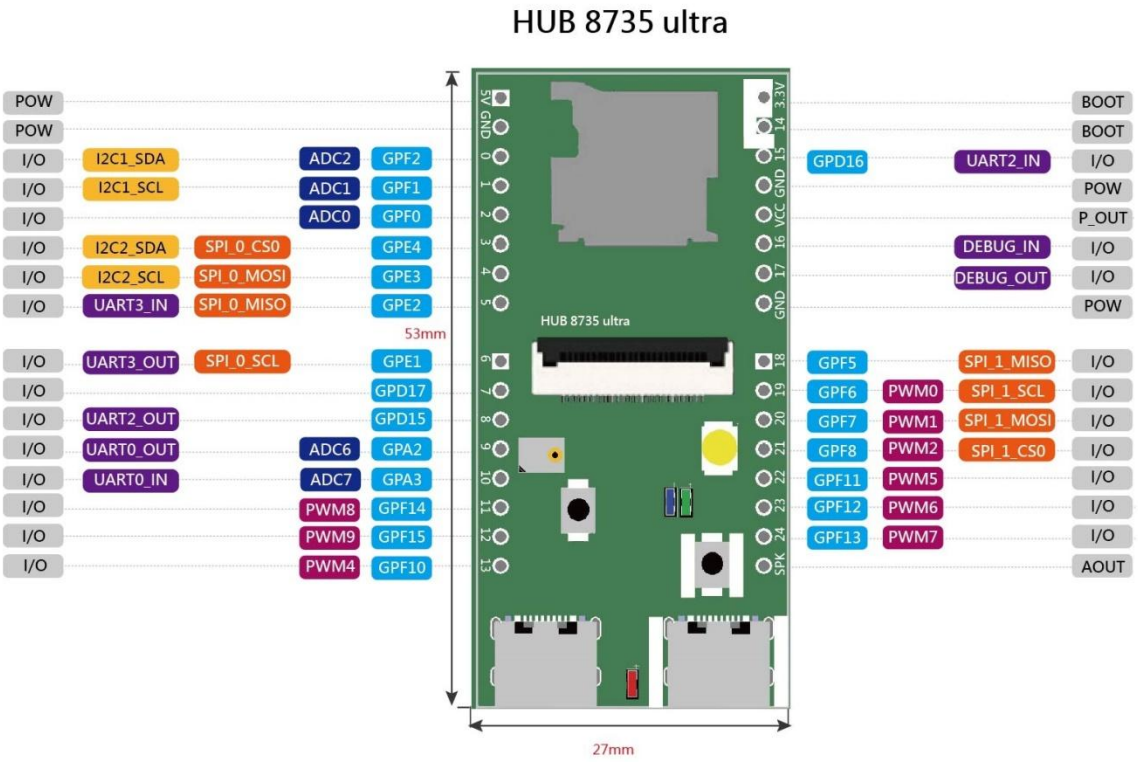
- Environment condition

Parameter	Specification
Operating temperature	0°C to + 60°C
Storage temperature	-20°C to + 85°C

- Certification

Type	Number
NCC	CCAL23Y11150T5

3. Hardware Interface



SPI x 2

I2C x 2

PWM x 9

UART x 3

ADC x 5

GPIO x 22

4. Reference Schematic – HUB 8735 ultra

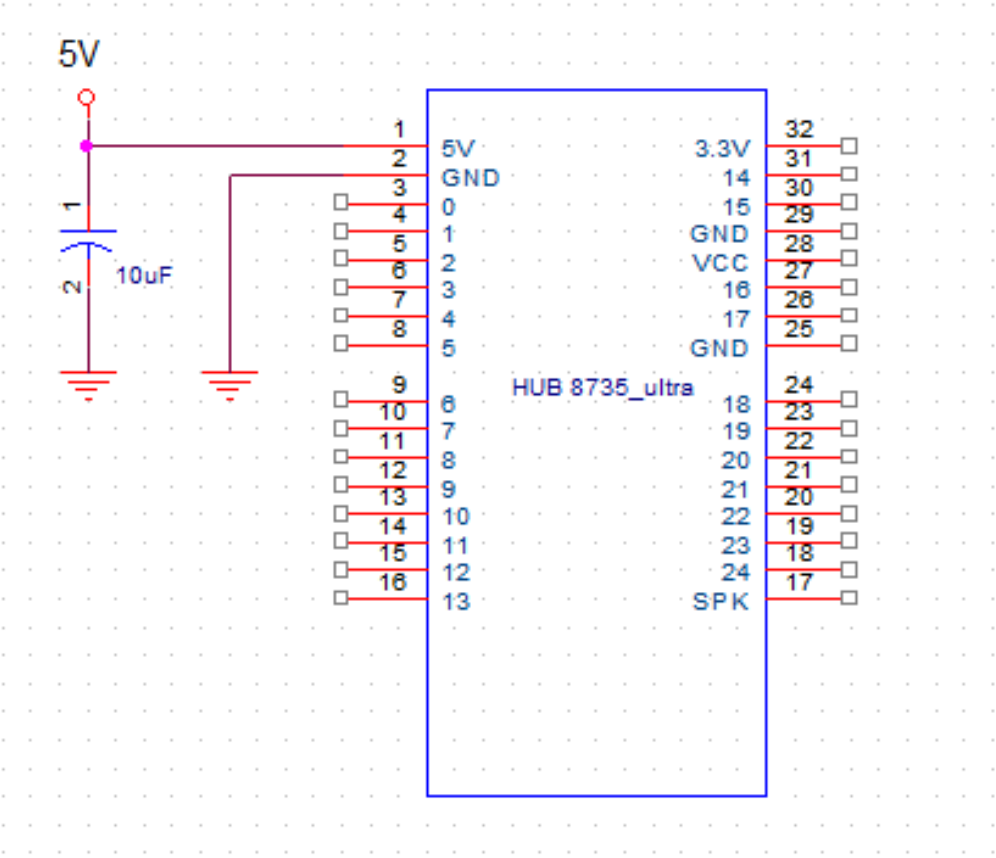


Figure 1: Reference schematic

5. Pin description – HUB 8735 ultra

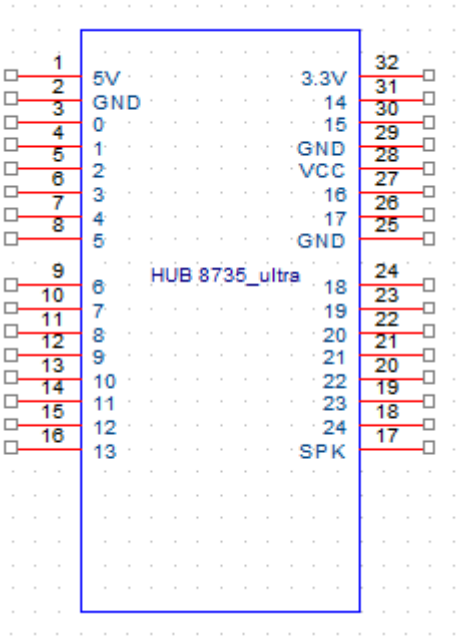


Figure 2: Pin definition

Pin	Name	I/O	Description
1	5V	PI	5V Power input
2	GND	G	Ground
3	0	I/O	GPF2 , I2C1_SDA , ADC2
4	1	I/O	GPF1 , I2C1_SCL , ADC1
5	2	I/O	GPF0 , ADC0
6	3	I/O	GPE4 , I2C2_SDA , SPI_0_CS0
7	4	I/O	GPE3 , I2C2_SCL , SPI_0_MOSI
8	5	I/O	GPE2 , UART3_IN , SPI_0_MISO
9	6	I/O	GPE1 , UART3_OUT , SPI_0_SCL
10	7	I/O	GPD17
11	8	I/O	GPD15 , UART2_OUT
12	9	I/O	GPA2 , UART0_OUT , ADC6
13	10	I/O	GPA3 , UART0_IN , ADC7
14	11	I/O	GPF14 , PWM8
15	12	I/O	GPF15 , PWM9
16	13	I/O	GPF10 , PWM4
17	SPK	O	Audio output
18	24	I/O	GPF13 , PWM7
19	23	I/O	GPF12 , PWM6
20	22	I/O	GPF11 , PWM5
21	21	I/O	GPF8 , SPI_1_CS0 , PWM2
22	20	I/O	GPF7 , SPI_1_MOSI , PWM1
23	19	I/O	GPF6 , SPI_1_SCL , PWM0

24	18	I/O	GPF5 , SPI_1_MISO
25	GND	G	Ground
26	17	I/O	GPF4 , UART1_OUT
27	16	I/O	GPF3 , UART1_IN
28	VCC	PO	5V OUTPUT
29	GND	G	Ground
30	15	I/O	GPD16 , UART2_IN
31	14	I	BOOT mode selection
32	3.3V	O	BOOT pin pull-up power

6. Mechanical dimension – HUB 8735 ultra

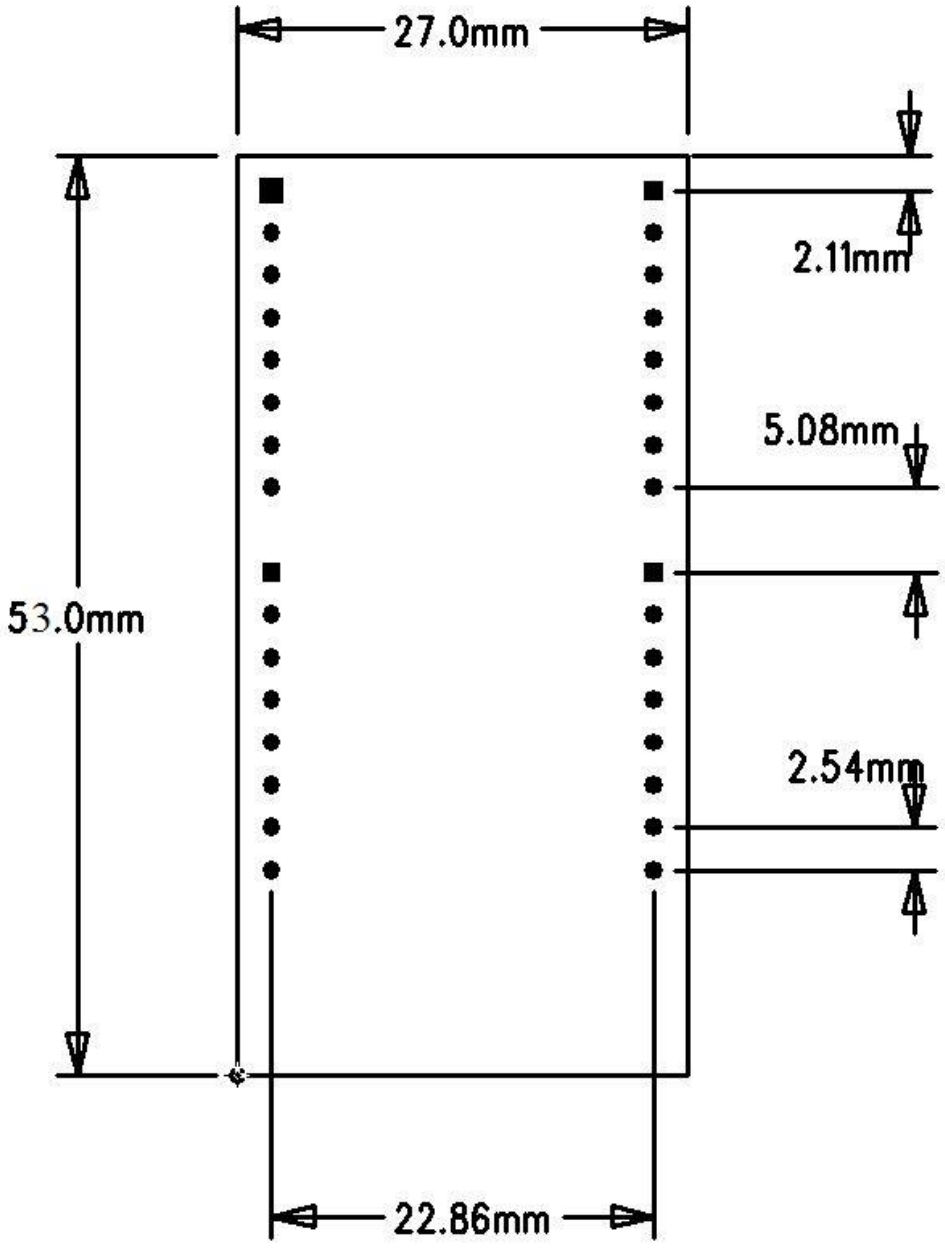


Figure 3: Module footprint