Smart AI Camera Module Specification

Model：HUB 8735

V02 (2024/03/07)

1. HUB 8735 module introduction

Overview

The HUB 8735 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 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 Interface	USB video output
I/O board	Easy to expand the IO functions by new requirement 1. Speaker output 2. USB video output and USB debug share one USB Type-C connector 3. IMU sensor 4. 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	43.9mm x 30.5mm x 6.4mm

- 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

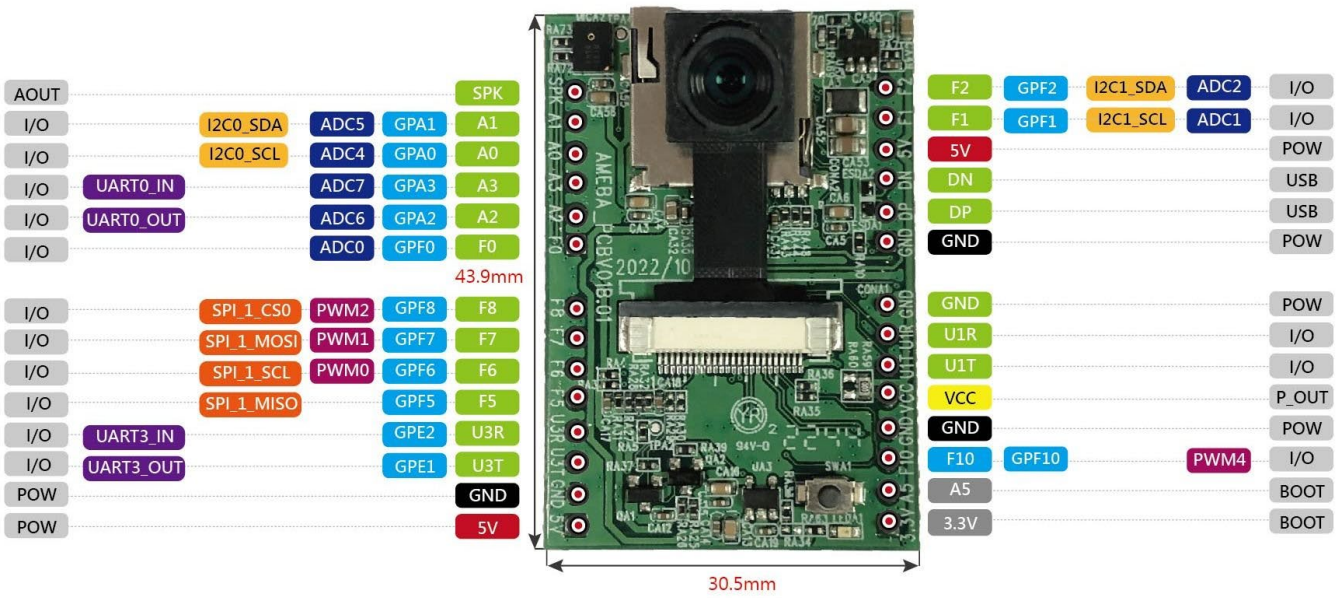
Parameter	Max.
Peak Supply Current	350mA

- Environment condition

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

3. Hardware Interface

HUB 8735



SPI x 1 組

I2C x 2 組

PWM x 4 組

UART x 2 組

ADC x 7 組

GPIO x 14 組

4. Reference Schematic – HUB 8735

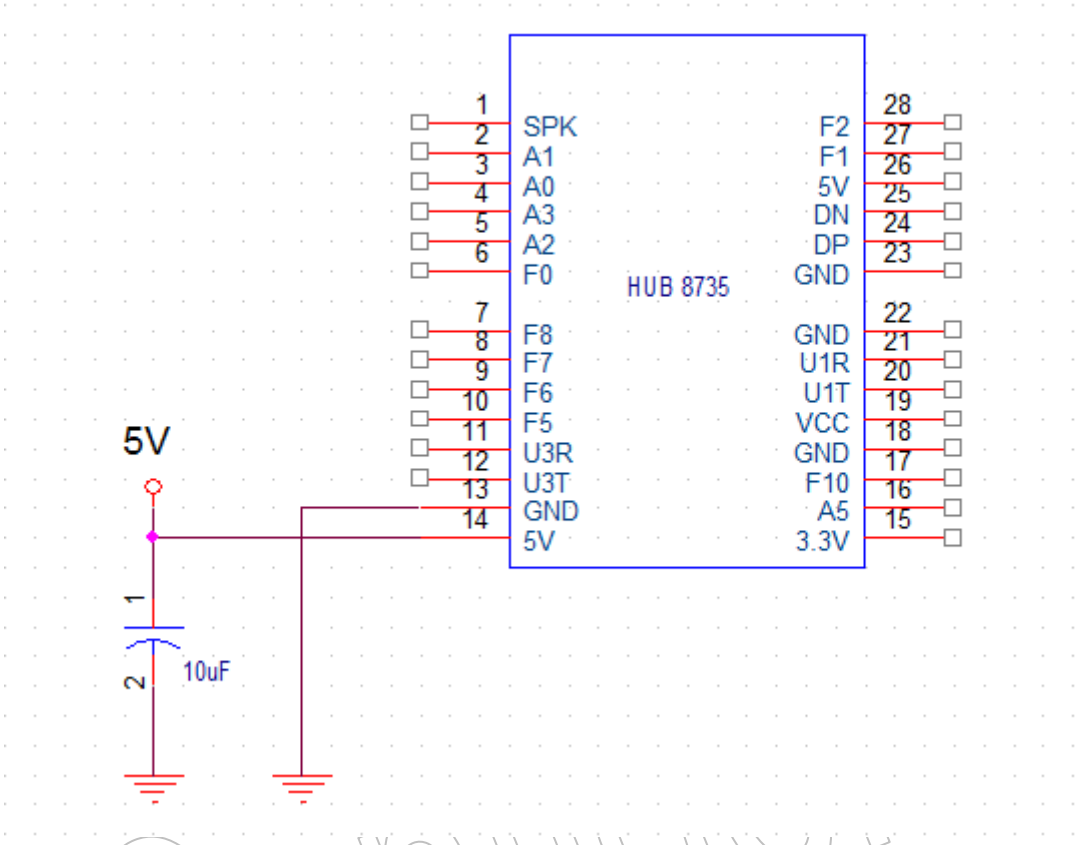


Figure 1: Reference schematic

5. Pin description – HUB 8735

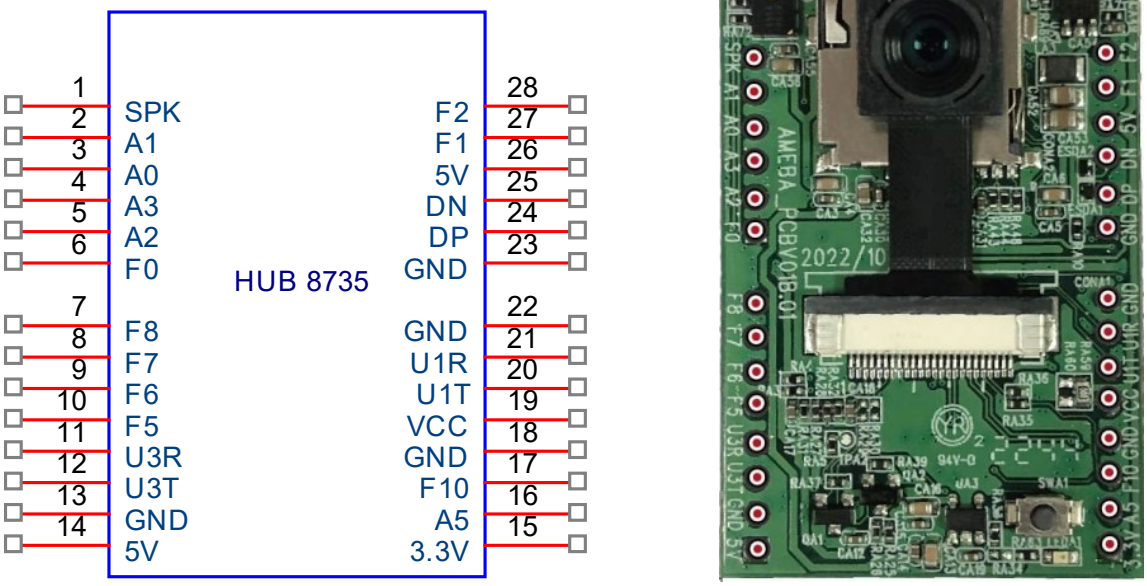


Figure 2: Pin definition

Pin	Name	I/O	Description
1	SPK	O	Audio output
2	A1	I/O	GPIOA_1, ADC5, I2C0_SDA
3	A0	I/O	GPIOA_0, ADC4, I2C0_SCL
4	A3	I/O	GPIOA_3, ADC7, UART0_IN
5	A2	I/O	GPIOA_2, ADC6, UART0_OUT
6	F0	I/O	GPIOF_0, ADC0,
7	F8	I/O	GPIOF_8, PWM2, SPI_1_CS0
8	F7	I/O	GPIOF_7, PWM1, SPI_1_MOSI
9	F6	I/O	GPIOF_6, PWM0, SPI_1_SCL
10	F5	I/O	GPIOF_5, SPI_1_MISO
11	U3R	I/O	GPIOE_2, UART3_IN
12	U3T	I/O	GPIOE_1, UART3_OUT
13	GND	G	Ground
14	5V	P	5V Power input
15	3.3V (BOOT_V3P3)	O	BOOT pin pull-up power
16	A5 (BOOT_MODE)	I	BOOT mode selection
17	F10	I/O	GPIOF_10, PWM4

18	GND	G	Ground
19	VCC	P	5V OUTPUT
20	U1T (DEBUG_MODE)	I/O	UART1_OUT (debug mode use)
21	U1R (DEBUG_MODE)	I/O	UART1_IN (debug mode use)
22	GND	G	Ground
23	GND	G	Ground
24	DP	I/O	USB positive differential data lines
25	DN	I/O	USB negative differential data lines
26	5V	P	5V Power input
27	F1	I/O	GPIOF_1, ADC2, I2C1_SCL
28	F2	I/O	GPIOF_2, ADC2, I2C1_SDA

6. Mechanical dimension – HUB 8735

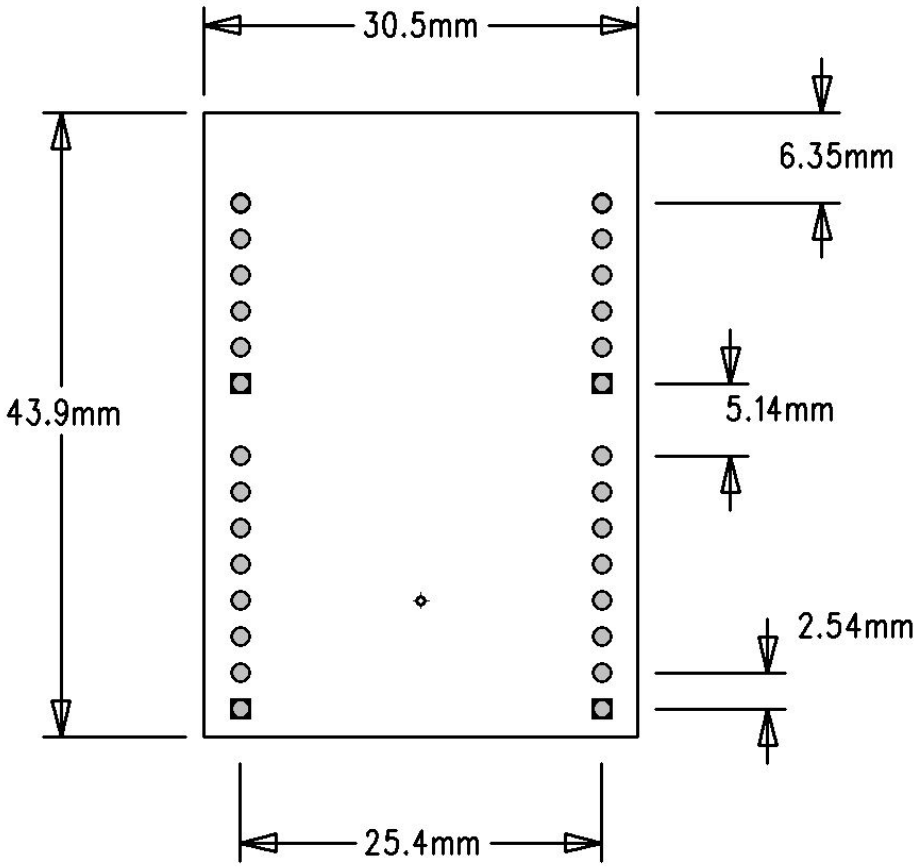


Figure 3: Module footprint