AIoT Module

Model：SM35B02

1. SM35B02 Module Introduction

● Overview

The SM35B02 is a highly integrated AIoT 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 interface can transmit images 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. SM35B02 Module Specification

● Functions Specification

Function	Description
Processor	32bi t low power ARM processor with up to 500MHz clock
Camera Input	MIPI interface
Audio Input	Both digital and analog microphone interface
Audio Output	Analog output
Storage	Support Micro SD memory card
Connectivity	Wi-Fi 2.4GHz/5GHz
	Bluetooth BLE 5.1
Video Encoder	H.264/265
AI Models	Provide multiple pre-trained AI models
UART	Multiple UART interface
SPI	Maximum 2 SPI interface
I2C	Multiple I2C interface
PWM	Multiple PWM interface with configurable duty cycle
ADC	Multiple ADC channel with 12-biit mode
GPIO	Multiple programmable GPIOs
USB Interface	USB video output
Native Develop	Support Arduino IDE development

3. PIN Description

< TOP VIEW >
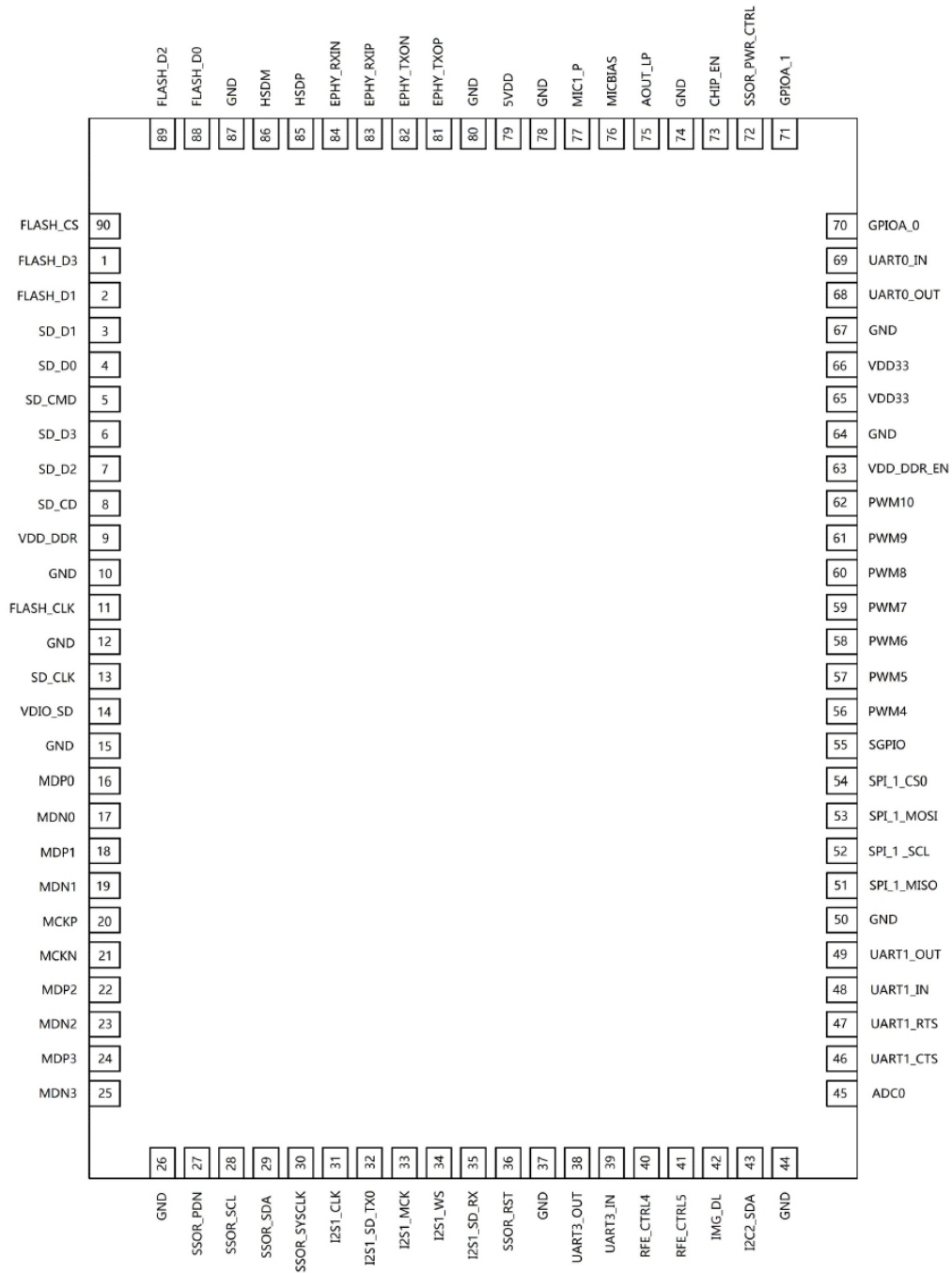
NO.	Name	Description
1	FLASH_D3	Flash Data Input (Data Input Output 3)
2	FLASH_D1	Flash Data Input (Data Input Output 1)
3	SD_D1	SD Data 1. Multiplexed with GPIOS_1.
4	SD_D0	SD Data 0. Multiplexed with GPIOS_2.
5	SD_CMD	SD Command. Multiplexed with GPIOS_3.
6	SD_D3	SD Data 3. Multiplexed with GPIOS_5.
7	SD_D2	SD Data 3. Multiplexed with GPIOS_5.
8	SD_CD	SD Card Detection. Multiplexed with GPIOS_4.
9	VDD_DDR	1.8V/1.35V power input
10	GND	Ground connections
11	FLASH_CLK	Flash Serial Clock Input
12	GND	Ground connections
13	SD_CLK	SD Bus clock. Multiplexed with GPIOS_0.
14	VDIO_SD	I/O Voltage supply input
15	GND	Ground connections
16	MDP0	MIPI sensor lane0 differential data positive input.
17	MDN0	MIPI sensor lane0 differential data negative input.
18	MDP1	MIPI sensor lane1 differential data positive input.
19	MDN1	MIPI sensor lane1 differential data negative input.
20	MCKP	MIPI sensor differential clock positive input.
21	MCKN	MIPI sensor differential clock negative input.
22	MDP2	MIPI sensor lane2 differential data positive input.
23	MDN2	MIPI sensor lane2 differential data negative input.
24	MDP3	MIPI sensor lane3 differential data positive input.
25	MDN3	MIPI sensor lane3 differential data negative input.
26	GND	Ground connections
27	SSOR_PDN	GPIO pin
28	SSOR_SCL	GPIO pin
29	SSOR_SDA	GPIO pin
30	SSOR_SYSCLK	GPIO pin
31	I2S1_CLK	GPIO pin
32	I2S1_CD_TX0	GPIO pin
33	I2S1_MCK	GPIO pin
34	I2S1_WS	GPIO pin

35	I2S1_SD_RX	GPIO pin
36	SSOR_RST	GPIO pin
37	GND	Ground connections
38	UART3_OUT	UART Output
39	UART3_IN	UART Input
40	RFE_CTRL4	GPIO pin
41	RFE_CTRL5	GPIO pin
42	IMG_DL	GPIO pin
43	I2S2_SDA	GPIO pin
44	GND	Ground connections
45	ADC0	GPIO pin
46	UART1_CTS	UART CTS
47	UART1_RTS	UART RTS
48	UART1_IN	UART Input
49	UART1_OUT	UART Output
50	GND	Ground connections
51	SPI_1_MISO	GPIO pin
52	SPI_1_SCL	GPIO pin
53	SPI_1_MOSI	GPIO pin
54	SPI_1_CS0	GPIO pin
55	SGPIO	GPIO pin
56	PWM4	PWM controllers generate pulse signals
57	PWM5	PWM controllers generate pulse signals
58	PWM6	PWM controllers generate pulse signals
59	PWM7	PWM controllers generate pulse signals
60	PWM8	PWM controllers generate pulse signals
61	PWM9	PWM controllers generate pulse signals
62	PWM10	PWM controllers generate pulse signals
63	VDD_DDR_EN	GPIO pin
64	GND	Ground connections
65	VDD33	3.3V Voltage input
66	VDD33	3.3V Voltage input
67	GND	Ground connections
68	UART0_OUT	UART Output
69	UART0_IN	UART Input

70	GPIOA_0	GPIO pin
71	GPIOA_1	GPIO pin
72	SSOR_PWR_CTRL	GPIO pin Shared with GPIOA_5 1: Enter into test/debug mode 0: Normal operation mode
73	CHIP_EN	Whole chip enable control ， When asserted, chip function is enabled; when de-asserted, whole chip is shutdown
74	GND	Ground connections
75	AOUT_LP	Speaker output positive signal.
76	MICBIAS	Microphone bias output.
77	MIC1_P	MIC input positive signal.
78	GND	Ground connections
79	5VDD	5.0V Voltage input
80	GND	Ground connections
81	EPHY_TXOP	GPIO pin
82	EPHY_TXON	GPIO pin
83	EPHY_RXIP	GPIO pin
84	EPHY_RXIN	GPIO pin
85	HSDP	USB positive differential data lines
86	HSDM	USB negative differential data lines
87	GND	Ground connections
88	FLASH_D0	Flash Data Input (Data Input Output 0)
89	FLASH_D2	Flash Data Input (Data Input Output 2)
90	FLASH_CS	Flash Chip Select Input

4. Electrical Characteristics

	MIN	TYP	MAX	Unit
Operating Temperature	-20	25	85	deg.C
5VDD	4.75	5	5.25	V
VDD33	3.135	3.3	3.465	V

5. Warning

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance

could void the user's authority to operate the equipment.

15.105(b)

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.

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

of the device.

FCC RF Radiation Exposure Statement

1) This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2) This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This equipment should be installed.

Note: The end product shall has the words "Contains Transmitter Module FCC ID: 2AOAOSM35B02"

OEM statement

The Original Equipment Manufacturer (OEM) must ensure that the OEM modular transmitter must be labeled with its own FCC ID number. This includes a clearly visible label on the outside of the final product enclosure that displays the contents shown below. If

the FCC ID is not visible when the equipment is installed inside another device, then the outside of the device into which the equipment is installed must also display a label referring to the enclosed equipment.

The end product with this module may subject to perform FCC part 15B unintentional emission test requirement and be properly authorized while installation to host(s), and platform, and integrator are obligated to have its manual or instruction with the related compliance warning to end users.

This device is intended for OEM integrator only

The end product with this module may be subject to re-evaluate RF exposure as per 47CFR §

2.1091, and §2.1093 if antenna or usage, including co-located usage of other transmitters, of the

subsequent installation are changed.

This radio transmitter has been approved by FCC/Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that Have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

PCB Trace Antennas: 2.4G:3.12dBi / 5G:4.54dBi