1. Product Name

Class 2 RoHS-compliant Bluetooth Module v2.0+EDR

2. Product Description

Class 2 Bluetooth module compliant to Bluetooth Specification v2.0+EDR. It has three versions: (1) with chip antenna, (2) with mini coaxial connector, (3) with RF pad. It has 8Mbit of flash for customized applications. This product is RoHS-compliant.

3. Features and Applications

3.1 Features

3.1.1 Bluetooth Specification v2.0+EDR compliant

3.1.2 Power Class 2 operation (-6dBm to +4dBm output power or 10-meter range)

3.1.3 Small Dimension (25mm x 14.5mm)

3.1.4 USB/UART/PCM/SPI interface

3.1.5 Three versions:

- With chip antenna

- With mini coaxial connector

- With RF pad

3.1.6 With 8Mbit Flash

3.1.7 RoHS Compliant

3.2 Applications

3.2.1 Embedded applications using USB/UART/PCM interface

3.2.2 Small form factor USB dongle

3.2.3 Serial Cable Replacement

3.2.4 Headset

4. Hardware Specifications

4.1 Interfaces

4.1.1 Connector/Pin Assignments

Terminal Name	Terminal	Type	Description
GND	1	GND	Module Supply Ground
NC	2	N/A	No Connection
GND	3	GND	Module Supply Ground
AIO (0)	4	Bi-directional	Programmable Input/Output line
AIO (1)	5	Bi-directional	Programmable Input/Output line
RESET	6	CMOS input, pulled down	Reset if high
SPI_MISO	7	CMOS output, tristatable	Serial Peripheral Interface data output
SPI_CSB	8	CMOS input,	Serial Peripheral Interface chip select

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		pulled down	
SPI_CLK	9	CMOS input, pulled down	Serial Peripheral Interface clock
SPI_MOSI	10	CMOS input, pulled down	Serial Peripheral Interface data input
UART_CTS	11	CMOS input, pulled down	UART clear to send
UART_TX	12	CMOS output	UART data output
UART_RTS	13	CMOS output, pulled down	UART ready to send
UART_RX	14	CMOS input	UART data input
2V2	15	Voltage input	Module supply: +2.2V for low voltage operation.
VCC	16	VCC	Module supply: +3.3V or +1.8V for low voltage operation
GND	17	GND	Module supply ground
PCM_OUT	18	CMOS output, tristatable	Synchronous data output
PCM_SYNC	19	Bi-directional, pulled down	Synchronous data SYNC
PCM_IN	20	CMOS input, pulled down	Synchronous data input
PCM_CLK	21	Bi-directional, pulled down	Synchronous data clock
USB_DP	22	Bi-directional	USB data plus
USB_DN	23	Bi-directional	USB data minus
PIO (7)	24	Bi-directional, pulled down	Programmable Input/Output line
PIO (6)/CLK_REQ	25	Bi-directional, pulled down	PIO line or clock request output to enable external clock for external clock line
PIO (5) /USB_DETACH	26	Bi-directional, pulled down	PIO line or chip detaches from USB when this input is high
PIO (4)/USB_ON	27	Bi-directional, pulled down	PIO or USB on (input senses when VBUS is high, wakes BlueCore2-External)
PIO (3)/ USB_WAKE_UP	28	Bi-directional, pulled down	PIO or output goes high to wake up PC when in USB mode or external RAM chip select
PIO (2)/ USB_PULL_UP	29	Bi-directional, pulled down	PIO or USB pull-up (via 1.5kΩ resistor to USB_D+)
PIO (1)	30	Bi-directional, pulled down	Control output for external PA Class 1 applications only
PIO (0)	31	Bi-directional, pulled down	Control output for external LNA (if fitted)

4.1.2 Type of Interface

- Surface-mountable module
- Interfaces Available:

Interface	Lines	Type	Description
Programmable Digital I/O	8	Individual or vector GPIO ports	Digital input/output ports, CMOS level
Programmable Analog I/O	2	GPIO ports	Analog input/output ports
PCM	4	Pulse Code Modulation interface	PCM interface for digital audio transmission
SPI	4	Serial Peripheral Interface	For test and programming internal flash
UART	4	UART/ Serial Interface	UART Transmit and Receive
USB	2	Universal Serial Bus	USB Data pins

4.2   Temperature and Humidity

Operating Temperature: -40°C to 85°C

Storage Temperature: -40°C to 150°C

4.3   Functionality

4.3.1 Power Supply

- 3.3V operation: Supply pin 16 (VCC) with 3.3V and leave pin 15 (2V2) open
- Low voltage operation: Supply pin 16 (VCC) with 1.8V and pin 15 (2V2) with 2.2V

4.3.2 Interfaces

- Communication with the module can be done via UART-BCSP interface when using HCI-BCSP Firmware and UART-VM when using RFCOMM firmware at standard baud rates (1200bps to 115200bps).
- Communication with the module can be done via USB interface when using HCI-USB Firmware. [Restriction: 3.3V power supply only]
- Digital PIOs can be set to input/output and high/low as necessary.
- Communication with and flash programming of module can be done via the SPI interface.

4.3.3 Basic Bluetooth operations such as inquiry, pairing, establishing connection and data transfers at ~1Mbps (basic data rate) and ~2Mbps (enhanced data rate) can be done by the module using HCI-BCSP/HCI-USB Firmware. These operations shall be done with at least two golden units (e.g. other available Bluetooth module or Bluetooth-enabled devices such as cellular phones and Bluetooth headsets).
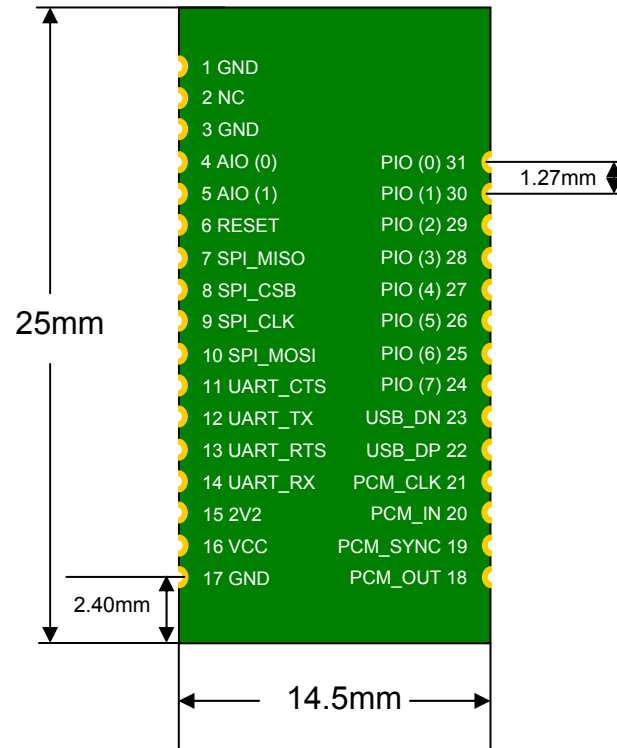
4.3.4 Effective operating range: 10 meters

5.   PCB Specifications

5.1   Pin Layout

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                    ┌──────────────────┐
                    │ 1 GND            │
                    │ 2 NC             │
                    │ 3 GND            │
                    │ 4 AIO (0)   PIO (0) 31 │
         25mm       │ 5 AIO (1)   PIO (1) 30 │   1.27mm
                    │ 6 RESET     PIO (2) 29 │
                    │ 7 SPI_MISO  PIO (3) 28 │
                    │ 8 SPI_CSB   PIO (4) 27 │
                    │ 9 SPI_CLK   PIO (5) 26 │
                    │ 10 SPI_MOSI PIO (6) 25 │
                    │ 11 UART_CTS PIO (7) 24 │
                    │ 12 UART_TX  USB_DN 23  │
                    │ 13 UART_RTS USB_DP 22  │
                    │ 14 UART_RX  PCM_CLK 21 │
                    │ 15 2V2      PCM_IN 20  │
                    │ 16 VCC    PCM_SYNC 19  │
                    │ 17 GND    PCM_OUT 18   │
         2.40mm     └──────────────────┘
                         14.5mm
```

6.   Standards Compliance

- RoHS Compliant (for mass production)
- Bluetooth Specification v2.0+EDR Compliant
- UL
- FCC part 15
- CE