

FSC-BT826

4.2 Dual Mode Bluetooth Module Data Sheet

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Contact Us

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1. INTRODUCTION

FSC-BT826 is a fully integrated Bluetooth module that complies with Bluetooth 4.2 dual mode protocols(BR/EDR/BLE). It supports SPP, BLE, ANCS, iBeacon, profiles. It integrates Baseband controller in a small package (Integrated chip antenna), so the designers can have better flexibilities for the product shapes.

FSC-BT826 can be communicated by UART port. With Feasycom's Bluetooth stack, Customers can easily transplant to their software. Please refer to Feasycom stack design guide.

1.1 Block Diagram

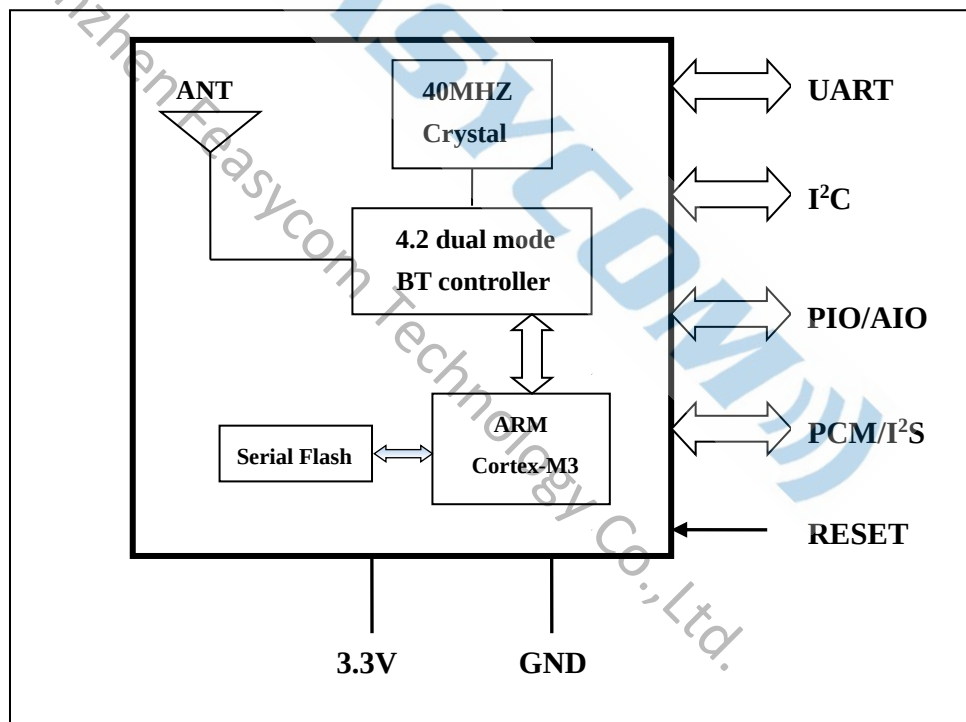


Figure 1

1.2 Feature

- ◆ Fully qualified Bluetooth 4.2/4.0/3.0/2.1/2.0/1.2/1.1
- ◆ Postage stamp sized form factor.
- ◆ Low power.
- ◆ Class 1.5 support (high output power)
- ◆ The default UART Baud rate is 115.2Kbps and can support from 1200bps up to 921Kbps.
- ◆ UART, I²C, PCM / I²S data connection interfaces.
- ◆ Support the OTA upgrade.
- ◆ Bluetooth stack profiles support: SPP, HID, MAP, and all BLE protocols.
- ◆ BQB, SRRC, ROHS and Airsync Certified.
- ◆ Power Consumption In Working Mode (VDD_3V3 at 3.3 V)
 - Discoverable: 18.5mA
 - BR/EDR Connection: 22.4mA
 - LE Connection: 17.9mA
 - BR/EDR Connection @ 115200bps: 23.4mA

1.3 Application

- ◆ Smart Watch and Bluetooth Bracelet
- ◆ Health & Medical devices
- ◆ Wireless POS
- ◆ Measurement and monitoring systems
- ◆ Industrial sensors and controls
- ◆ Asset Tracking

2. GENERAL SPECIFICATION

General Specification	
Chipset	Realtek RTL8761
Product	FSC-BT826
Dimension	13mm x 26.9mm x 2mm
Bluetooth Specification	Bluetooth V4.2 (Dual Mode)
Power Supply	3.3 Volt DC
Output Power	5.5 dBm
Sensitivity	-82dBm@0.1%BER
Frequency Band	2.402GHz -2.480GHz ISM band
Modulation	FHSS,GFSK,DPSK,DQPSK
Baseband Crystal OSC	40MHz
Hopping & channels	1600hops/sec, 1MHz channel space,79 Channels(BT 4.2 to 2MHz channel space)
RF Input Impedance	50 ohms
Antenna	Integrated chip antenna
Interface	Data: UART, I ² C, PCM / I ² S
Profile	SPP, GATT(BLE Standard) MFI,Airsync,ANCS, iBeacon, MAP(optional),OTA(optional)
Temperature	-20°C to +70 °C
Humidity	10%~95% Non-Condensing
Environmental	RoHS Compliant

Table 1

3. PHYSICAL CHARACTERISTIC

FSC-BT826 dimension is 26.9mm(L)x13mm(W)x2mm(H).

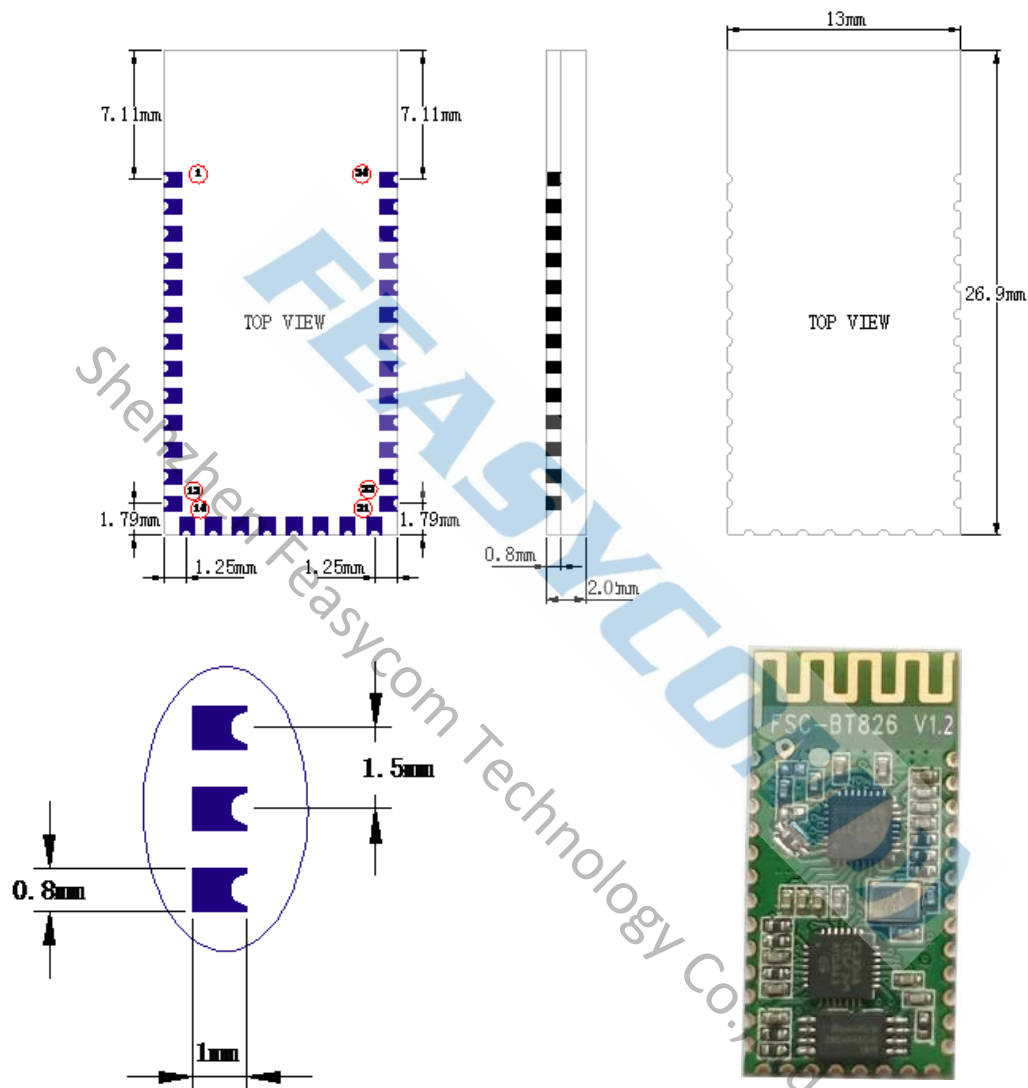


Figure 2: Package Dimensions (TOP VIEW)

4. PIN DEFINITION DESCRIPTIONS

* **Special tips:** PIO0,PIO1,PIO2,PIO3 I/O port for reuse.

When using the OTA function upgrade (air), please send the I/O mouth dangling;

If the I/O port to connect the MCU,

then set the MCU I/O ports for the input port or high impedance state.

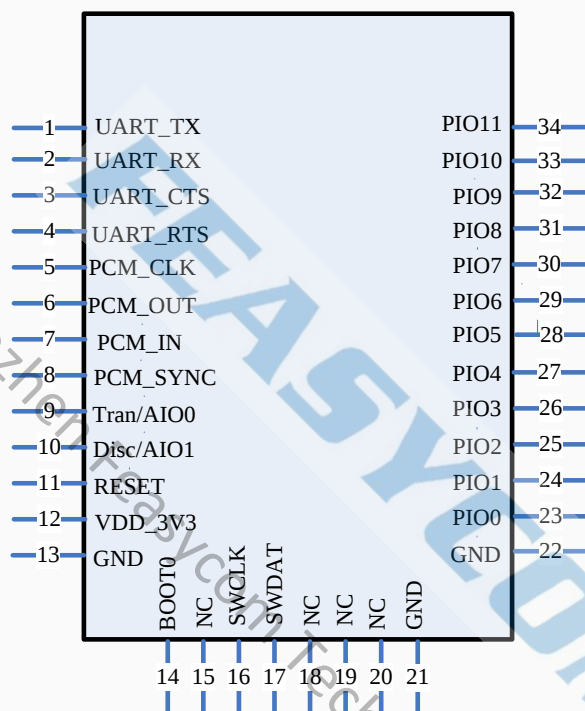


Figure 3: PIN description

Pin	Pin Name	Pad Type	Description
1	UART_TX	CMOS output	UART data output
2	UART_RX	CMOS input	UART data input
3	UART_CTS	CMOS input	UART clear to send active low Alternative Function: Programmable input/output line
4	UART_RTS	CMOS output	UART request to send active low Alternative Function: Programmable input/output line
5	PCM_CLK	Bi-directional	Synchronous data clock
6	PCM_OUT	CMOS Output	Synchronous data output
7	PCM_IN	CMOS Input	Synchronous data input

8	PCM_SYNC	Bi-directional	Synchronous data Sync
9	Tran/AIO0	I/O	Host MCU change UART transmission mode. (Default) Alternative Function: Analogue programmable I/O line.
10	Disc/AIO1	I/O	Host MCU disconnect bluetooth. (Default). Alternative Function: Analogue programmable I/O line.
11	RESET	CMOS input	Reset if low. Input debounced so must be low for >5ms to cause a reset.
12	VDD_3V3	VDD	Power supply voltage 3.3V
13	GND	VSS	Power Ground
14	BOOT0	Bi-directional	The default is low. (internal 10K resistance drop) UART DFU Mode, Enabled at startup when set to high level, Disabled by default
15	NC	NC	NC
16	SWCLK	Bi-directional	Debugging through the clk line(Default)
17	SWDIO	Bi-directional	Debugging through the data line(Default)
18	NC	NC	NC
19	NC	NC	NC
20	NC	NC	NC
21	GND	VSS	Power Ground
22	GND	VSS	Power Ground
23	PIO0	I/O	Programmable input/output line * The I/O port for reuse.
24	PIO1	I/O	Programmable input/output line * The I/O port for reuse.
25	PIO2	I/O	Programmable input/output line * The I/O port for reuse.
26	PIO3	I/O	Programmable input/output line * The I/O port for reuse.
27	PIO4	I/O	Programmable input/output line Alternative Function: BT Power Mode, low level in run mode, it will be set to high level when fall asleep.
28	PIO5	I/O	With the use of the Pin 9.
29	PIO6	I/O	Programmable input/output line Alternative Function: I ² C CLK line (Default)

30	PIO7	I/O	Programmable input/output line Alternative Function: I ² C DATA line (Default)
31	PIO8	I/O	With the use of the Pin 10.
32	PIO9	I/O	Programmable input/output line Alternative Function: LED(Default)
33	PIO10	I/O	Programmable input/output line Alternative Function: BT Status(Default)
34	PIO11	I/O	Programmable input/output line

Table 2

5. Interface Characteristics

5.1 UART Interface

Four signals are used to implement the UART function. When FSC-BT826 is connected to another digital device, UART_RX and UART_TX transfer data between the two devices. The remaining two signals, UART_CTS and UART_RTS, can be used to implement RS232 hardware flow control where both are active low indicators.

The interface consists of four-line connection as described in below:

Signal name	Driving source	Description
UART-TX	FSC-BT826 module	Data from FSC-BT826 module
UART-RX	Host	Data from Host
UART-RTS	FSC-BT826 module	Request to send output of FSC-BT826 module
UART-CTS	Host	Clear to send input of FSC-BT826 module

Table 3

Default Data Format

Property	Possible Values
BCSP-Specific Hardware	Enable
Baud Rate	115. 2 Kbps
Flow Control	None
Data bit length	8bit
Parity	None
Number of Stop Bits	1

Table 4

The diagram illustrates the FSC-BT826 module with the following components and connections:

- MCU Interface:**
 - MCU_RX and MCU_TX are connected to UART RX and TX pins.
 - TRANSFER_MODE is connected to UART CTS.
 - RESET is connected to the RESET pin.
- Bluetooth Connection:**
 - When established, H = instruction mode and L = throughput mode.
 - DISCONNECT is connected to the RST pin.
 - When established, a rising edge of PIN 10 causes disconnection with the remote device.
- Power and Grounding:**
 - 3V3_BT is connected to the 3V3 pin.
 - Grounding points are marked with C54 (100nF) and C4 (10nF).
- SWD Interface:**
 - SWDIO and SWCLK are connected to the SWDIO and SWCLK pins.
 - Remarks: The module reserves the power pin, ground, reset, SWCLK, and SWDIO for test.
- I2C Interface:**
 - I2C_DATA is connected to PIN 7.
 - I2C_CLK is connected to PIN 6.
- LED and Status:**
 - LED is connected to PIN 10 through a 560Ω resistor.
 - BT work Status Indicator Light is connected to PIN 10.
- Optional Debug Interface:**
 - TP7 is connected to SWDIO.
 - TP8 is connected to SWCLK.
 - TP9 is connected to 3V3_BT.
 - TP10 is connected to RESET.
 - TP11 is connected to GND.
- POWER (Optional):**
 - 5V is connected to VIN.
 - EN is connected to the EN pin.
 - 3V3_BT is connected to the 3V3 pin.
- RESET (Optional):**
 - Reset Circuit Based On Voltage Dual Comparators (U1: CN809R-2.63V).
 - 3V3_BT is connected to the 3V3 pin.
 - R4 (100K) is connected to the RESET pin.
- RC Reset:**
 - 3V3_BT is connected to the 3V3 pin.
 - R2 (10K) and C14 (100nF) form the RC reset network.