

Product: Bluetooth controller

Model: TF002

1.General Functions

The ST17H26 is designed to offer ultra-low cost, low power Bluetooth Smart application capabilities, which integrates powerful 32-bit MCU, advanced BLE, 16KB on-chip OTP, 6KB on-chip SRAM, a 10bit ADC, a quadrature decoder(QDEC), up to four-channel PWM, flexible I/O interfaces, and nearly all of the peripheral blocks needed for Bluetooth Low Energy applications development.

2.Technique Parameters

General features are as follows:

- 1) Program memory: 16KB on-chip OTP.
- 2) Data memory: 6KB on-chip SRAM.
- 3) 12MHz Crystal.
- 4) Up to 9GPIOs depending on package option, with configurable Internal pull-up or pull-down resistors.
- 5) Debug interface: SWS (Single Wire Slave).
- 6) Embeds one quadrature decoder (QDEC).
- 7) Supports up to four-channel PWM output.
- 8) Embeds three general 32-bit timers Timer0~Timer2.
" Timer0~Timer2 are available in active mode
" Timer0~Timer1 supports four modes
" Generally Timer2 is programmable as watchdog

9) A low-frequency 32K timer LTIMER available in suspend mode or deep Sleep mode.

10) Operating temperature: -40°C~+85°C industrial temperature range.

11) J2 in the PCB connect to LED type light;

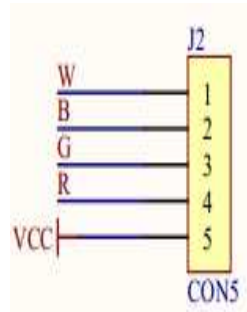
1 connect to product White light circuit;

2 connect to product Blue light circuit;

3 connect to product Green light circuit;

4 connect to product red light circuit;

5 connect to product input power circuit



RF features include:

- 1) Bluetooth 4.0 Compliant (Only support BLE mode), 1Mbps data rate mode.
- 2) Rx Sensitivity: -94dBm at 1Mbps mode.
- 3) Auto acknowledgement and retry.
- 4) Single-pin antenna interface.
- 5) RSSI monitoring.

Features of power management module include:

- 1) The nominal power supply voltage +5.0VDC to +24VDC, the voltage is reduced to 3.3V through the voltage step-down circuit to power the Bluetooth chip
- 2) Embedded LDO.
- 3) Battery monitor: Embedded low battery detection.
- 4) Multiple stage power management to minimize power consumption.
- 5) Low power consumption:
 - " Receiver mode current: 12mA
 - " Suspend mode current: 10uA
 - " Deep sleep mode current: 0.7uA

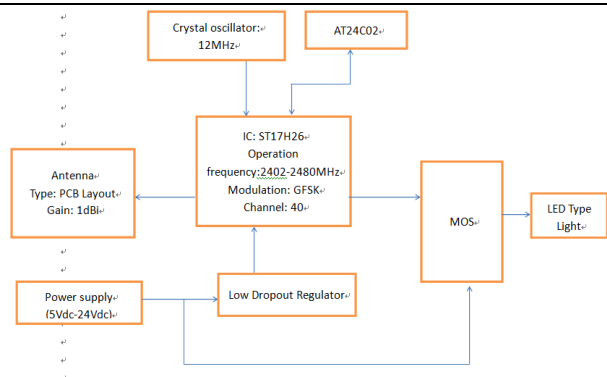


Figure 1. Block Diagram

Based on the ST17H26 with high-volume-assembly and high integration, few external components are needed to satisfy customers’ ultra-low cost requirement.

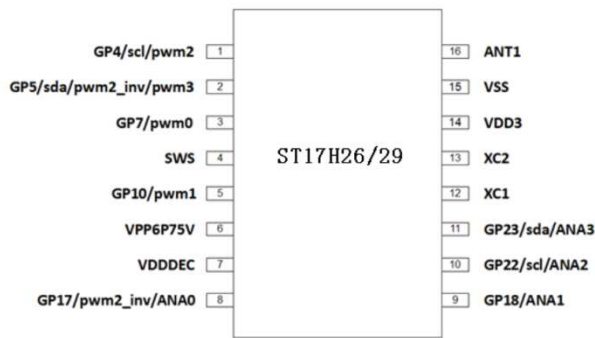


Figure2. Pin Definition

Table2. Pin Definition

PIN	Name	Mode
1	GP4	PWMWW
2	GP5	PWMB
3	GP7	PWMG
5	GP10	PWMR
10	GP22	SCL
11	GP23	SDA
14	VDD3	3.3V
15	VSS	GND

3. Requirement of FCC KDB 996369 D03 for module certification:

3.1 List of applicable FCC rules:

The module complies with FCC Part 15.247

3.2 Summarize the specific operational use conditions:

The module has been certified for Fix, Mobile, Portable applications. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

3.3 Limited module procedures:

The module has not its own RF shielding, which belong to Limited module Standard requires:

Clear and specific instructions describing the conditions, limitations and procedures for third-parties to use and/or integrate the module into a host device (see Comprehensive integration instructions below).

Resolve: Supply example as follows:

Installation Notes:

- 1) TF002 module Power supply range is DC 5~24V, when you use TF002 module design product, the power supply cannot exceed this range.
- 2) When connect TF002 module to the host device, the host device must be power off.
- 3) Make sure the module pins correctly installed.
- 4) Make sure that the module does not allow users to replace or demolition

3.4 Trace antenna designs:
Not applicable.

3.5 RF exposure considerations:
This equipment complies with FCC’s RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter.

Note: the host product manuals must include a statement in order to alert the users of FCC RF exposure compliance.

3.6 Antennas:

Type	Gain	Impedance	Application
PCB type FA Antenna	1dBi	50 Ω	Fixed, Mobile, Portable

The antenna is permanently attached, can’t be replaced.

3.7 Label and compliance information

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.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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.

The system integrator must place an exterior label on the outside of the final product housing the 2ATZB-TF002 Modules. Below is the content that must be included on this label.

The host product Labeling Requirements:

NOTICE: The host product must make sure that FCC labeling requirements are met. This includes clearly visible exterior label on the outside of the final product housing that displays the contents shown in below:

Contains FCC ID: 2ATZB-TF002

3.8 Information on test modes and additional testing requirements:

When testing host product, the host manufacture should follow FCC KDB Publication 996369 D04 Module Integration Guide for testing the host products. The host manufacturer may operate their product during the measurements. In setting up the configurations, if the pairing and call box options for testing does not work, then the host product manufacturer should coordinate with the module manufacturer for access to test mode software.

3.9 Additional testing, Part 15 Subpart B disclaimer:

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) list on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.

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