

**Reference
Design
Application Note**

for

**BT3010
Bluetooth
Module**

May 14, 2002

Important Information

TECOM Model BT3010 must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. The device complies with the following radio frequency and safety standards.

Federal Communications Commission (FCC) Compliance Notice

Radio Frequency Notice

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

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. 2. This device must accept any interference received, including interference that may cause undesired operation.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications 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 not 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: (1) Reorient or relocate the receiving antenna, (2) Increase the separation between the equipment and receiver, (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, (4) Consult the dealer or an experienced radio/TV technician for help.

Interference Notice

TECOM Model BT3010 is a radio device that might cause interference with other non-Bluetooth devices (for instance, devices using wireless LAN). 802.11b technology might cause degradation on the performance of TECOM Bluetooth devices.



CAUTION:

1. To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

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

Department of Communications-Canada Canadian Compliance Statement

This Class B Digital apparatus meets all the requirements of the Canadian Interference Causing Equipment Regulations. Cet appareil numérique de la classe B respect les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Class B Limits of Industry of Canada. 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. This device is certified to the requirements of RSS-139-1 and RSS-210 for 2.4 GHz spread spectrum devices. The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact local Industry Canada office.

EN 55 022 Statement: CE Warning

This is to certify that the Model BT3030 is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN55 022 Class B. This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

CE Declaration of Conformity

For the following equipment: Product Name: Bluetooth USB Dongle Model Name: BT3030
Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to 1999/5/EC R&TTE Directive. For the evaluation regarding the Directives, the following standards were applied: ETSI 300

1. Product Description

BT3010 Bluetooth™ Module is a highly integrated module for fast implementation in various applications to enable electronic devices to communicate wirelessly with other Bluetooth™ enabled devices.

BT3010 Bluetooth™ Module is fast in implementation. It is a complete time-to-market solution for manufacturers to provide products into targeted market. With three different types of interface, (USB/UART/PCM), the module can be used in applications such as Notebook PCs & accessories, PDA, Access Points, Headphones, PC peripherals, etc.

The module supports both voice and data transmission and is fully compliant with Bluetooth™ specification version 1.1 standard, class1, 2, & 3 operations, which allows up to 20 dBm output power, supporting operation range up to 100 meters.

* **BLUETOOTH** is a trademark owned by Telefonaktiebolaget L M Ericsson, Sweden.

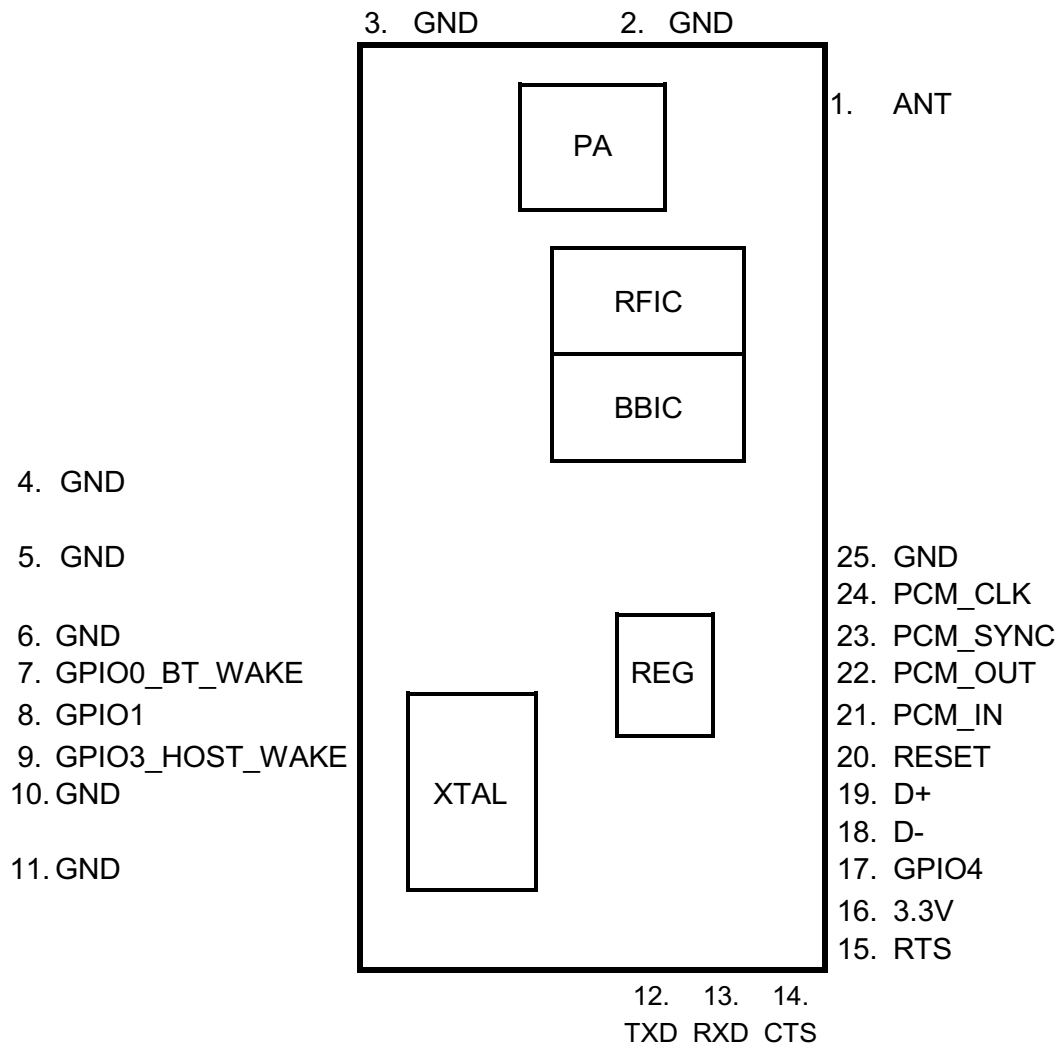
Key Features

- Bluetooth Specification V.1.1 compliant
- Supports USB/UART/PCM (Pulse Code Modulation) interface.
- Bluetooth Protocol layers support up to HCI
- 0 to 20dBm Output Power (Support Class 1, 2, 3)
- Optimized Link Manager and Control.

Applications

- Personal Computers accessories
- Laptop PCs and accessories
- Handheld devices and accessories
- Internet access points
- Mobile phone accessories

2. Soldering Pad Assignment



Note:

1. PCB size is 32.0 x 17.0 x 3.0 mm (± 0.1)
2. Soldering pad size is described in the section 7.

3. Soldering Pad Definition

Pad No.	Signal Name	Type	Description
Power / GND			
16	VCC	I	Input DC power 3.3V
20	Reset	I	System enabled for DC = High (>3.0V) System disable for DC = Low (< 0.7V)
2,3,4,5, 6,10,11, 25	GND		
UART Interface			
12	TXD	O	UART serial data output
13	RXD	I	UART serial data input
14	CTS	I	UART clear to send
15	RTS	O	UART request to send
USB Interface			
18	D -	Diff I/O	USB differential data
19	D+	Diff I/O	USB differential data
PCM Interface			
21	PCM_IN	I	PCM data in
22	PCM_OUT	O	PCM data output
23	PCM_SYNC	O	PCM sync signal
24	PCM_CLK	O	PCM bit clock
RF Interface			
1	ANT	I/O	Antenna interface, 50 Ω impedance
System Control			
17	GPIO4	I/O	LED control Enable
7	GPIO0_BT_WAKE	I/O	For DC power control by Host
8	GPIO1	I/O	Can be LED control
9	GPIO3_HOST_WAKE	I/O	For DC power control by Module

4. Module Hardware Interface

4.1 PCM interface

The standard PCM interface is provided. The PCM codec interface supports 13 to 16-bit Linear PCM, 8-bit m-Law, 8-bit u-Law and CVSD audio/ data formats.

4.2 UART Interface

The standard UART interface is provided. It is 16C550 compatible with programmable baud rate up to 921Kbps and offers a 128-byte TX and RX FIFO. UDI & UDO are used for data flow, and URTSn & UCTSn are used for flow control.

4.3 USB Interface

The module is a USB high-speed device (12Mbps) that has the full functionality of a USB slave and is compliant to the USB 1.1 specification. Data transfer is on the bi-directional port.

4.4 ANT interface

The ANT pad should be connected to a 50 Ω antenna interface such that the best performance can be obtained.

4.5 VCC

There are two pads for the voltage input but only one pad can be used. Pad 1 is for 5V typically and the voltage range is 4.5~5.5V. Pad 1* is for 3.3V typically and the voltage range is 3.0~3.6V.

4.6 GND

Ground should be distributed with very low impedance as a ground plane. Connect all GND pads to the ground plane.

4.7 System control

- (1) GPIO_1 and GPIO_4 can be used for the LED indicators.
- (2) GPIO_0 : wake-up function from Host to BT module.
- (3) GPIO_3 : wake-up function from BT module to host.

GPIO_0	I / O	This is GPIO signal 0, with an interrupt function (rising or falling edge triggered) when in input mode. The default of this signal is input. The directional control is done by the internal microprocessor. This pin may also be configured as an active high or active low SUSPEND (HC_WAKE) signal for power control.
GPIO_1	I / O	This is GPIO signal 1, with an interrupt function (rising or falling edge triggered) when in input mode. The default of this signal is input. The directional control is done by the internal microprocessor. In External LPO mode, this pin may also be configured as an active high System Clock power down signal (XTAL_PD) when the device is in external LPO mode. When this signal is active, the device is indicating that the System Clock may be disabled.
GPIO_3	I / O	This is GPIO signal 3, with an interrupt function (rising or falling edge triggered) when in input mode. The default of this signal is

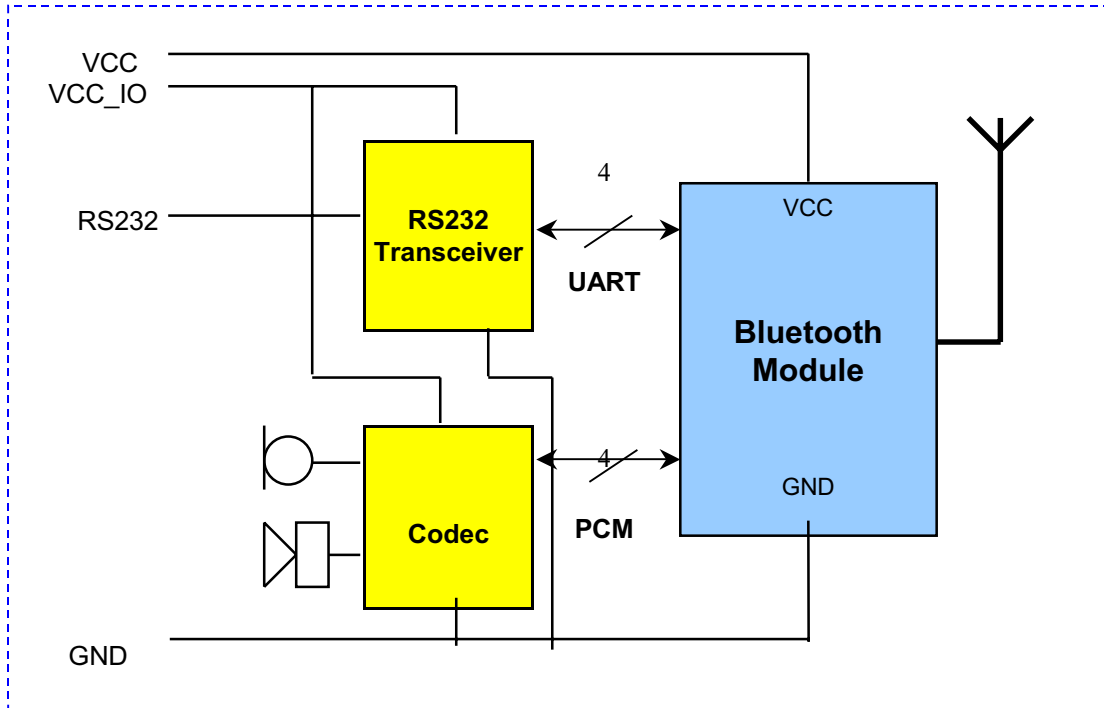
		input. The directional control is done by the internal microprocessor. This pin may also be configured as a RESUME (HOST_WAKE) signal for power control.
GPIO_4	I / O	This is GPIO signal 4, with an interrupt function (rising or falling edge triggered) when in input mode. The default of this signal is input. The directional control is done by the internal microprocessor. When the device is configured for external LPO mode, this pin acts as the LPO input.

5. Module Firmware Interface

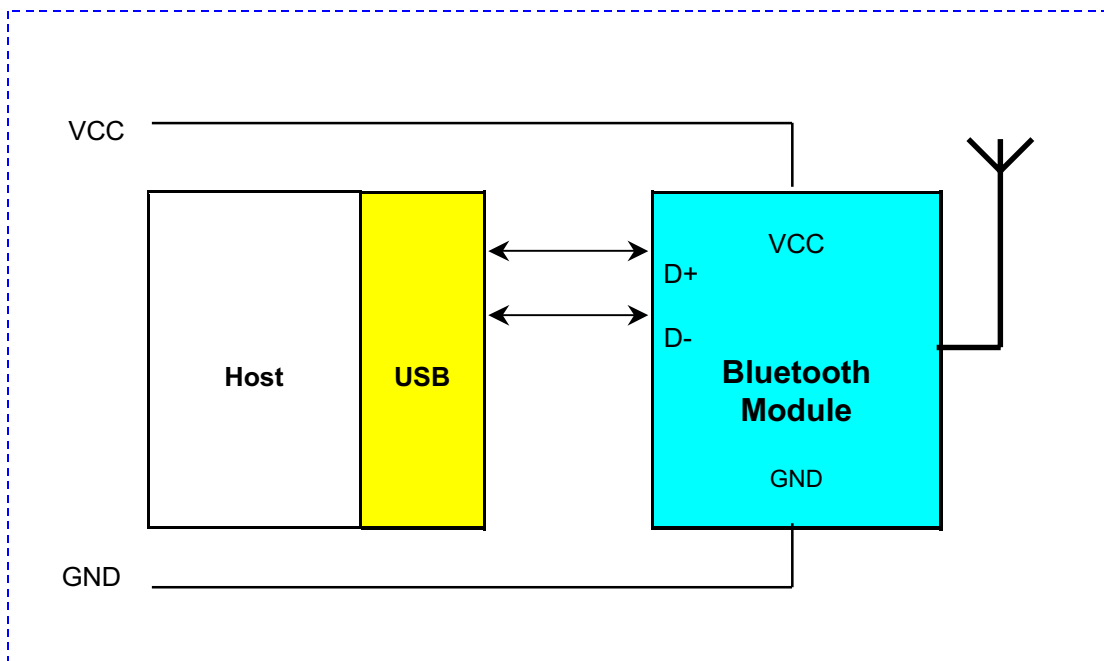
The module includes firmware for the host controller interface, HCI, and the link manager, LM. This firmware is provided in the CD-R or disc. Please see BT3010 Firmware User Manual.

6. Application Block Diagram

(1) UART and PCM Application



(2) PC USB Application



7. Mechanical Size Information

(1) Soldering pad information

