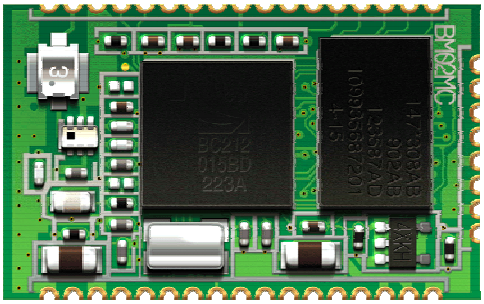
Yasing Technology Corp.



YBM-1200
Class 2
Bluetooth Module

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Version: 0304 V1.4

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Selection Guide

Part No.	Application	Default Settings
YBM-120A	HCI Stack	◆ Host interface: USB
YBM-120B	HCI Stack	◆ Host interface: UART ◆ Communication protocol: H4 ◆ Baud rate: 38,400 bit ◆ Stop bit: 1 ◆ Parity: None ◆ Data bits: 8 ◆ Hardware flow control: RTS/CTS
YBM-120C	HCI Stack	◆ Host interface: UART ◆ Communication protocol: BCSP ◆ Baud rate: 38,400 bit ◆ Stop bit: 1 ◆ Parity: Even ◆ Data bits: 8 ◆ No hardware flow control
YBM-120D	SPP Slave	◆ Host interface: UART ◆ Data bits: 8 ◆ Role defined: Device B

Configuration Options for YBM-120D

Baud Rate	Please specify	
Stop bits	1	☐
	2	☐
Parity	Odd	☐
	Even	☐
	None	☐
Hardware Flow Control	RTS/CTS	☐
	None	☐
Delete paired device button	Please define a PIO (PIO 3 ~PIO 11 available) (Default is PIO 2)	
Bluetooth Status LED	Please define a PIO (PIO 3 ~PIO 11 available) (Default is PIO 5)	
PIN Code	The PIN number can be up to 16 digits long. It can consist of numbers, case-sensitive letters or a combination both.	
Device Name	Please specify	

Overview

YBM-1200 is a class2 Bluetooth module with CSR BlueCore2 chipset. It contains RF, Baseband, and Link Manager Protocol up to HCI level. It supports HCI interface over USB as well as UART, and PCM interface for SCO connections.

YBM-1200 Bluetooth Module is the ready-to-go design for customers to provide time-to-market Bluetooth products. Fully compliant with Bluetooth v1.1 specification, the module allows devices to wirelessly and seamlessly communicate with other Bluetooth enabled devices within 10 meters.

Features

- Fully compliant with Bluetooth v1.1
- USB 1.1 compliant
- Supports power class 2
- Supports up to 7 ACL connections and 3 SCO connections
- 13-bit PCM interface, 12 programmable I/O pins
- Compact package size for any type of product
- Transmission range up to 10 meters
- Full support for Bluetooth power saving modes: Park, Sniff, Hold and Deep Sleep

Applications

- Laptops
- PCs
- Access points
- Keyboards
- Mice
- Barcode scanners
- Printers
- Cordless headsets
- Mobile phones
- Domestic and industrial appliances
- Digital still cameras

Specifications

Chipset	Bluetooth version 1.1 single chip
Firmware	Built-in HCI firmware
Radio Frequency	2402 MHz ~2480 MHz
Modulation Method	GFSK 1 Mbps, 0.5BT Gaussian
Hopping Channel	79
Data Rate	723 Kbps
User Interface	UART – UART interface signals USB – conforms to full-speed 12Mbps of USB spec. 1.1 SPI – Firmware upgrade 13bit PCM – Codec interface signals
Transmitter Power	Class 2/Class 3 (max 4dBm)
Transmission Range	Up to 10 meters
Receiver Sensitivity	–85dBm
Operating Temperature	-40°C to 80°C
DC Supply Range	2.7V ~ 3.3V
Power Consumption	ACL DH1: 46.5mA ACL DH3: 46mA ACL DH5: 45.4mA SCO HV1: 46mA SCO HV3: 46mA
Dimension	25 x 15.5 x 2 (mm)
Weight	1.2g
Certifications	BQB

Specifications are subject to change without notice

Block Diagram

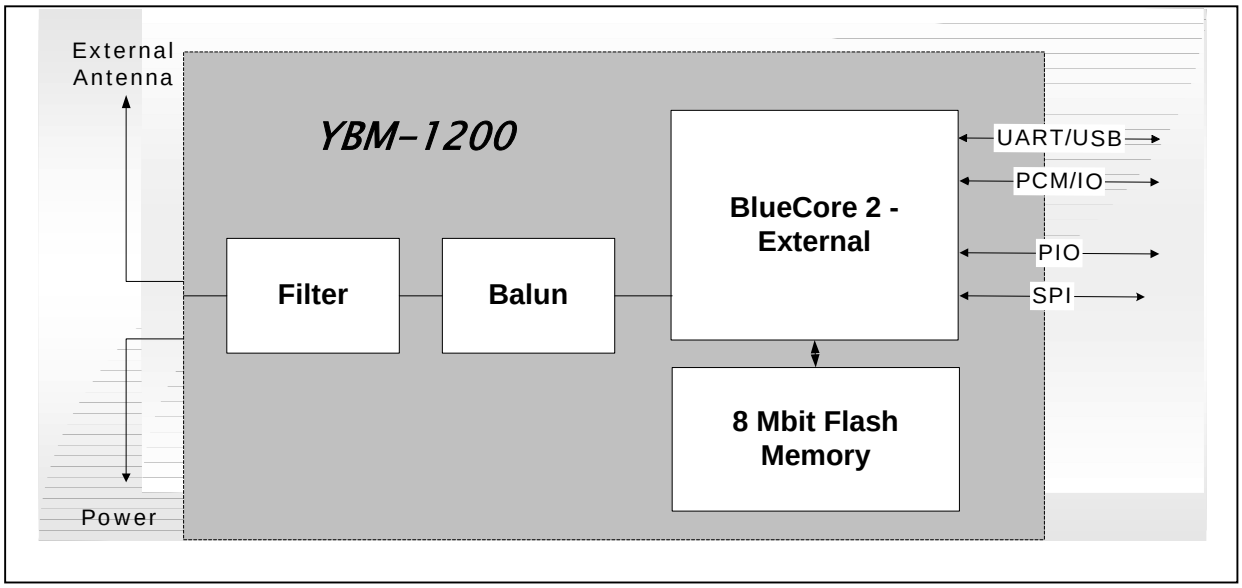

Fig. 1 Block Diagram

PCB Footprint

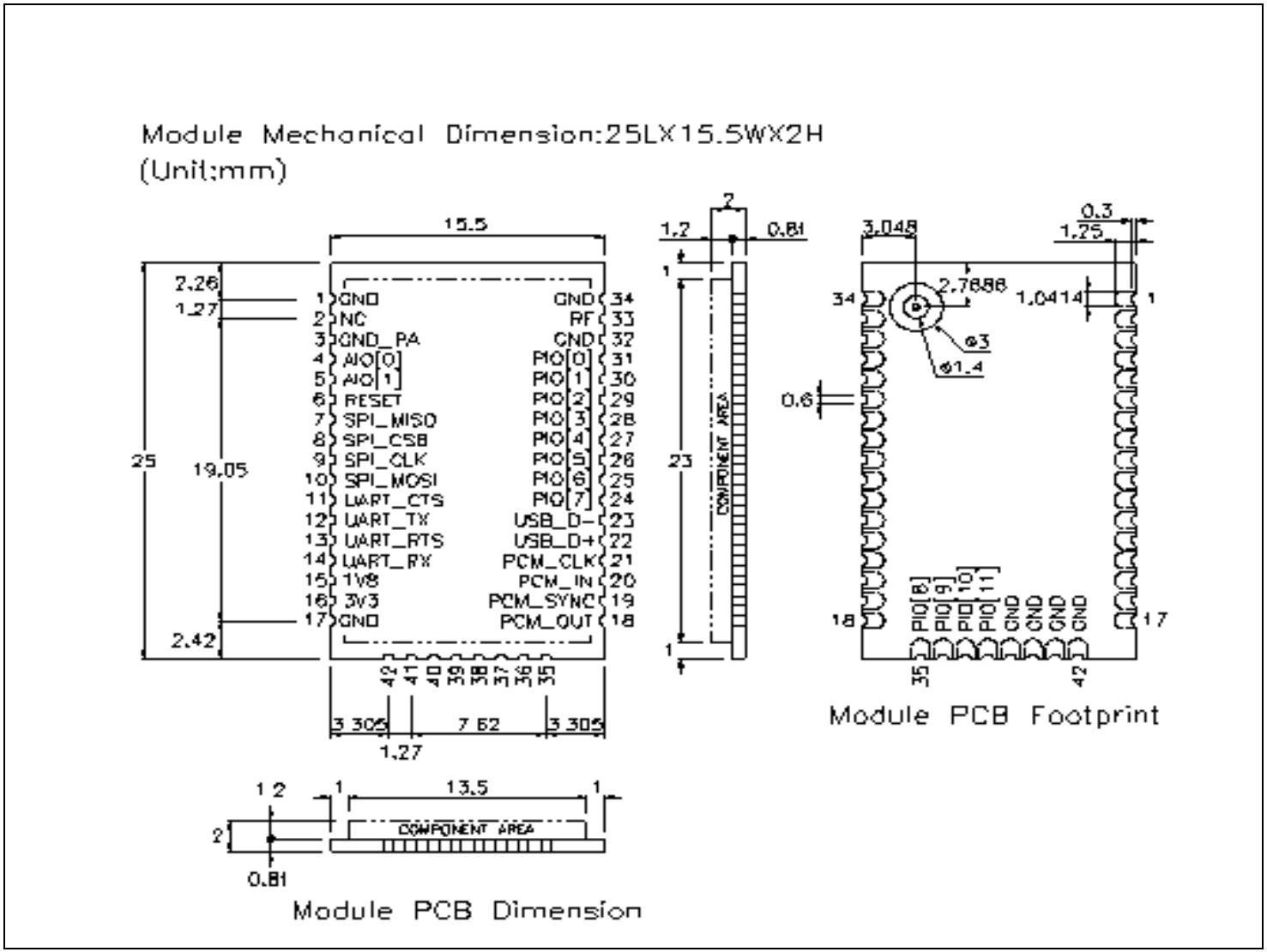

Fig. 2 PCB Footprint

PIN Assignment

PIN No.	*PIN Name*	*I/O*	*Description*
1	GND	--	Ground
2	NC		No connection
3	GND_PA	--	Ground
4	AIO[0]	I/O	Programmable input/output line
5	AIO[1]	I/O	Programmable input/output line
6	RESET	I	Reset if high. Input debounced so much be high for >5ms to cause a reset
7	SPI_MISO	O	Serial Peripheral Interface data output
8	SPI_CSB	I	Chip select for Synchronous Serial Interface active low
9	SPI_CLK	I	Serial Peripheral Interface clock
10	SPI_MOSI	I	Serial Peripheral Interface data output
11	UART_CTS	I	UART Asynchronous serial data CTS
12	UART_TX	O	UART Asynchronous serial data output
13	UART_RTS	O	UART Asynchronous serial data RTS
14	UART_RX	I	UART Asynchronous serial data input
15	1V8	O	Voltage Test Point
16	3V3	I	For module Power
17	GND	--	Ground
18	PCM_OUT	O	Synchronous data output
19	PCM_SYNC	I/O	Synchronous data SYNC
20	PCM_IN	I	Synchronous data input
21	PCM_CLK	I/O	Synchronous data clock
22	USB_D+	I/O	USB data+
23	USB_D-	I/O	USB data-
24	PIO[7]	I/O	Programmable input/output line
25	PIO[6]	I/O	Programmable input/output line
26	PIO[5]	I/O	Programmable input/output line
27	PIO[4]	I/O	Programmable input/output line
28	PIO[3]	I/O	Programmable input/output line
29	PIO[2]	I/O	Programmable input/output line
30	PIO[1]	I/O	Programmable input/output line
31	PIO[0]	I/O	Programmable input/output line
32	GND	--	Ground
33	RF	I/O	Transmitter output and receiver input
34	GND	--	Ground

PIN No.	***PIN Name***	***I/O***	***Description***
35	PIO[8]	I/O	Programmable input/output line
36	PIO[9]	I/O	Programmable input/output line
37	PIO[10]	I/O	Programmable input/output line
38	PIO[11]	I/O	Programmable input/output line
39	GND	--	Ground
40	GND	--	Ground
41	GND	--	Ground
42	GND	--	Ground

PIO

The Parallel Input Output (PIO) is a general-purpose input/output interface to YBM-1200 Bluetooth module. The port consists of 12 programmable, bi-directional input/output lines. Programmable input/output lines can be assessed either via an embedded application running on YBM-1200 Bluetooth module, or via private channel or manufacturer-specific HCI commands.

PIO[0]/RXEN

This is a multifunction terminal. Its function is selected by setting the Persistent Store Key PSKEY_TXRX_PIO_CONTROL (0x209). It can be used as a programmable I/O, however it will normally be used to control the radio front-end receive switch.

PIO[1]/TXEN

This is a multifunction terminal. Its function is selected by setting the Persistent Store Key PSKEY_TXRX_PIO_CONTROL (0x209). It can be used as a programmable I/O, however it will normally be used to control the radio front-end receive switch. Refer to CSR documentation for BlueCore2-External software.

PIO[2]/USB_PULL_UP

This is a multifunction terminal. On UART versions of YBM-1200, this terminal is a programmable I/O. On USB versions, it can drive a pull-up resistor on USB_D+.

PIO[3]/USB_WAKE_UP

This is a multifunction terminal. On UART versions of YBM-1200, this terminal is a programmable I/O. On USB versions, its function is selected by setting the Persistent Store Key PSKEY_USB_PIO_WAKEUP (0x2cf) either as a programmable I/O or as a USB_WAKE_UP function.

PIO[4]/USB_ON

This is a multifunction terminal. On UART versions of YBM-1200, this terminal is a programmable I/O. On USB versions, the USB_ON function is also selectable.

PIO[5]/USB_DETACH

This is a multifunction terminal. On UART versions of YBM-1200, this terminal is a programmable I/O. On USB versions, the USB_DETACH function is also selectable.

PIO[6]/CLK_REQ

This is a multifunction terminal. The function is determined by Persistent Store Keys. Using PSKEY_CLOCK_REQUEST_ENABLE, (0x246) this terminal can be configured to be low when YBM-1200 is in deep sleep and high when a clock is required. The clock must be supplied within 4ms of the rising edge of PIO[6] to avoid losing timing accuracy in certain Bluetooth operating modes.

PIO[7]

Programmable I/O terminal.

PIO[8]

Programmable I/O terminal.

PIO[9]

Programmable I/O terminal.

PIO[10]

Programmable I/O terminal.

PIO[11]

Programmable I/O terminal.

External RC Circuit

If employing some flash memories, the CPU inside the BlueCore2 chipset will be ready, but the flash memory not when YBM-1200 is powered up. This causes the CPU to hang when it tries to access to the flash memory at the first time.

Therefore, users are recommended to combine an additional RC circuit to prevent the above problem. The purpose is to postpone the access to the flash memory from the CPU.

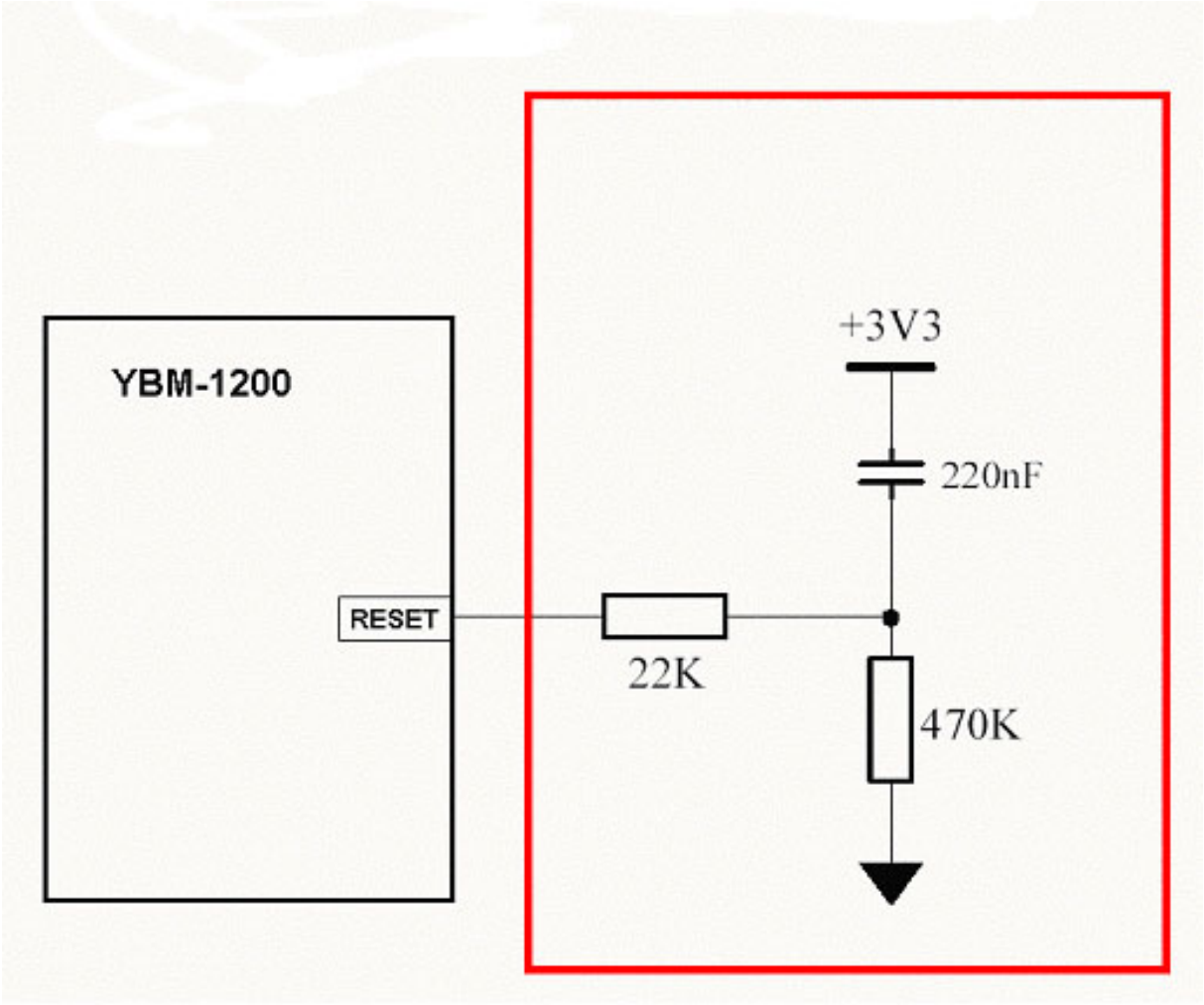

Fig. 3 External RC Circuit for the Reset of the YBM-1200

UART Interface

YBM-1200 Universal Asynchronous Receiver Transmitter (UART) interface offers a simple mechanism for communicating with other serial devices using the RS-232 standard.

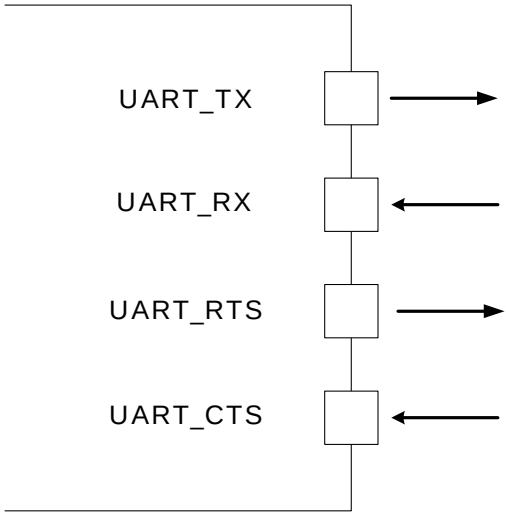

Fig. 4 Universal Asynchronous Receiver

Four signals are used to implement the UART function, as shown in above figure. When YBM-1200 is connected to another digital device, UART_RX and UART_TX transfer data between two devices. The remaining two signals, UART_CTS and UART_RTS, can be used to implement RS-232 hardware flow control where both are active low indications. All UART connections are implemented using CMOS technology and have signaling levels of 0V and VDD_PADS. VDD_PADS of YBM-1200 is 3.3V.

UART configuration parameters, such as Baud rate and packet format, are set using PSTool software. These UART configuration parameters will be set prior to shipment to customers.

Notes:
In order to communicate with the UART at its maximum data rate using a standard PC, an accelerated serial port adapter card is required for the PC. Uses RS-232 protocol but voltage levels are 0V to VDD_PADS, (requires external RS-232 transceivers IC). VDD_PADS of YBM-1200 is 3.3V.

The following table is the possible UART settings. Please specify your needs when ordering YBM-1200 Bluetooth modules with UART interface.

Parameters		**Possible Values**
Baud Rate	Minimum	1200 Baud (≤2% Error)
	Maximum	1.5M Baud (≤1% Error)
Hardware Flow Control		RTS/CTS or None
Parity		Odd, Even or None
Number of Stop Bits		1 or 2
Bits per channel		8

USB Interface

YBM-1200 contains a full-speed (12Mbits/s) USB interface. It is compliant with USB 1.1 specification. YBM-1200 operates as a USB peripheral, responding to requests from a master host controller such as PC. Both the Open Host Control Interface (OHCI) and the Universal Host Control (UHCI) are supported. The set of USB endpoints implemented behave as specified in the USB section of the Bluetooth specification v1.1, part H2.

Power Supply

The minimum output high voltage for USB data lines is 2.8V. To safely meet the USB specification, the voltage on terminals must be an absolute minimum of 3.1V. Yasing recommends 3.3V for optimal USB signal quality.

Self-Powered Mode

In self-powered mode, the circuit is powered from its own power supply and not from the VBUS (5V) line of the USB cable. It draws only a small leakage current (below 0.5mA) from VBUS on the USB cable. This is the easier mode for which to design for, as the design is not limited by the power that can be drawn from the USB hub or root port. However, it requires that VUSB be connected to YBM-1200 via a resistor work (R_{vb1} and R_{vb2}), so YBM-1200 can detect when VBUS is powered up. YBM-1200 will not pull USB_D+ high when VBUS is off.

The terminal marked USB_ON can be any free PIO pin. The default is PIO[4]. The PIO pin selected must be registered by setting PSKEY_USB+PIO_VBUS (0x2d1) to the corresponding pin number.

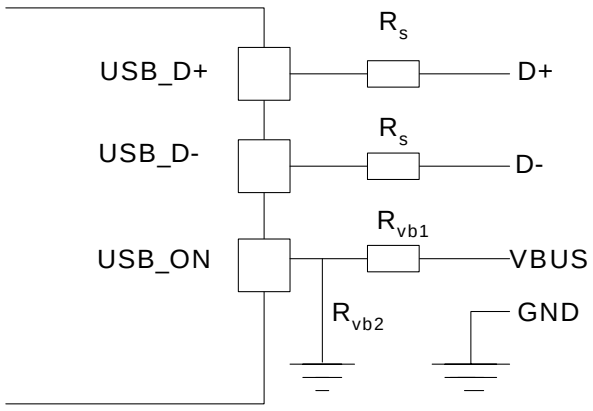

Fig. 5 Self-Powered Mode

Bus-Powered Mode

In bus-powered mode, the application circuit draws its current from the 5V VBUS supply on the USB cable. YBM-1200 negotiates with the PC during the USB enumeration stage about power consumption. The 5V VBUS line emerging from a PC is often electrically noisy. As well as regulation down to 3.3V and 1.8V, applications should include careful filtering of the 5V line to attenuate noise that is above the voltage regulator's bandwidth. Excessive noise on the 1.8V supply to the analogue supply pins of YBM-1200 will result in reduced receive sensitivity and a distorted transmit signal.

Detach and WAKE_UP Signaling

YBM-1200 provides out-of-band signaling to a host controller by using the dedicated control lines called "USB_DETACH" and "USB_WAKE_UP". These are outside the USB specification (no wires exist for them inside the USB cable), but can be useful when embedding YBM-1200 into a circuit where no external USB is visible to the user. Both control lines are shared with PIO pins and can be assigned to any PIO pin by setting the Persistent Store Keys PSKEY_USB_PIO_DETACH (0x2ce) and PSKEY_USB_PIO_WAKEUP (0x2cf) to the selected PIO number.

USB_DETACH, is an input which, when asserted high, causes YBM-1200 to put USB_D- and USB_D+ in a high-impedance state and to 1.5KΩ pull-up resistor on USB_D+. This detaches the device from the bus and is logically equivalent to unplugging the device. When USB-DETACH is taken low, YBM-1200 will connect back to USB and await enumeration by the USB host.

USB_WAKE_UP, is an active high output (used only when USB_DETACH is active) to wake up the host and allow USB communication to recommence. It replaces the function of the software USB_WAKE_UP message (which runs over the USB cable proper), and cannot be sent while YBM-1200 is effectively disconnected from the bus.

USB Driver

A USB Bluetooth device driver is required to provide a software interface between YBM-1200 and Bluetooth applications running on the host.

Application Circuit of USB

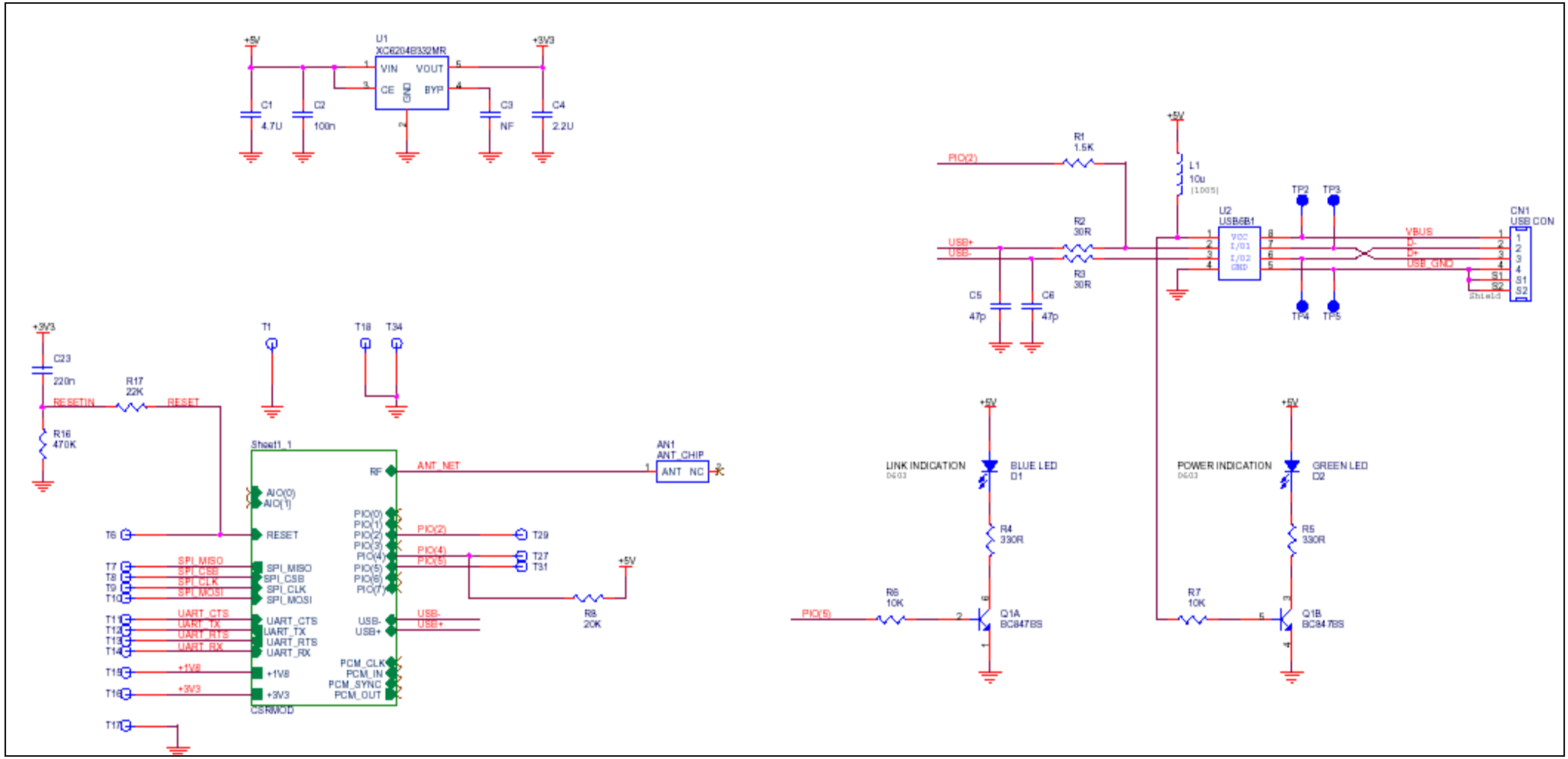

Fig. 6 Application Circuit of USB

PCM Interface

Pulse Code Modulation (PCM) is the standard method used to digitize human voice patterns for transmission over digital communication channels. Through the PCM interface, YBM-1200 has hardware support for continual transmission and reception of PCM data, thus reducing processor overhead for wireless headset applications. YBM-1200 provides a bi-directional digital audio interface that routes directly into the Baseband layer of the on-chip firmware. It does not pass through the HCI protocol layer.

Hardware on YBM-1200 allows the data to be sent to and received from a SCO connection. Up to three SCO connections can be supported by the PCM interface at any one time.

YBM-1200 can operate as the PCM interface Maser generating an output clock of 128, 256 or 512KHz. When configured as PCM interfaces slave it can operate with an input clock up to 2048KHz. YBM-1200 is compatible with a variety of clock formats, including Long Frame Sync, Short Frame Sync and GCI timing environments. It supports 13 or 16 bit linear, 8-bit μ-law or A-law compared sample format at 8ksamples/s and can receive and transmit on any selection of three of the first four slots following PCM_SYNC. The PCM configuration options are enabled by setting the Persistent Store Key PSKEY_PCM_CONFIG (0x1b3).

PCM Interface Master/Slave

When configured as the Master of the PCM interface, YBM-1200 generates PCM_CLK and PCM_SYNC. When configured as the Slave of PCM interface, YBM-1200 accepts PCM_CLK rates up to 2048KHz.

Long Frame Sync

Long Frame Sync is the name given to a clocking format that controls the transfer of PCM data words or samples. In Long Frame Sync, the rising edge of PCM_Sync indicates the start of the PCM word. When YBM-1200 is configured as PCM Master, generating PCM_SYNC and PCM_CLK, then PCM_SYNC is 8-bits long. When YBM-1200 is configured as PCM slave, PCM-SYNC may be from two consecutive falling edges of PCM_CLK to half the PCM_SYNC rate (i.e., 62.5μs) long.

YBM-1200 samples PCM_IN on the falling edge of PCM_CLK and transmits

PCM_OUT on the rising edge. PCM_OUT may be configured to be high impedance on the falling edge of PCM_CLK in the LSB position or on the rising edge.

Short Frame Sync

In Short Frame Sync, the falling edge of PCM_SYNC indicates the start of the PCM word. PCM_SYNC is always one clock cycle long.

As with Long Frame Sync, YBM-1200 samples PCM_IN on the falling edge of PCM_CLK and transmits PCM_OUT on the rising edge. PCM_OUT may be configured to be high impedance on the falling edge of PCM_CLK in the LSB position or on the rising edge.

Multi-Slot Operation

More than one SCO connection over the PCM interface is supported using multiple slots. Up to three SCO connections can be carried over any of the first four slots.

GCI Interface

YBM-1200 is compatible with the General Circuit Interface, a standard synchronous 2B+D ISDN timing interface. The two 64Kbps B channels can be assessed when this mode is configured.

The start of frame is indicated by the rising edge of PCM_SYNC and runs at 8KHz. With YBM-1200 in Slave mode, the frequency of PCM_CLK can be up to 4.096MHz.

Slots and Sample Formats

YBM-1200 can receive and transmit on any selection of the first four slots following each sync pulse. Slot durations can be either 8 or 16 clock cycles. Durations of 8 clock cycles may only be used with 8-bit sample formats. Durations of 16 clocks may be used with 8-bit μ-law or A-law sample formats. The sample rate is 8ksamples/s. When 16-bit slots are used, the 3 or 8 unused bits in each slot may be filled with sign extension, padded with zeros or a programmable 3-bit audio attenuation compatible with some Motorola CODECs.

Additional Features

YBM-1200 has a mute facility that forces PCM-OUT to be 0. In Master mode, PCM_SYNC may also be forced to 0 while keeping PCM_CLK running (which some CODECs use to control power-down)

PCM Master Timing Information

Symbol	Parameter	Min	Typ	Max	Unit
fmclk	PCM_CLK frequency		128 256 512		KHz
-	PCM_SYNC frequency		8		KHz
tmclkh	PCM_CLK high	980			ns
tmclkl	PCM_CLK low	730			ns
tdmclksynch	Delay time from PCM_CLK high to PCM_SYNC high			20	ns
tdmclkpout	Delay time from PCM_CLK high to valid PCM_OUT			20	ns
tdmclklsyncl	Delay time from PCM_CLK low to PCM_SYNC low (Long Frame Sync only)			20	ns
tdmclkhsyncl	Delay time from PCM_CLK high to PCM_SYNC low			20	ns
tdmclklpoutz	Delay time from PCM_CLK low to PCM_OUT high impedance			20	ns
tdmclkhpoutz	Delay time from PCM_CLK high to PCM_OUT high impedance			20	ns
tsupinclkl	Set-up time for PCM_IN valid to PCM_CLK low	30			ns
thpinclkl	Hold time for PCM_CLK low to PCM_IN invalid	30			ns
tr	Edge rise time (Ci=50 pf, 10-90%)			15	ns
tf	Edge fall time (Ci=50 pf, 10-90%)			15	ns

Note:

Assumes normal system clock operation. Figures will vary during low power modes, when system clock speeds are reduced.

PCM Slave Timing Information

Symbol	Parameter	Min	Typ	Max	Unit
fsclk	PCM clock frequency (Slave mode: input)	64		2048	KHz
fsclk	PCM clock frequency (GCI mode)	128		4096	KHz
tsclkl	PCM_CLK low time	200			ns
tsclkh	PCM_CLK high time	200			ns
thsclksynch	Hold time from PCM_CLK low to PCM_SYNC high	30			ns
tsusclksynch	Set-up time from PCM_SYNC high to PCM_CLK low	30			ns
tdpout	Delay time from PCM_SYNC or PCM_CLK whichever is later, to valid PCM_OUT data (Long Frame Sync only)			20	ns
tdsclkhpout	Delay time from CLK high to PCM_OUT valid data			20	ns
tdpoutz	Delay time from PCM_SYNC or PCM_CLK low, whichever is later, to PCM_OUT data line high impedance			20	ns
tsupinsclkl	Set-up time for PCM_IN valid to PCM_CLK low	30			ns
thpinsclkl	Hold time for PCM_CLK low to PCM_IN invalid	30			ns
tr	Edge rise time (Ci=50 pf, 10-90%)			15	ns
tf	Edge fall time (Ci=50 pf, 10-90%)			15	ns

Serial Peripheral Interface

YBM-1200 uses 16-bit address during serial peripheral interface transactions. Such transactions will occur whether the internal processor is running or is stopped. Data may be written or read one word at a time or the audio-increment feature may be used to access blocks.

Instruction Cycle

Before YBM-1200 can be addressed, SPI_CSB must be taken low (SPI_CSB=0). Data on SPI_MOSI is then clocked into YBM-1200 on the rising edge of the clock line SPI_CLK.

When reading, YBM-1200 will reply to the Master on MISO (the data being valid on falling edge of the SPI_CLK). The Master provides the clocking.

Single Cycle Operation

After a serial peripheral interface transaction completes, the Master toggles SPI_CLK with SPI_CSB high to initiate a new transaction. SPI_CSB must be high for at least two SPI_CLK cycles.

Multi-Slave Operation

YBM-1200 should not be connected in a multi-slave arrangement by simple parallel connection of slave MISO lines. When YBM-1200 is deselected (SPI_CSB=1), the SPI_MISO line does not float. Instead, YBM-1200 outputs 0 if the processor is running or 1 if it is stopped.

Writing to YBM-1200

To write to YBM-1200, the 8-bit write command (00000010) is sent first (C[7:0]) followed by a 16-bit address (A[15:0]). After that, 16-bits of data (D[15:0]) are sent.

Auto-Increment Operation

Sending a command word and the address of a register every time it is to be read or written can be a significant overhead, especially when large amounts of data are to be transferred. To overcome this, YBM-1200 offers increased data transfer

efficiency via an auto-increment operation. During operation, YBM-1200 increments the address automatically. Only the data is transmitted or received over the serial peripheral interface. YBM-1200 keeps the previous command word.

Auto-increment mode is invoked by SPI_CSB low after the last bit of a read or write operation, while providing an extra 16 clock cycles. If the previous command was a write, continuous 16-bit words of data may then be written to the YBM-1200 without the need to send the address or command word. Similarly, if the previous command was a read, then data may be read. T[15:0] are not returned after the first read, just D[15:0].

Application Circuit of SPI

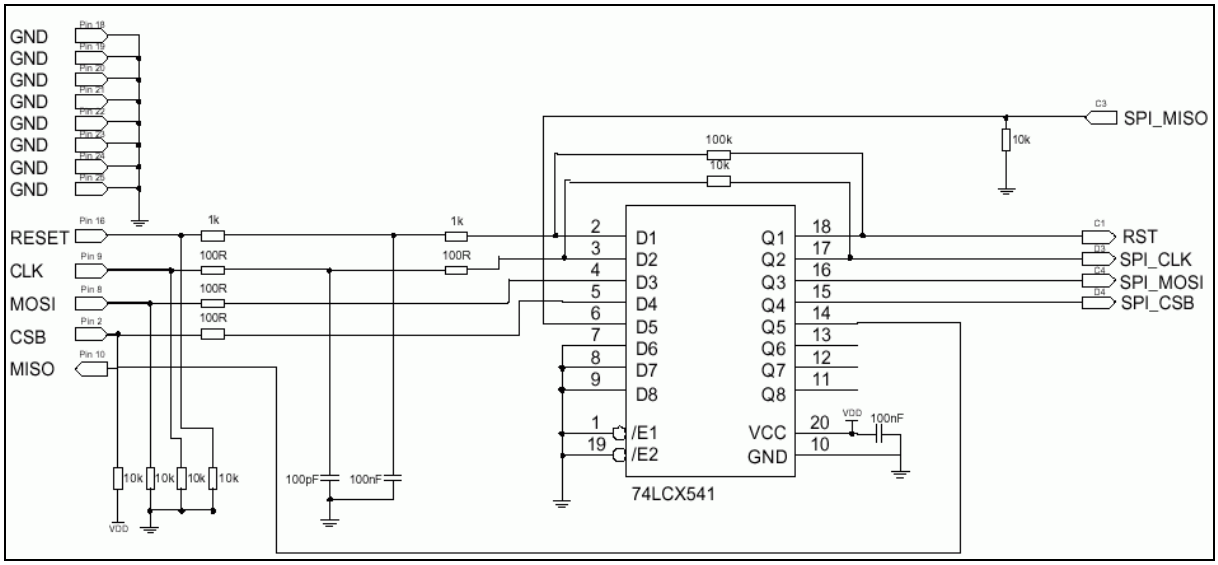

Fig. 7 Application Circuit of SPI

Serial Port Profile Applications

The Serial Port Profile defines the protocols and procedures that shall be used by devices using Bluetooth RS232 (or similar) serial cable emulation. The applications covered by this profile use Bluetooth as a cable replacement through a virtual serial com port abstraction.

To emulate a serial cable between two devices, set up virtual serial ports on the two devices (e.g. PCs) and connect these over a Bluetooth radio link. Any application may be run on either device, using the virtual serial port as if there were a real serial cable connecting two devices with RS232 control signaling.

Roles Defined

- Device A (DevA): This is the device that takes initiative to form a connection to another device (As Initiator).
- Device B (DevB): This is the device that waits for another device to take initiative to connect (As Acceptor).

Only one connection at a time is dealt with in the Serial Port Profile. Therefore, only point-to-point configurations are considered. However, this should not be construed as imposing any limitation on concurrence. Multiple executions of this profile should be able to run concurrently in the same device. This also includes taking on the two different roles (as DevA and DevB) concurrently.

Example Applications

- Mini Printer
- Barcode Scanner
- GPS Receiver

Application Circuit of SPP-Slave

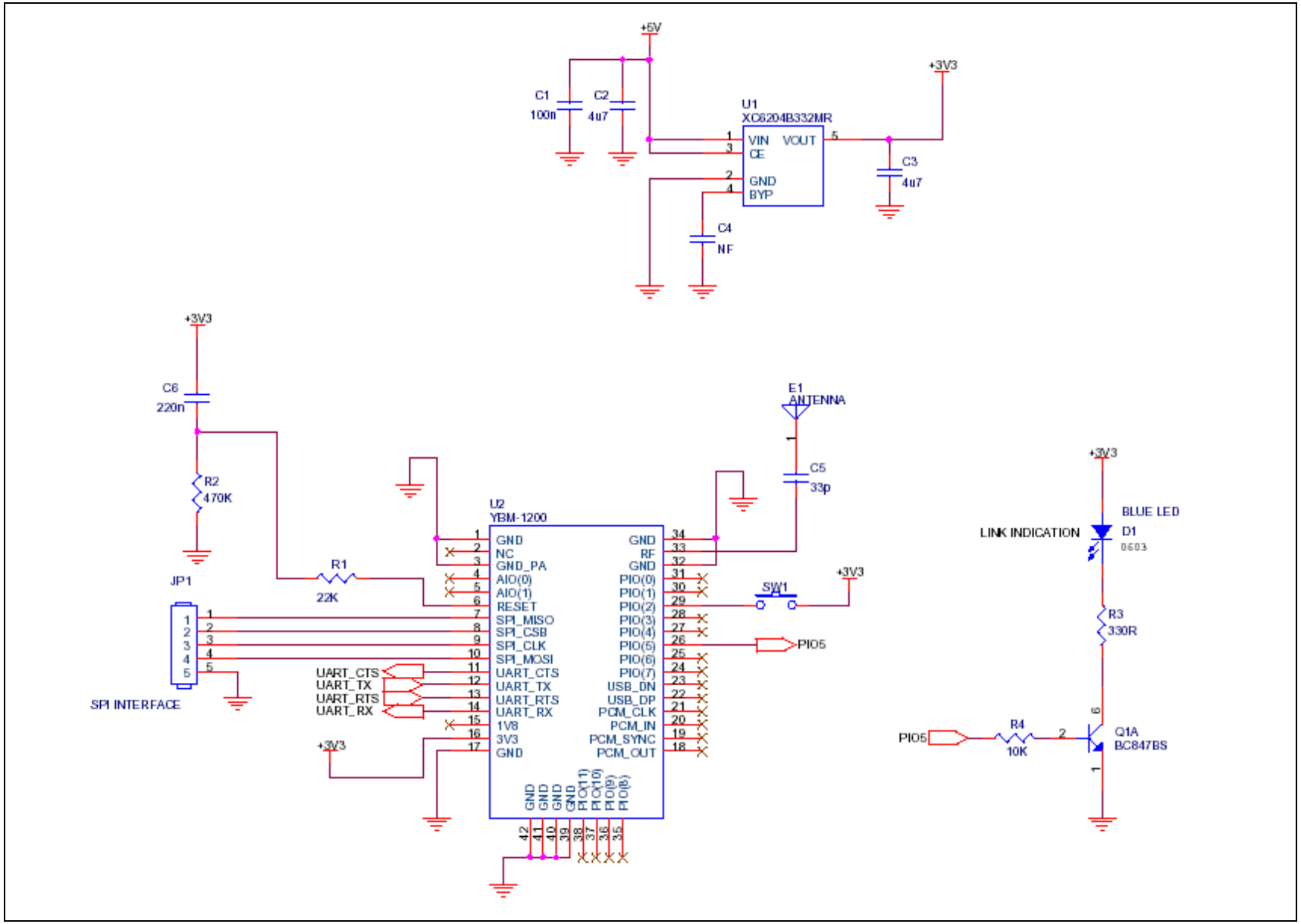

Fig. 8 Application Circuit of SPP-Slave

Description of Application Circuit of SPP-Slave

1. The pin 33 of YBM-1200 is the RF output and should be connected to the antenna. Use a 33p capacitor in series with the antenna. The system impedance is 50 ohm.
2. When drawing the layout, the GND pin of YBM-1200 must be grounded via PAD, especially pin 33 and pin 35 close to RF pin.
3. If firmware upgrade is required even if YBM-1200 is soldered into the PCB, add a connector for SPI interface in the PCB layout. (For production and rework use only)
4. C6 and R2 take the Reset pin of YBM-1200 high when the Bluetooth circuit is powered up. This ensures BlueCore2 is held in reset while the 3.3V power rail reaches stability. Otherwise, the BlueCore2 will attempt to fetch instructions from the flash memory when the 1.8V rail reaches 1.6V. The supply to the flash memory may not be ready at this point, and it will return invalid instruction to BlueCore2. This can lead to a boot-time failure of the firmware.
5. PIO[0] and PIO[1] are reserved for future use of class 1 module. Other PIO lines can be configured based on customers' requirements.
6. 1V8 (pin 15) is a test point for voltage measurement.

Configuration Options

Baud Rate		Please specify
Stop bits	1	☐
	2	☐
Parity	Odd	☐
	Even	☐
	None	☐
Hardware Flow Control	RTS/CTS	☐
	None	☐
Delete paired device button		Please define a PIO from PIO 3 ~PIO 11
Bluetooth Status LED		Please define a PIO from PIO 3 ~PIO 11
PIN Code		The PIN number can be up to 16 digits long. It can consist of numbers, case-sensitive letters or a combination both.
Device Name		

When streaming data continuously or sending large blocks of data, it is recommended to use hardware flow control.

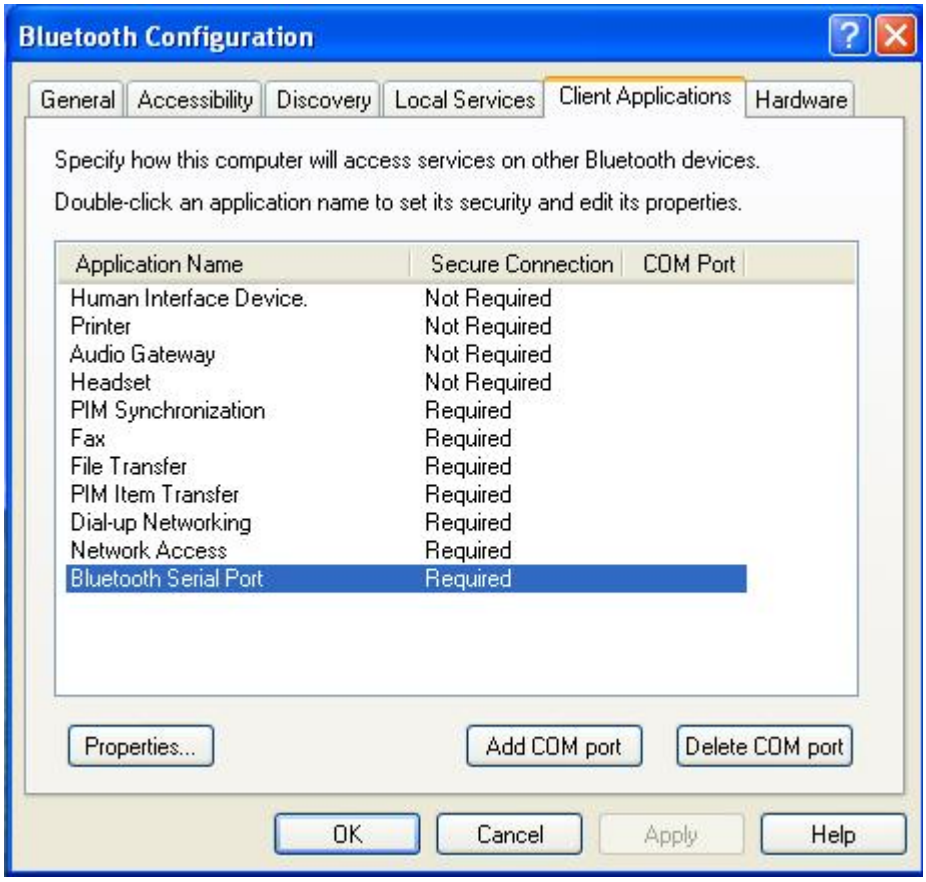

Fig. 9 Secure Connection of Bluetooth Serial Port

How to Test a Bluetooth Mini Printer

In the following section, a PC with a USB Dongle and WIDCOMM BTW software installed will be taken as the remote Bluetooth device for the mini printer.

1. On your computer, right click the Bluetooth icon on the Windows system tray, and choose **Advanced Configuration**.
2. Select **Client Applications**.
3. Make sure the Secure Connection of Bluetooth Serial Port is required.
4. Double click the Bluetooth icon on the Windows system tray or on the desktop.
5. From My Bluetooth Places, click Entire Bluetooth Neighborhood in the folder pane.
6. Right click anywhere except the device items in the right pane and select **Search** from the pop-up menu.

7. **Mini Printer** is found.
8. Right click the icon of Mini Printer and choose **Pair Device** from the pop-up menu.
9. Enter PIN Code in the blank of Bluetooth PIN Code Request. Press OK.
10. After successful pairing, the icon of Mini Printer displays a red check mark on its left corner.
11. From the Entire Bluetooth Neighborhood, double click the Mini Printer icon.
12. Double click SPP Slave on Mini Printer.
13. A SPP Slave window appears. A com port is assigned to connect to the device Mini Printer.
14. Run your program to print the data from the Mini printer.
15. Even if both Mini printer and the remote device are turned off and then turn on, you have no need to pair them again. Just make certain that the USB Dongle is inserted into the USB port, and execute the BTW software directly.
16. To connect to another remote device, you must delete the paired device by pressing Delete Paired Device button. This returns the Mini printer to unpaired state.

Acronyms and Definitions

Term	Definition
Bluetooth	A set of technologies providing audio and data transfer over short-range radio connections
ACL	Asynchronous Connection-Less. A Bluetooth data packet
A-law	Audio encoding standard
Codec	Coder Decoder
CTS	Clear to Send
dBm	Decibels relative to 1mW
DC	Direct Current
GCI	General Circuit Interface
HCI	Host Controller Interface
Host Controller	Bluetooth integrated chip
HV	Header Value
Ksamples/s	Kilosamples per second
μ-law	Encoding standard
OHCI	Open Host Controller Interface
PCM	Pulse Code Modulation. Refers to digital voice data
PIO	Parallel Input Output
PS_Key	Persistent Store Key
RF	Radio Frequency
RFCOMM	Protocol layer providing serial port emulation over L2CAP
RTS	Ready to Send
RX	Receiver or Receiver
SCO	Synchronous Connection-Oriented. Voice oriented Bluetooth packet
SIG	Special Interest Group
SPI	Serial Peripheral Interface
SPP	Serial Port Profile
TX	Transmit or Transmitter
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus or Upper Side Band

Document References

Document	Reference:
BlueCore™ 2-External Product Data Book	BC212015LF-ds-001b, May 2002
Specification of the Bluetooth System	February 2001
RS232 Cable Replacement Example Design for BlueCore2-External	October 2002

Appendix

Document	Reference
Antenna	2002 July 08 Rev.0

Revision History

Revision	Date	Description
0304 V1.0	5/30/2003	First issue of this specification
0304 V1.1	6/18/2003	Additions made to Serial Port Profile
0304 V1.2	6/23/2003	Additions made to External Reset Circuit
0304 V1.3	6/26/2003	Additions made to Selection Guide, UART Interface and Serial Port Profile
0304 V1.4	7/23/2003	Some configuration option changes in selection guide
0304 V1.5	10/13/2003	Some configuration option changes in selection guide

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