

Technical Description

The brief circuit description is listed as below:

- 1) U2 acts as 2.4GHz RF Module (BC5).
- 2) U1 acts as Linear Voltage Charging Chip (XT2055).
- 3) U3 acts as LDO Regulator (BL9198).
- 4) X1 acts as a Crystal for U2.
- 5) U4 acts as Audio Amplifier.
- 6) U3 of 2.4GHz RF Module acts as Flash.

Antenna Type: Internal antenna

Antenna Gain: 0dBi

Field strength of production range: 100 to 103.8 dB μ V/m at 3m

BT57E6 Bluetooth Module

SPECIFICATION FOR APPROVAL

Part No: BT57E6

Description:BC5 bluetooth module

Revision:V2.1+EDR

Customer:

Customer Approval No:_____

APPROVED SIGNATURES

Customer:	
APPROVED BY:	APPROVED BY:
DATE:	DATE:
CHOP&SIGNATURES:	CHOP&SIGNATURES:

Bestzlink Technology Ltd
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BC5 Bluetooth Module



1. PCBA Features

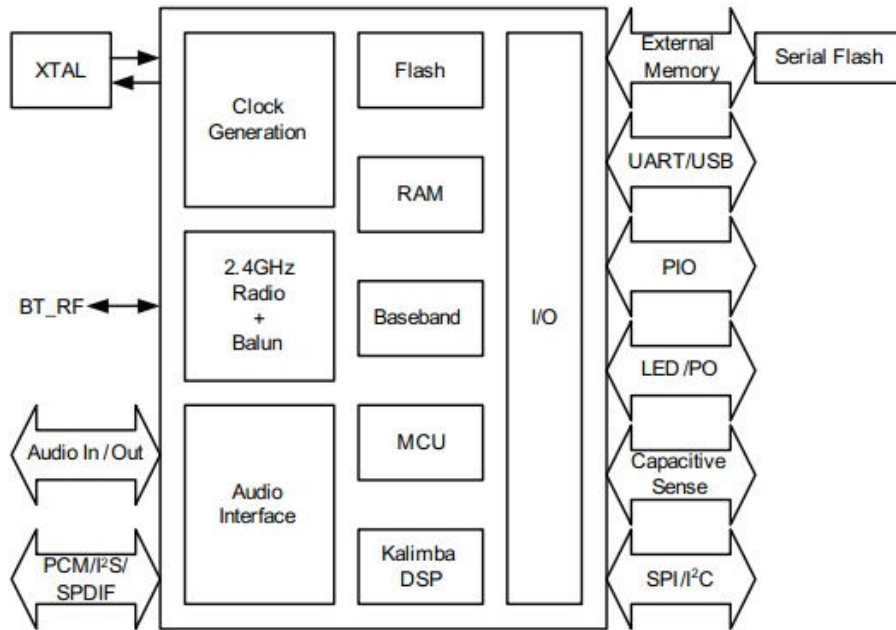
- Fully Qualified Bluetooth V2.1+EDR specification system
- Best in Class Bluetooth Radio with +8dBm Transmit Power and -90dBm Receive Sensitivity
- 64MIPS Kalimba DSP Co-Processor
- 16-bit Internal Stereo CODEC - 95dB SNR for DAC
- Low-Power 1.5V Operation, 1.8V to 3.6V I/O
- Integrated 1.5V and 1.8V Linear Regulators
- Integrated Switched-Mode Regulator
- Integrated Battery Charger
- USB, I2C and UART with Dual Port Bypass Mode to 4Mbits/s
- Supports up to 32Mbits of External Flash Memory (8Mbits Typical Requirement)
- Multi-Configurable I2S, PCM or SPDIF Interface
- Enhanced Audibility and Noise Cancellation
- Support for 802.11 Co-existence
- RoHS Compliant
- Surface-mount, Size: **18.50×13.00×2.00mm** max

2. Description

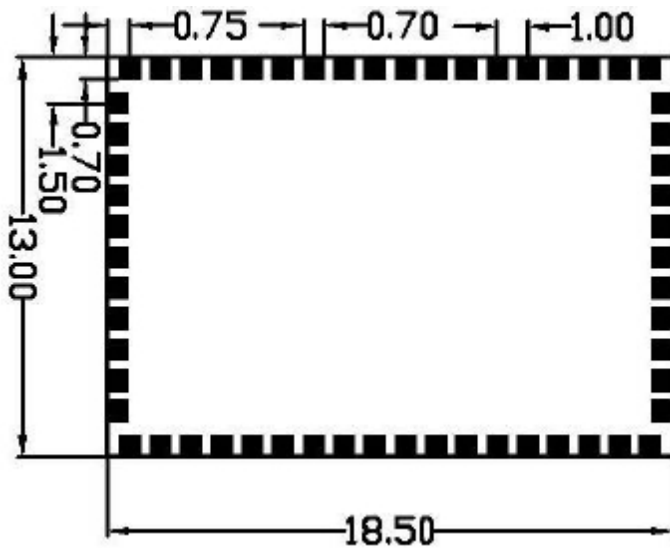
The **BT57E6** is a Bluetooth sub-system using BlueCore5-Multimedia External chipset from leading Bluetooth chipset supplier Cambridge Silicon Radio. The BlueCore5-Multimedia External is a single-chip radio and baseband IC for Bluetooth 2.4GHz systems.

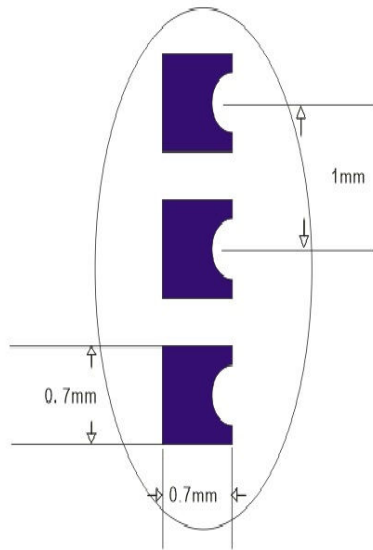
BT57E6 interfaces up to 32Mbit of external Flash memory. When used with CSR Bluetooth stack, it provides a fully compliant Bluetooth system to V2.1+EDR of the specification for data and voice.

3. Diagram



4. Dimensions

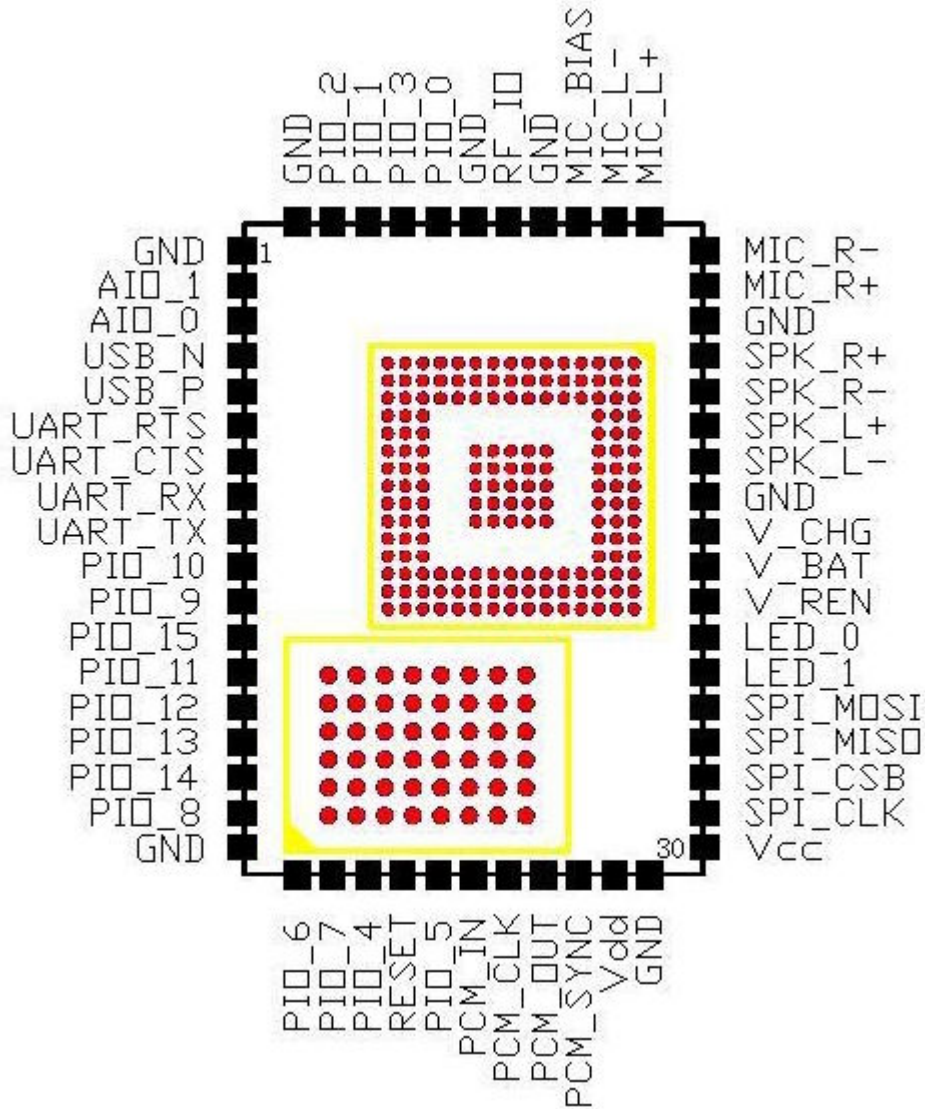




5. Pin Assignment

1	GND	Ground connections
2	AIO(1)	Analogue programmable input/output line
3	AIO(0)	Analogue programmable input/output line
4	USB_DN	USB data minus
5	USB_DP	USB data plus with selectable internal 1.5kΩ pull-up resistor
6	UART_RTS	UART request to send active low
7	UART_CTS	UART clear to send active low
8	UART_RX	UART data input
9	UART_TX	UART data output
10	PIO_10	Programmable input/output line
11	PIO_9	Programmable input/output line
12	PIO_15	Programmable input/output line
13	PIO_11	Programmable input/output line
14	PIO_12	Programmable input/output line
15	PIO_13	Programmable input/output line
16	PIO_14	Programmable input/output line
17	PIO_8	Programmable input/output line
18	GND	Ground connections
19	PIO_6	Programmable input/output line
20	PIO_7	Programmable input/output line
21	PIO_4	Programmable input/output line

22	RESET	Reset if low. Input de bounced so must be low for >5ms to cause a reset
23	PIO_5	Programmable input/output line
24	PCM_IN	Synchronous data input
25	PCM_CLK	Synchronous data clock
26	PCM_OUT	Synchronous data output
27	PCM_SYNC	Synchronous data sync
28	Vdd	+2.8~+3.3V
29	GND	Ground connections
30	Vcc	+1.8V
31	SPI_CLK	SPI clock
32	SPI_CSB	SPI active low
33	SPI_MISO	SPI data output
34	SPI_MOSI	SPI data input
35	LED_1	LED driver
36	LED_0	LED driver
37	V_REN	Take high to enable high-voltage linear regulator and switch-mode regulator
38	V_BAT	Lithium ion/polymer battery positive terminal. Battery charger output and input to switch-mode regulator
39	V_CHG	Lithium ion/polymer battery charger input
40	GND	Ground connection
41	SPK_L-	Speaker output negative, left
42	SPK_L+	Speaker output positive, left
43	SPK_R-	Speaker output negative, right
44	SPK_R+	Speaker output positive, right
45	GND	Ground connection
46	MIC_R+	Microphone input positive, right
47	MIC_R-	Microphone input negative, right
48	MIC_L+	Microphone input positive, left
49	MIC_L-	Microphone input negative, left
50	MIC_BIAS	Microphone bias
51	GND	Ground connection
52	RF_I/O	50 ohm Rx/Tx connection to antenna
53	GND	Ground connection
54	PIO_0	Programmable input/output line
55	PIO_3	Programmable input/output line
56	PIO_1	Programmable input/output line
57	PIO_2	Programmable input/output line
58	GND	Ground connection



6. Specification

6.1 General Specification

Items	Specification
Operating Frequency Band	2.402GHz-2.480GHz unlicensed ISM Band(USA,Spain, France)
Bluetooth Specification	V2.0/V2.1/V2.1+EDR
Output Power Class	Class II
Operating Voltage	+1.8V, +3.3V
Host interface	UART
Audio interface	Analog 、 PCM、 I2S、 SPDIF
Baseband Crystal OSC	26.000MHz
Output Interface	UART,I2C

6.2 Electrical Characteristics

Absolute Maximum Rating			
Rating	Min	Max	
Storage Temperature	-25°C	+125°C	
Supply Voltage: Vcc	-0.4V	+2.1V	
Input I/O Voltage: Vdd	-0.4V	+3.6V	
Supply Voltage: V_BAT, V_REN	-0.4V	+4.5V	
Supply Voltage: V_CHG	-0.4V	+6.3V	
Recommended Operating Conditions			
Operating Condition	Min	Max	
Operating Temperature Range	-20°C	+70°C	
Supply Voltage: Vcc	+1.75V	+1.9V	
Supply Voltage: Vdd	+2.75V	+3.5V	
Supply Voltage: V_BAT	+3.1V	+4.3V	
Supply Voltage: V_CHG	+5.0V	+6.0V	
Input/Output Terminal Characteristics			
Linear Regulator	Minimum	Typical	Maximum
Output Voltage (Iload = 200mA / VREG_IN = 3.0V)	1.70V	1.8V	1.9V
Maximum Output Current	-	-	200mA
Crystal frequency		26.000MHz	
Maximum RF transmit power	-6dBm	0dB	+4dBm
Sensitivity at 0.1% BER for all	-	-84dBm	-75dBm
Audio Output power into 32Ω		30mW	
Typical Average Current Consumption			
Mode	Average		
ACL data transfer 115.2kbps UART no traffic (Master)	2.5		
ACL data transfer 115.2kbps UART no traffic (Slave)	10		
SCO connection HV3 (30ms interval Sniff Mode) (Slave)	13		
SCO connection HV3 (30ms interval Sniff Mode)	14		
SCO connection HV3 (Slave)	17		
SCO connection HV3 (Master)	14		
SCO connection HV1 (Slave)	25		
SCO connection HV1 (Master)	24.5		
Microphone inputs and ADC / channel	1		
DAC and loudspeaker driver, no signal / channel	1.5		
Digital audio processing subsystem	8		
General conditions: Vcc=1.8V Vdd_Flash=3.3V Temperature = +20°C Output			

7 Recommended Reflow Temperature Profile

