Contents

1. Overview

The BCM20730 is a Bluetooth Human Interface Device (HID) Module base on Broadcom BCM20730 Bluetooth controller. It is integrated with PCB antenna, serial EEPROM, Crystal, and also components for the built-in switching regulators to reduce the external BOM cost.

The BCM20730 Module has been designed to provide low power, low cost, and robust communications for applications operating in the globally available 2.4GHz unlicensed ISM band. It is fully compliant with Bluetooth Radio Specification 3.0.

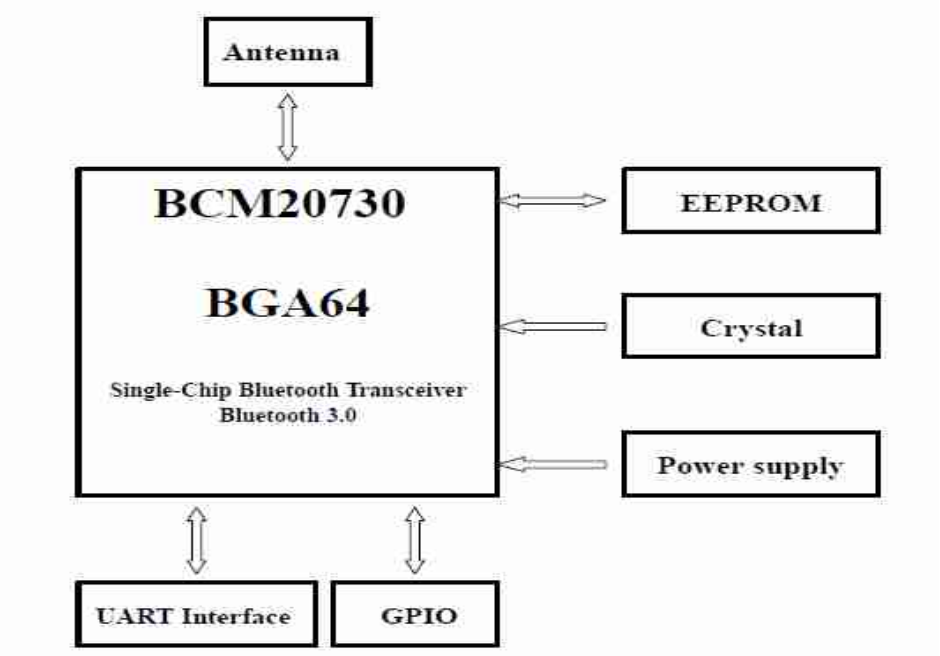
2. Applications

- Wireless pointing devices: Mouse, trackballs, gestural controls
- Wireless keyboards
- 3D glasses
- Remote controls
- Game controllers
- Point-of-sale(POS) input device
- Remote sensors
- Home automation
- Personal health and fitness monitoring

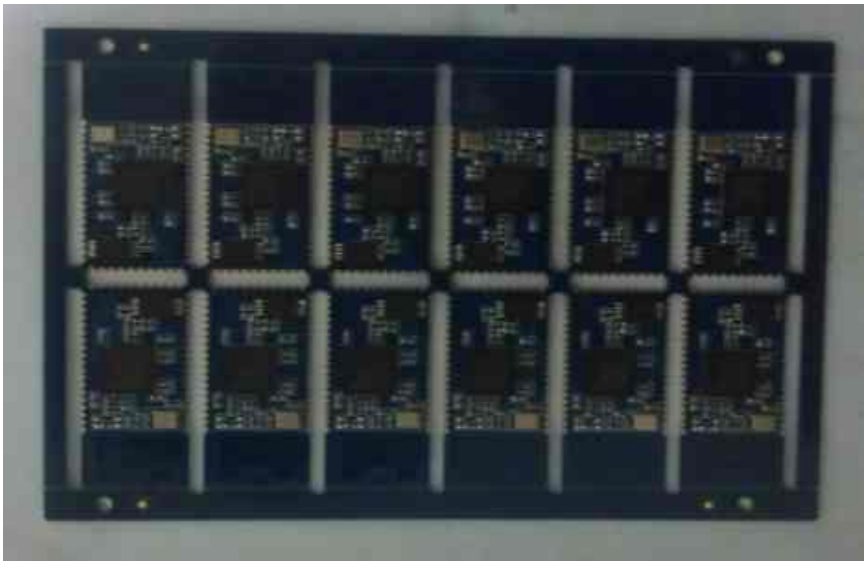
3. Features

- Bluetooth V3.0 specification compatible, including enhanced power control (Unicast Connectionless Data)
- Bluetooth HID profile V1.0 compliant
- Bluetooth Device ID profile version 1.3 compliant
- Bluetooth AVRCP-CT profile version 1.3 compliant
- Programmable output power control meets Class 2 and Class 3 requirements
- Ultra low power design
- Support AFH(Adaptive Frequency Hopping)
- Enhanced power control
- Shutter control for 3D glasses
- Infrared modulator
- Triggered Broadcom Fast Connect
- Slim printed with 30mm*14mm*0.8mm
- ROHS compliant
- BQB certification

4. Block Diagram



5. Module Picture

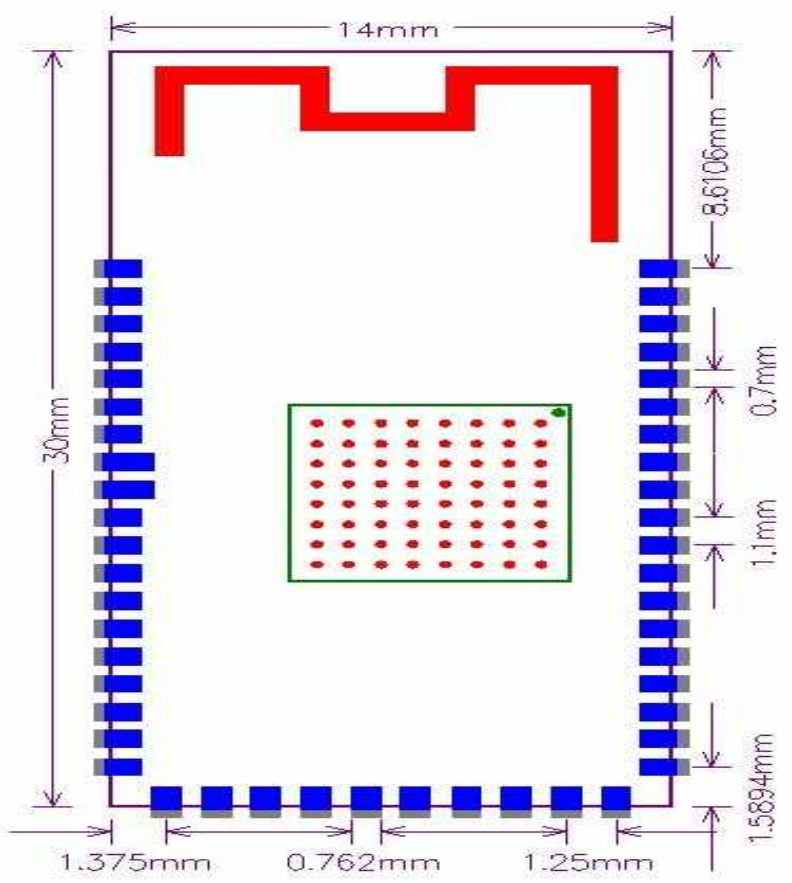


6. Packing

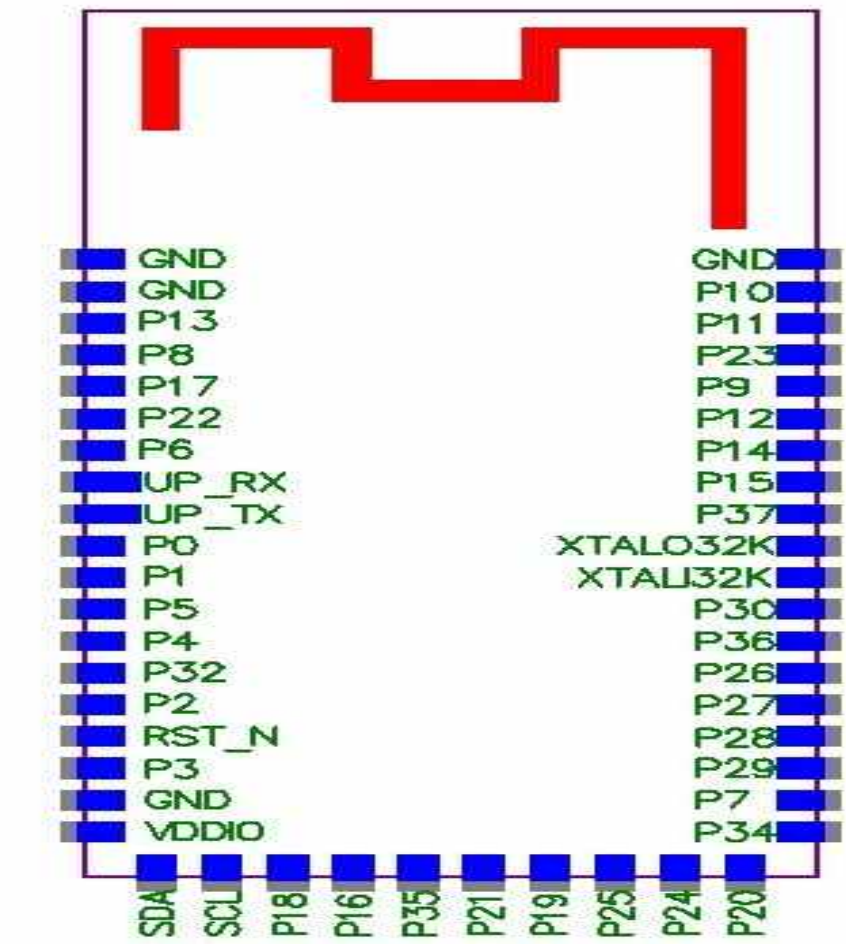
Finished product packing use the blister-tray

7. Module Dimension

Dimension: 30mm*14mm*0.8mm



8. Pin Description



Pin No.	Pin Name	Default Direction	Function Description
1	GND	Power	System ground
2	GND	Power	System ground
3	P13	Input	GPIO
4	P8	Input	GPIO
5	P17	Input	GPIO
6	P22	Input	GPIO
7	P6	Input	GPIO
8	UP_RX	Input	UART serial input
9	UP_TX	Output	UART serial output
10	P0	Input	GPIO
11	P1	Input	GPIO
12	P5	Input	GPIO
13	P4	Input	GPIO
14	P32	Input	GPIO
15	P2	Input	GPIO
16	RST_N	Input	Active-low system reset with open-drain output & internal pull-up resistor
17	P3	Input	GPIO
18	GND	Power	System ground
19	VDDIO	Power	Battery input supply for LDO
20	SDA	I2C	I2C DATA
21	SCL	I2C	I2C CLOCK
22	P18	Input	GPIO
23	P16	Input	GPIO
24	P35	Input	GPIO

25	P21	Input	GPIO
26	P19	Input	GPIO
27	P25	Input	GPIO
28	P24	Input	GPIO
29	P20	Input	GPIO
30	P34	Input	GPIO
31	P7	Input	GPIO
32	P29	Input	GPIO
33	P28	Input	GPIO
34	P27	Input	GPIO
35	P26	Input	GPIO
36	P36	Input	GPIO
37	P30	Input	GPIO
38	XTALI32K	Input	Low-power oscillator input is used
39	XTALO32K	Input	Low-power oscillator output
40	P37	Input	GPIO
41	P15	Input	GPIO
42	P14	Input	GPIO
43	P12	Input	GPIO
44	P9	Input	GPIO
45	P23	Input	GPIO
46	P11	Input	GPIO
47	P10	Input	GPIO
48	GND	Power	System ground

9. Technical Specifications

9.1 General Specification

Items	Min	Typical	Max	Unit
Frequency range	2042		2480	MHz
Bluetooth specification	V3.0			
Output power Class	Class 2			
Working distance	Up to 10 meters in open space			
TX output power	-2		4	dBm
Frequency deviation	140		175	KHz
Channel spacing		1		MHz
Initial carrier frequency tolerance		+-75		KHz
RX sensitivity		-88	-84	dBm
RX Max input		-10		dBm
Input IP3		-16		dBm
Input impedance		50		Ohms

9.2 Electrical Characteristics

Power Supply					
Parameter		**Min**	**Typical**	**Max**	**Unit**
DC supply voltage for RF		1.14	1.2	1.26	V
DC supply voltage for Core		1.14	1.2	1.26	V
DC supply voltage for VDDM		1.62		3.63	V
DC supply voltage for VDDO		1.62		3.63	V
DC supply voltage for LDOIN		1.43		3.63	V
DC supply voltage for VDDFE		1.14	1.2	1.26	V
Digital Level					
Characteristics	**Symbol**	**Min**	**Typical**	**Max**	**Unit**

Input low voltage	V_{IL}			0.4	V
Input high voltage	V_{IH}	0.75*VDDO			V
Output low voltage	V_{OL}			0.4	V
Output high voltage	V_{OH}	VDDO-0.4			V
Input capacitance	C_{IN}		0.12		pF

Current Consumption

Operational Mode	**Conditions**	**Typical**	**Max**	**Unit**
Receive	Receiver and Baseband are both operating, 100% ON		26.6	mA
Transmit	Transmitter and Baseband are both operating, 100% ON		24	mA
DM1	DM1 TX Mode		15.2	mA
DH1	DH1 RX Mode		16.7	mA
Sleep	Internal LDO is in use		28.4	uA
HID OFF	----		1.5	uA
Sniff Mode,11.25ms	Slave		2.8	mA
Sniff Mode,22.5ms	Slave		1.27	mA
Sniff Mode,60ms	Slave		750	uA
Sniff Mode,100ms	Slave		500	uA
Sniff Mode,495ms	Slave		125	uA

10. Function Test

10.1 客户要求平台测试：

Platform	连机是否 OK	回连是否 OK/时间
Ipad1/Ipad2/Ipad3	Pass□ Fail□	Pass□ Fail□
Iphone3GS/4/4S	Pass□ Fail□	Pass□ Fail□
Mac OS 10.6/10.7	Pass□ Fail□	Pass□ Fail□
Windows 32bit	Pass□ Fail□	Pass□ Fail□
Windows 64bit	Pass□ Fail□	Pass□ Fail□
Android 3.0	Pass□ Fail□	Pass□ Fail□

10.2 客户的 Key matrix layout 测试

测试项目	PASS	FAIL
KEY 功能是否正确		
KEY 在文字输入时是否有连键现象		
KEY 在文字输入时是否有明显延时现象		

10.3 蓝牙设备搜索名称是否正确（客户要求）：PASS□ FAIL□

10.4 指示灯的状态是否正确（客户要求）：PASS□ FAIL□ 无指示□

10.5 键盘 NumLock,ScrollLock,CapsLock 指示灯是否与主机同步：

PASS□ FAIL□ 无指示□

10.6 休眠时间是否正确（客户要求）：PASS□ FAIL□

10.7 低电压报警电压/关机电压（客户提供）：PASS□ FAIL□

10.8 操作距离测试（符合 CLASS2 要求无障碍物测试有效距离 10 米以上）：

PASS□ FAIL□