Product Features:

- Bluetooth specification version 2.0+EDR compatible

- Bluetooth HID profile version 1.0 compliant

- Supports AFH

- Supports common keyboard and mouse interfaces eliminates external processor

- Built-in switching regulator to support external sensor to reduce external BOM cost

- Dual output – 1.5V to 1.8V or 2.7V to 3.3V

- Built-in 128K serial EEPROM

- Class 2 type Output Power

- SPI support full-/half-duplex mode

- Serial Communications Interface (compatible with I2C™ slaves)

- Surface-mount, Size: 25mm x 12.5mm x 2.35mm

- Weight: TBD

BM2042 Class 2 HID Module

Qualified

Broadcom, BCM2042KFB
BM2042 Rev.1.0
November 2007

Product Description:

The BM2042 is a class 2 Human Interface Device (HID) module using BCM2042 chipset from Broadcom. The BM2042 is integrated with serial EEPROM, crystal, and switching regulator to reduce external BOM cost. The module and device firmware is fully compliant with the Bluetooth specification v2.0+EDR and Bluetooth HID profile version 1.0 compliant

Applications:

- Wireless Keyboards
- Wireless pointing devices: mice, trackballs
- Game controllers
- Joysticks
- Point of sale (POS) input devices
- Remote controls
- Remote sensors
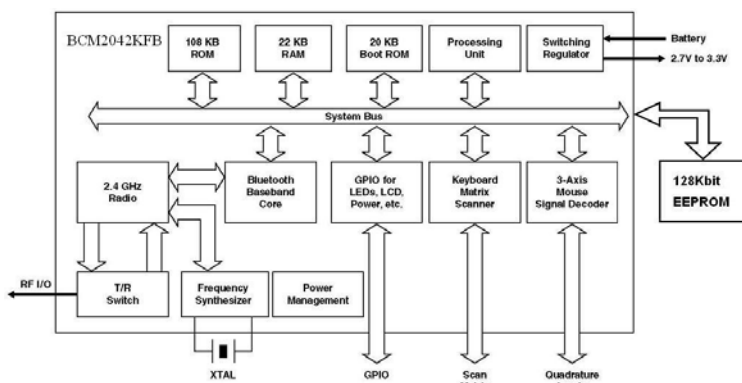
Block Diagram

Specifications:

Operating Frequency Band	2.4GHz ~ 2.48GHz unlicensed ISM band
Bluetooth Specification	Version 2.0+EDR compatible
Bluetooth HID profile version	version 1.0 compliant
Output Power Class	Class 2
Operating Voltage	DC 1.8V------3.6V
EEPROM Size	128Kbit
Dimension	25mm (L) x 12.5 (W) mm x 2.35mm (H)

Specifications are subject to change without prior notice

Electrical Characteristics

Absolute Maximum Rating	Min	Max
Storage Temperature	-40°C	+85°C
Supply Voltage, (VBAT)	-0.3V	+3.63V

Recommended Operating Conditions	Min	Max
Operating Temperature Range	0°C	+70°C
Supply Voltage, (VBAT)	+1.8V	+3.6V

Power Consumption	Minimum	Typical	Maximum
Transmit ①	---	43 mA	---
Receive ②	---	38 mA	---
DM1 (TX mode)	---	28 mA	---
DM1 (RX mode)	---	25 mA	---
Sniff mode, 10ms	---	2.35 mA	---
Sniff mode, 60ms	---	0.39 mA	---
Sniff mode, 100ms	---	0.24mA	---
Sniff mode, 1.28s	---	0.018mA	---
Sleep (disconnected or Inter-Sniff, state preserved)	---	50uA	
Deep sleep (disconnected, wake on interrupt)	---	16uA	---

① Max current when receiver and baseband are both operating, 100% on.

② Max current when transmitter and baseband are both operating, 100% on.

RF Characteristics

Receiver	Units	Min	Typ	Max	Bluetooth Spec
Sensitivity at 0.1% BER	dBm	-	-85	-80	-70
Maximum Receiver Signal	dBm	-	-10	-	-20
C/I Co-Channel	dB	-	9	-	11
Adjacent Channel Selectivity C/I 1MHz	dB	-	-	0	0
2nd Adjacent Channel Selectivity C/I 2MHz	dB	-	-	-30	-30
3rd Adjacent Channel Selectivity C/I >3MHz	dB	-	-	-40	-40
Image Rejection C/I	dB	-	-	-9	-9

VDD = 1.5V; f = 2.45GHz; T=25°C

Transmitter	Units	Min	Typ	Max	Bluetooth Spec
RF Output Power	dBm	-	0	+4	-6 to +4
RF Power Control Range	dB	-	30	-	> 16
RF Power Range Control Resolution	dB	2	-	6	-
20dB Bandwidth for Modulated Carrier	KHz	-	900	-	<1000
2nd Adjacent Channel Power (+/- 2MHz)	dBc	-	-	-20	-20
3rd Adjacent Channel Power (+/- 3MHz)	dBc	-	-	-40	-40

VDD_RF= 1.5 V; f = 2.45GHz; T=25°C

All specifications including pinouts and electrical specifications may be changed without prior notice

Pin Configurations:

PIN NO.	NAME	TYPE	FUNCTION	RE-MARK
1	GND	GND	Ground	
2	P4_5	I/O	Port 4 pin 5	
3	P1_1	I/O	Port 1 pin 1	
4	P1_0	I/O	Port 1 pin 0	
5	P4_2	I/O	Port 4 pin 2	
6	P2_6	I/O	Port 2 pin 6	
7	P2_7	I/O	Port 2 pin 7	
8	P0_1	I/O	Port 0 pin 1	
9	P0_3	I/O	Port 0 pin 3	
10	GND	GND	Ground	
11	RESET_N	I	Active low system reset – contains a weak pull up.	
12	P2_5	I/O	Port 2 pin 5	
13	P0_2	I/O	Port 0 pin 2	
14	UP_RX	O	Debug UART Transmit port	
15	UP_TX	I	Debug UART Receiver port – after power on reset, if: UP_RX = 1, Boot-ROM waits for download of firmware through debug serial port UP_RX = 0, Boot-ROM launches firmware image in the external Flash or internal ROM	
16	P0_6	I/O	Port 0 pin 6	
17	P0_7	I/O	Port 0 pin 7	
18	P0_4	I/O	Port 0 pin 4	
19	SCL	I/O	Broadcom Serial Control Clock (I2C compatible)	
20	SDA	I/O	Broadcom Serial Control Data (I2C compatible)	
21	P0_5	I/O	Port 0 pin 5	
22	P3_0	I/O	Port 3 pin 0	
23	P0_0	I/O	Port 0 pin 0	
24	3P0V	Power	3V power output	
25	P1_5	I/O	Port 1 pin 5	
26	P2_3	I/O	Port 2 pin 3	
27	P3_1	I/O	Port 3 pin 1	
28	1P8V_1	Power	1.8V power output	
29	P2_4	I/O	Port 2 pin 4	
30	VBAT	Power	Battery power supply 1.7V----3.6V	
31	P2_2	I/O	Port 2 pin 2	
32	GND	GND	Ground	
33	P1_6	I/O	Port 1 pin 6	
34	GND	GND	Ground	
35	P1_7	I/O	Port 1 pin 7	
36	P3_5	I/O	Port 3 pin 5	
37	P3_4	I/O	Port 3 pin 4	
38	P4_0	I/O	Port 4 pin 0	
39	GND	GND	Ground	
40	3P0V_1	Power	3V power output	
41	GND	GND	Ground	
42	P3_3	I/O	Port 3 pin 3	
43	P3_2	I/O	Port 3 pin 2	
44	P4_1	I/O	Port 4 pin 1	
45	P1_3	I/O	Port 1 pin 3	
46	GND	GND	Ground	
47	P2_0	I/O	Port 2 pin 0	
48	P2_1	I/O	Port 2 pin 1	
49	P1_2	I/O	Port 1 pin 2	
50	P1_4	I/O	Port 1 pin 4	
51	P4_3	I/O	Port 4 pin 3	

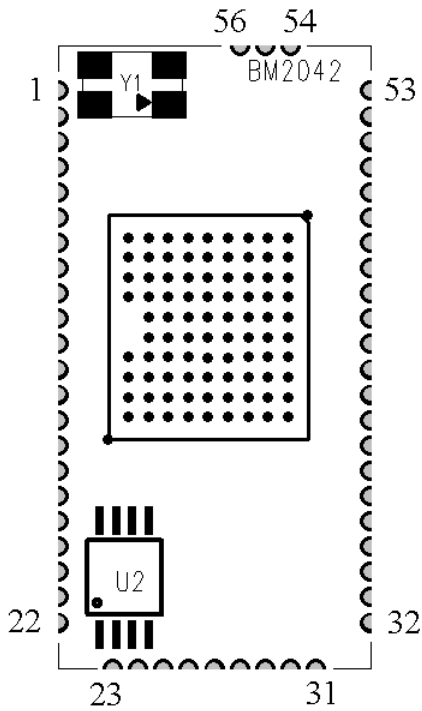| 52 | P4_4 | I/O | Port 4 pin 4 | |
53	GND	GND	Ground	
54	GND	GND	Ground	
55	RF	RF	RF Interface	
56	GND	GND	Ground	

Mechanical Drawing
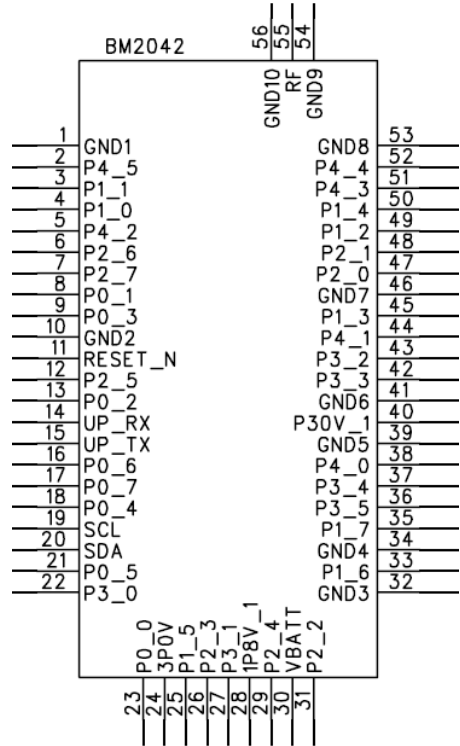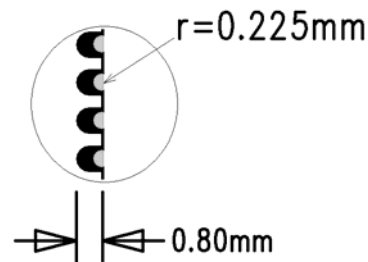
Module dimension unit: mm

Figure 1.

Figure 2.
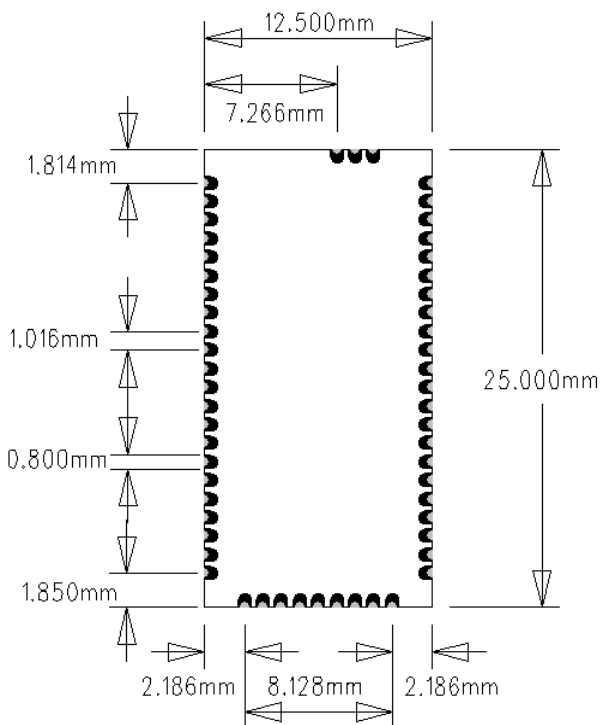
Figure 3

Figure 4

Bluetooth Mouse reference Design

Ordering Information

No	Items	Ordering Code (Class 2)	Description
1	BM2042	BM2042	Operating Voltage is 3.0V, Crystal frequency is 24MHZ

Document References

References	Version
Specifications of the Bluetooth System	V2.0+EDR, 04 November 2004
BCM2042 DATA SHEET	2042-DS05-RDS 01/26/06
BCM2042 Product Brief	2042-PB03-R 11/08/06

Document History

Revision	Date	History
V1.0	2007-11-17	First release

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