Description

- Model : RBHP-B216C
- Bluetooth: v4.2+EDR
- WLAN : 802.11 a/b/g/n/ac
- Frequency Range : 2400MHz ~ 5835MHz

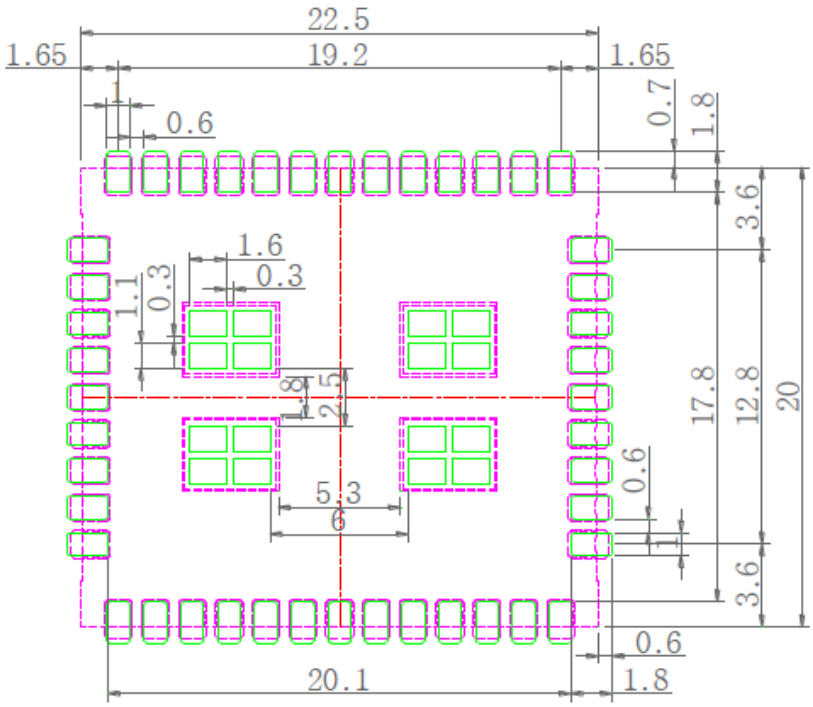
Features

- Dimension : 22.5mm x 20.0mm x 2.7mm
- Temperature Range : -40℃ ~ +85℃
- Supply Voltage : VBAT 3.0V to 3.6V
- Output Power
  BT: Typ. +1.5dBm(Class 2)
  WLAN : 16.0dBm(b), 13dBm(g), 12dBm(n), 13dBm(a), 10dBm(ac)
- Interface
  PCIe(WLAN), UART(BT), I2S

Application

- Automotive

Dimensions



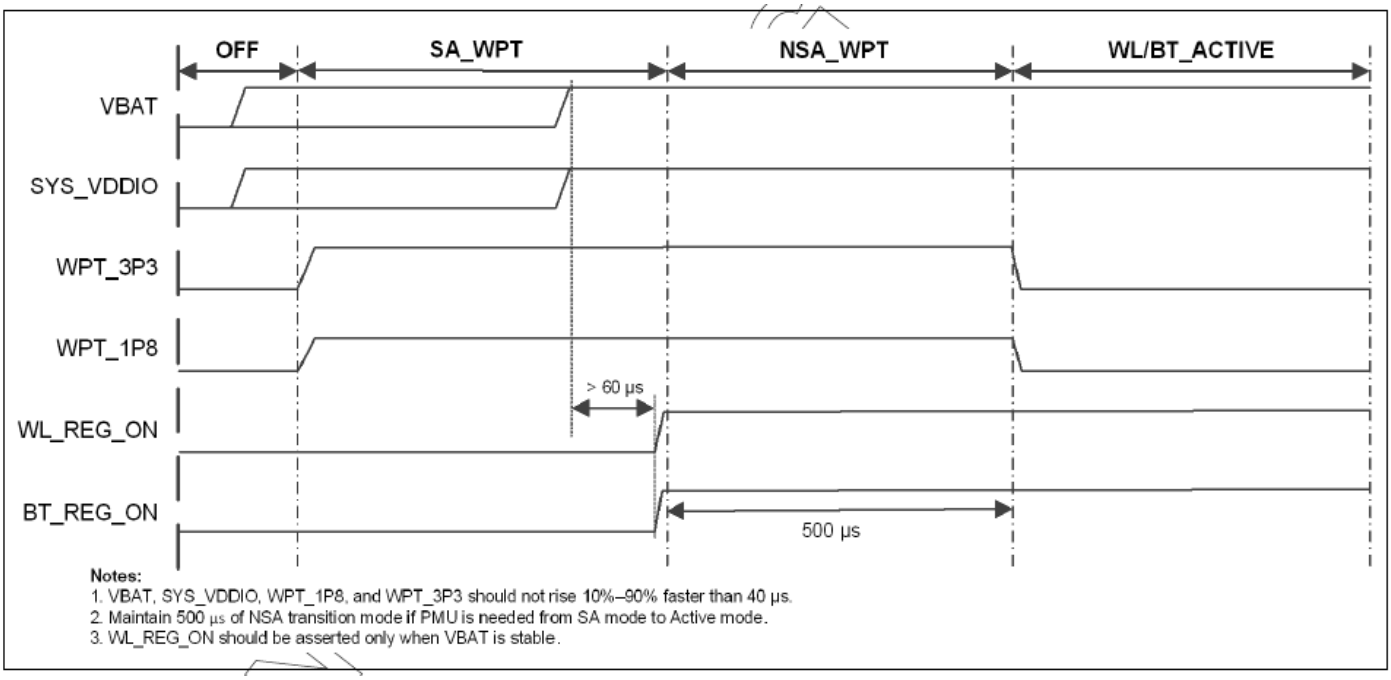
- **Power Supply Specification**

One Buck regulator, multiple LDO regulators, and a power management unit(PMU) are integrated into the BCM88359. All regulators are programmable via the PMU. These blocks simplify power supply design for Bluetooth and WLAN functions in embedded designs.
A single VBAT(3.0V to 3.6V DC max) and VIO supply (1.8V to 3.3V) can be used, with all additional voltages being provided by the regulators in the BCM88359.
Three control signals, BT_REG_ON, WL_REG_ON, and WPT_REG_ON(that is, WPT_1P8), are used to power-up the regulators and
take the respective section out of reset. The CBUCK CLDO and LNLDO power up available. All regulators are powered down only when both BT_REG_ON an WL_REG_ON are deasserted.
The CLDO and LNLDO may be turned off/on based on the dynamic demands of the digital baseband.
The BCM88359 allows for an extremely low power-consumption mode by completely shutting down the CBUCK, CLDO, and LNLDO regulators. When in this state, MEMLPLDO and LPLDO(which is a low-power linear regulator supplied by the system VIO supply) provide the BCM88359 with all the voltage it requires, further reducing leakage currents.

Rating	*Symbol*	*Value*	*Unit*
DC supply for VBAT and PA driver supply	VBAT	–0.5 to +6.0	V
DC supply voltage for digital I/O	VDDIO	–0.5 to 3.9	V
DC supply voltage for RF switch I/Os	VDDIO_RF	–0.5 to 3.9	V
DC input supply voltage for CLDO and LNLDO	–	–0.5 to 1.575	V
DC supply voltage for RF analog	VDDRF	–0.5 to 1.32	V
DC supply voltage for core	VDDC	–0.5 to 1.32	V
WRF_TCXO_VDD	–	–0.5 to 3.63	V
Maximum undershoot voltage for I/O[a]	$V_{undershoot}$	–0.5	V
Maximum overshoot voltage for I/O[a]	$V_{overshoot}$	VDDIO + 0.5	V
Maximum junction temperature	T_j	125	°C
DC supply voltage for wireless charging	WPT_3p3	–0.5 to 3.9	V
DC supply voltage for wireless charging	WPT_1p8 V	–0.5 to 3.9	V
DC supply voltage for WCC I/O	WCC_VDDIO V	–0.5 to 3.9	V

a. Duration not to exceed 25% of the duty cycle.

***Boot sequence**



General Features

RBHP-B216C satisfies the following standards

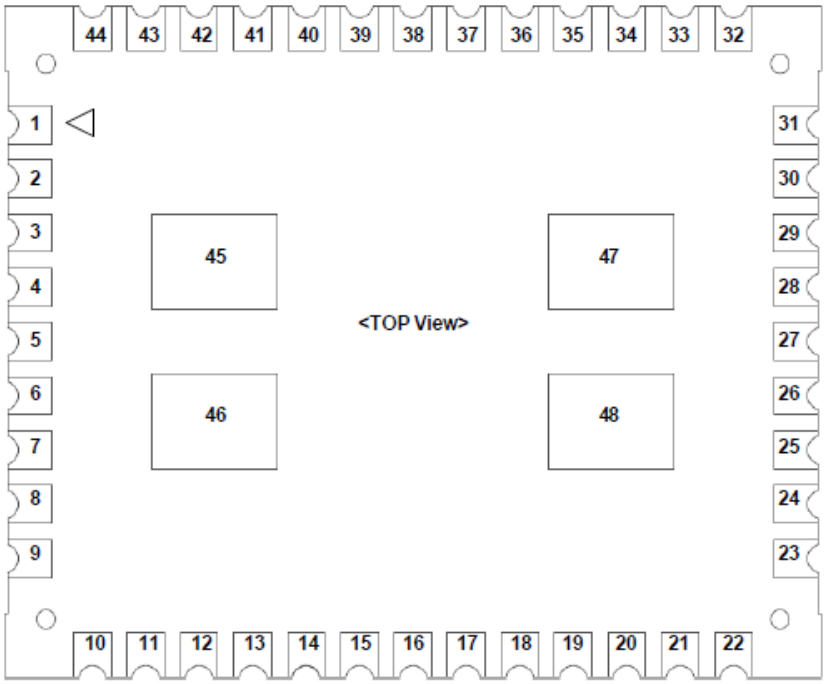
1)Bluetooth Features

- **Bluetooth Power Class 2.**
- **Provisioned for low energy angle-of –arrival applications.**
- **Complies with Bluetooth Core Specification Version 4.2 with provisions for supporting future specifications.**
- **Supports extended synchronous connections(eSCO), for enhanced voice quality by allowing for retransmission of dropped packets.**
- **Adaptive frequency hopping(AFH) for reducing radio frequency interference.**
- **Interface support, host controller interface(HCI) using a USB or high-speed UART interface and PCM for audio data**
- **Supports multiple simultaneous Advanced Audio Distribution Profiles(A2DP) for stereo sound.**

2) WLAN Features

- **Support for IEEE 802.11a/b/g/n/ac**
- **Dual-stream spatial multiplexing up to 867Mbps data rate.**
- **Tx and Rx low-density parity check(LDPC) support for improved range and power efficiency.**
- **Supports IEEE 802.11ac/n beamforming.**
- **Supports real simultaneous dual-band(RSDB).**
- **On-chip power amplifiers and low-noise amplifiers for both bands.**
- **PCIe mode complies with PCI Express base specification revision 3.0 for x1 lane and power management running at Gen1 speeds**
- **Security**
  - **WPA, WAPI STA, and WPA2(Personal) support for powerful encryption and authentication.**
  - **AES and TKIP in hardware for faster data encryption and IEEE 802.11i compatibility**
  - **Reference WLAN subsystem provides Cisco Compatible Extensions (CCX, CCX2.0, CCX3.0, CCX4.0)**
  - **Reference WLAN subsystem provides Wi-Fi Protected Setup(WPS)**

PIN Description



No.	Pin Name	I/O	Description
1	PCIE_CLK_P	I	PCIE differential clock input positive
2	PCIE_CLK_N	I	PCIE differential clock input negative
3	PCIE_TD_N	O	PCIE Transmitter differential negative
4	PCIE_TD_P	O	PCIE Transmitter differential positive
5	SDIO_CLK	I/O	SDIO clock line
6	SDIO_CMD	I/O	SDIO command line
7	SDIO_DATA3	I/O	SDIO data line 3
8	SDIO_DATA2	I/O	SDIO data line 2
9	SDIO_DATA1	I/O	SDIO data line 1
10	SDIO_DATA0	I/O	SDIO data line 0
11	BT_DEV_WAKE	I	Bluetooth device wake from host

PIN Description

12	BT_HOST_WAKE	O	Bluetooth host wake from device
13	VBAT	I	Positive supply - Supply voltage : Typical 3.3V.
14	VBAT	I	Positive supply - Supply voltage : Typical 3.3V.
15	GND	-	Ground
16	N.C.	-	Not Connected (Reserved)
17	WL_REG_ON	I	WLAN Power on reset(Power rail : VDDIO) - Internal 200KΩ pull-down
18	BT_REG_ON	I	Bluetooth Power on reset(Power rail : VDDIO) - Internal 200KΩ pull-down
19	BT_PCM_CLK	I/O	PCM clock, can be master (output) or slave (input)
20	BT_PCM_SYNC	I/O	PCM sync signal, can be master (output) or slave (input)
21	BT_PCM_IN	I/O	PCM data input
22	BT_PCM_OUT	I/O	PCM data output
23	WL_ANT_CORE0	RF	WLAN RF ANT 0 and BT RF ANT
24	GND	-	Ground
25	LPO	I	Low power clock input(32.768KHz, 0V ~ 1.8V peak to peak)
26	GND	-	Ground
27	WL_DEV_WAKE	I	WLAN device wake from host
28	WL_HOST_WAKE	O	WLAN host wake from device
29	GND	-	Ground
30	GND	-	Ground
23	WL_ANT_CORE1	RF	WLAN RF ANT 1
32	SDIO_PAD	I	SDIO_PADVDDIO :If VIO_SD=1.8V→high, If VIO_SD=3.3V→low
33	BT_UART_RTS_N	I/O	Bluetooth UART request to send
34	BT_UART_CTS_N	I/O	Bluetooth UART clear to send
35	BT_UART_RXD	I/O	Bluetooth UART signal input
36	BT_UART_TXD	I/O	Bluetooth UART signal output

PIN Description

No.	Pin Name	I/O	Description
37	VIO	I	BT, WLAN VDDIO supply voltage.(3.3V or 1.8V) - BT and WLAN should be same power rail
38	SDIO_DIS	I	SDIO_DIABLE : Low : SDIO Enabled, High : SDIO Disabled
39	PCIE_EN	I	PCIE_ENABLE : Low : PCIE Disabled, High : PCIE Enabled
40	PCIE_PME_L	O	PCIE power management event output
41	PCIE_PERST_N	I	PCIE system reset.
42	PCIE_CLKREQ	O	PCIE clock request signal
43	PCIE_RD_P	I	PCIE Receiver differential positive
44	PCIE_RD_N	I	PCIE Receiver differential negative
45	GND	-	Ground
46	GND	-	Ground
47	GND	-	Ground
48	GND	-	Ground

FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

(1) This Device may not cause harmful interface, and

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

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment 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 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 correct the interference by one or more of the following measures:

1.1. Reorient or relocate the receiving antenna.
1.2. Increase the separation between the equipment and receiver.
1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

"CAUTION : Exposure to Radio Frequency Radiation.
Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.

IC Information

This device complies with Industry Canada license-exempt RSS standard(s). Operation in subject to The following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avec Industrie Canada RSS standard exempts de licence(s), Son utilisation est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

∗ **This device is going to be operated in 5 150 MHz ~ 5 250 MHz frequency range, it is restricted in indoor environment only.**

Information for OEM Integrator

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2) The transmitter module may not be co-located with any other transmitter or antenna.

End product labelling

The label for end product must include

"Contains FCC ID: YZP-RBHP-B216C, Contains IC: 7414C-RBHPB216C".

" CAUTION: Exposure to Radio Frequency Radiation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20cm between the radiator and your body. This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users."