

Bluetooth® Module

BR-C29 Class2, and Class3 Bluetooth® ver1.2

OUTLINE

- **AT HOME. AT WORK. ON THE ROAD. USING BLUETOOTH WIRELESS TECHNOLOGY MEANS TOTAL FREEDOM FROM THE CONSTRAINTS AND CLUTTER OF WIRES IN YOUR LIFE.**
- Wireless communications module conforming to Bluetooth® ver. 1.2
- Two types of models: With/without an antenna provided.
- Conforms to FCC, CE, and the EMI standards of each country.
- Conforms to ISM 2.4GHz band Bluetooth®.
- UART data, and PCM audio interfaces available to various applications.
- Includes integrated software stack, profiles, and AT modem like commands.
- Embedded Bluetooth Stack Profiles Included (requires no host MCU stack): SPP, DUN, LAN, GAP SDP, RFCOMM, and L2CAP protocols.



FEATURES

- The BlueRadios serial radio modems can be configured, commanded, and controlled through simple ASCII strings over the Bluetooth RF link or directly through the hardware serial UART.
- Dedicated PCM voice channel for audio applications
- UART baud rate speeds: 1200bps up to 921.6Kbps, and customized
- +10 meter (33 feet) distance
- Software adjustable transmitter power from short to longer range applications
- Low power consumption (60mA TX, 40mA RX, 2mA idle mode, and 90uA deep sleep)
- Small-form factor SMT radio modem
- Self-discovery and network equipped multi-points
- Operating temperature range: -40~+85°C.
- Secure and robust communication link
  - ✓ FHSS (Frequency Hopping Spread Spectrum)
  - ✓ Encryption and 16 alphanumeric Personal Identification Number (PIN)
  - ✓ Error correction schemes

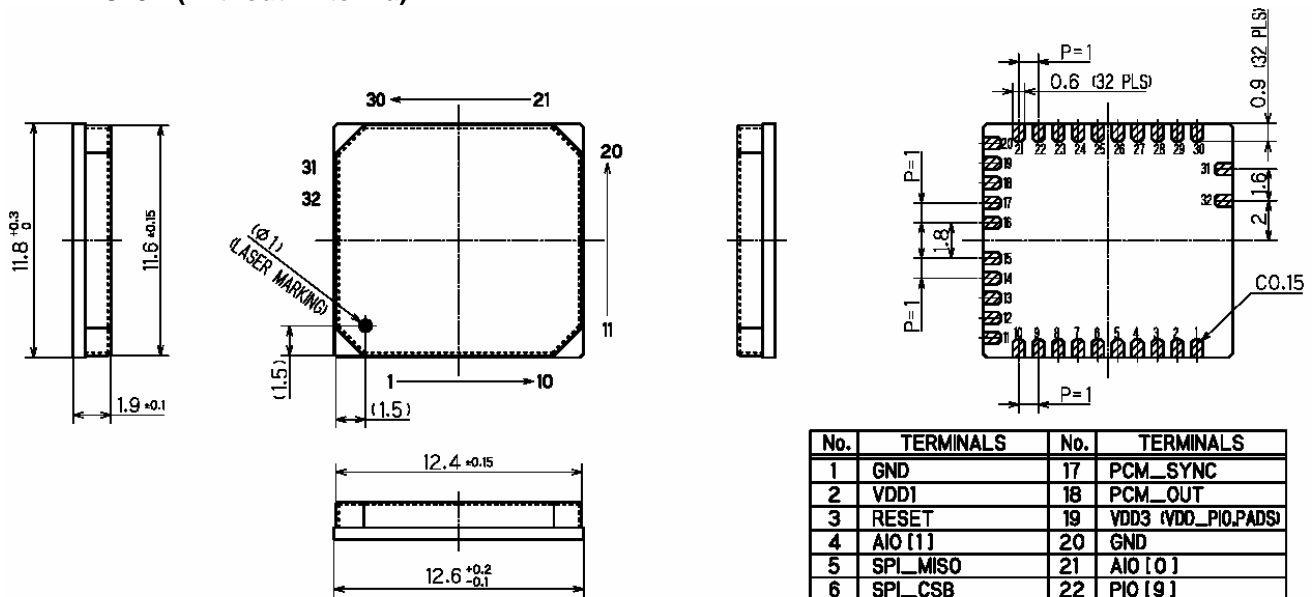


SPECIFICATIONS

Item	Specifications
Frequency	2402 ~ 2480MHz
Modulation	FHSS/GFSK
Channel intervals	1MHz
Number of channels	79CH
Power supply voltage	1.8Vdc ± 0.1V and 3.3Vdc ± 0.1V (both required)
Current consumption	60mA worst case peak
Transmission rate (over the air)	721kbps
Receive sensitivity	-82dBm typ.
Output level (variable)	4dBm max.
Dimensions	Without antenna
	With antenna
	11.8(W)X12.6(L)X1.9(H)mm
	11.8(W)X17.6(L)X1.9(H)mm

**DIMENSIONS**

● **BR-C29N (Without Antenna)**



No.	TERMINALS	No.	TERMINALS
1	GND	17	PCM_SYNC
2	VDD1	18	PCM_OUT
3	RESET	19	VDD3 (VDD_PIO,PADS)
4	AIO [1]	20	GND
5	SPI_MISO	21	AIO [0]
6	SPI_CSB	22	PIO [9]
7	SPI_CLK	23	PIO [2]
8	SPI_MOSI	24	PIO [5]
9	VDD2 (VDD_MEM)	25	PIO [6]
10	GND	26	PIO [3]
11	UART_CTS	27	PIO [8]
12	UART_RTS	28	PIO [4]
13	UART_TX	29	PIO [7]
14	UART_RX	30	GND
15	PCM_CLK	31	ANT
16	PCM_IN	32	GND

*Preliminary*

**Firmware Options**

- AT Command
- HCI
- Repeater
- Multi-Slave
- Custom

*Note: SPI is for internal use only.*

*VDD1 = 1.8Vdc ± 10mVP-P*

Part is not 5Vdc tolerant. Reset is active high; pulse >5msec.

PIO Sink Current is 4mA max.

Unused pins can float accept for PIO(4), tie to ground if not used.

Power Supply Recommendations (all three required):

Vdd1 = 1.8Vdc ± 0.1Vdc and 10mVp-p max noise

Vdd2 & Vdd3 = 3.3Vdc ± 0.1Vdc and 10mVp-p max noise

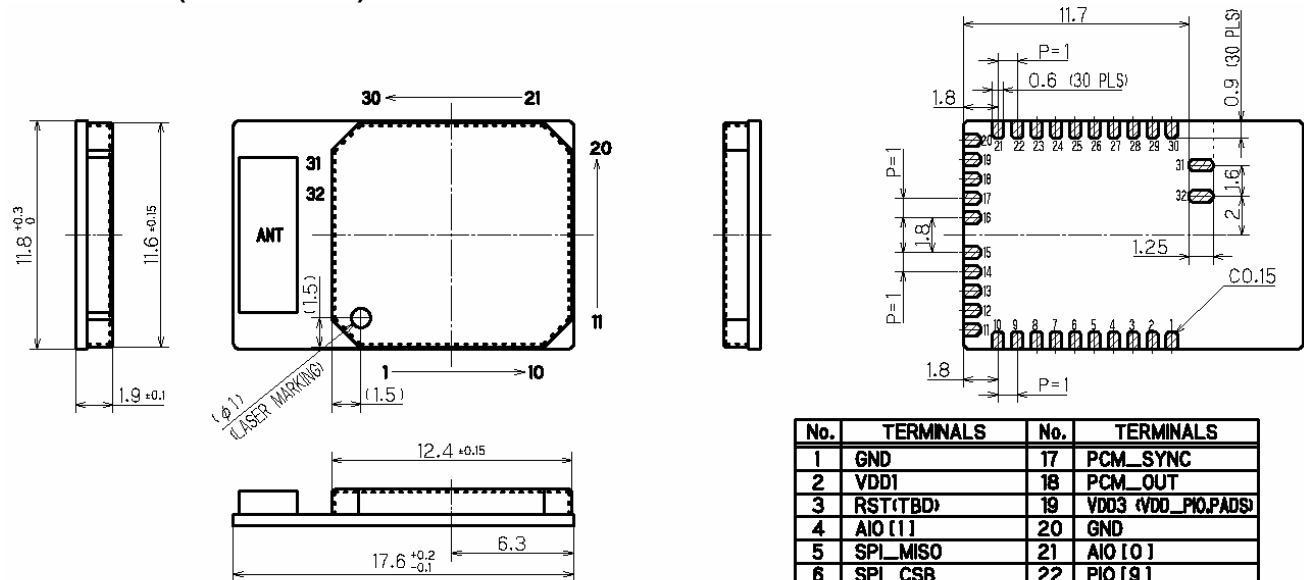
UART I/O tolerant is defined as Vdd2+0.4 in the detailed spec. 8-1-1. If Vdd2 for example is 2.9, maximum input voltage at UART I/O would be 3.3v. It's not affected by Vdd3. Let's say Vdd3=3.3v and Vdd2=2.8, maximum input voltage at UART I/O is 3.2v.

But keep in mind that absolute maximum input voltage at UART I/O is 3.6v. If Vdd2 is 3.4v, the maximum input voltage at UART I/O is 3.6v, not 3.8v (3.4v+0.4v). This is specified in 4-3-1 of the detailed specification.

**Unit: mm**

\*For technical details of the products in this page, refer to Sales Dept., BlueRadios, Inc.

● **BR-C29A (With Antenna)**



No.	TERMINALS	No.	TERMINALS
1	GND	17	PCM_SYNC
2	VDD1	18	PCM_OUT
3	RST(TBD)	19	VDD3 (VDD_PIO,PADS)
4	AIO [1]	20	GND
5	SPI_MISO	21	AIO [0]
6	SPI_CSB	22	PIO [9]
7	SPI_CLK	23	PIO [2]
8	SPI_MOSI	24	PIO [5]
9	VDD2(VDD_MEM)	25	PIO [6]
10	GND	26	PIO [3]
11	UART_CTS	27	PIO [8]
12	UART_RTS	28	PIO [4]
13	UART_TX	29	PIO [7]
14	UART_RX	30	GND
15	PCM_CLK	31	N.C (RF_TEST+ANT)
16	PCM_IN	32	N.C (RF_TEST+GND)

*Preliminary*

**Firmware Options**

- AT Command
- HCI
- Repeater
- Multi-Slave
- Custom

*Note: SPI is for internal use only.*

VDD1 = 1.8Vdc ± 0.1V and max. 10mVp-p max noise

Part is not 5Vdc tolerant. Reset is active high; pulse >5msec.

PIO Sink Current is 4mA max

Unused pins can float accept for PIO(4), tie

to ground if not used.

Power Supply Recommendations (all three required):

Vdd1 = 1.8Vdc ± 0.1Vdc and 10mVp-p max noise

Vdd2 & Vdd3 = 3.3Vdc ± 0.1Vdc and 10mVp-p max noise

UART I/O tolerant is defined as Vdd2+0.4 in the detailed spec 8-1-1. If Vdd2 for example is 2.9, maximum input voltage at UART I/O would be 3.3v. It's not affected by Vdd3. Let's say Vdd3=3.3v and Vdd2=2.8, maximum input voltage at UART I/O is 3.2v.

But keep in mind that absolute maximum input voltage at UART I/O is 3.6v. If Vdd2 is 3.4v, the maximum input voltage at UART I/O is 3.6v, not 3.8v (3.4v+0.4v). This is specified in 4-3-1 of the detailed specification.

**Unit: mm**

\*For technical details of the products in this page, refer to Sales Dept., BlueRadios, Inc.

### Power-up Sequence

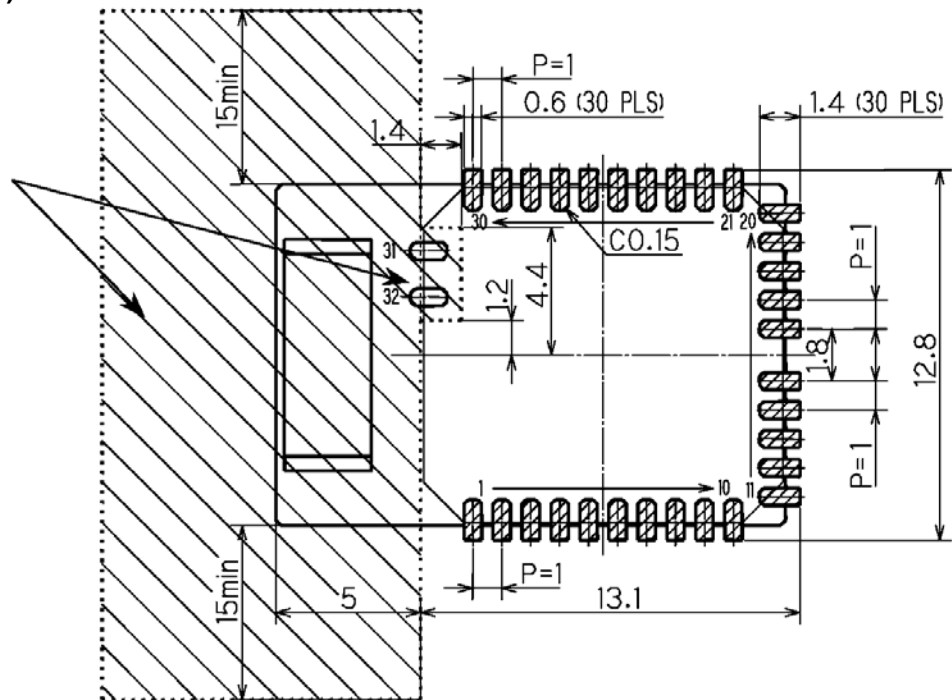
The unit must be reset with terminal 3 “RESET” after turning on the power supply VDD1, VDD2, and VDD3. Reset terminal should be high for >5 msec. to cause a reset incase of electrical “brown-out” or poor input supplied VDD. Allow 500msec for module to fully reboot. Unit will not initially boot-up reliably if the VDD ramp rate is in milliseconds.

Please refer to BlueRadios Specification BR-AT\_COMMANDS-100 hardware and software interface definition.

### STANDARD LAND DIMENSIONS

#### BR-C29A (With Antenna)

In this area, you should not locate any parts or GND plane / Patterns on surface or internal layer.



**Note:** Radio requires a RF ground plane on the rest of the Printed Circuit Board (PCB) area. This can be located on any layer of the PCB. Extend the RF ground plane parallel to module pins 31 and 32 the entire length of your board. Connect all ground pins and do not notch the ground plane around the module. Bottom of module is grounded so be careful of vias or conductive traces located under the modules that are not soldered masked to prevent shorting.