



Key Specifications

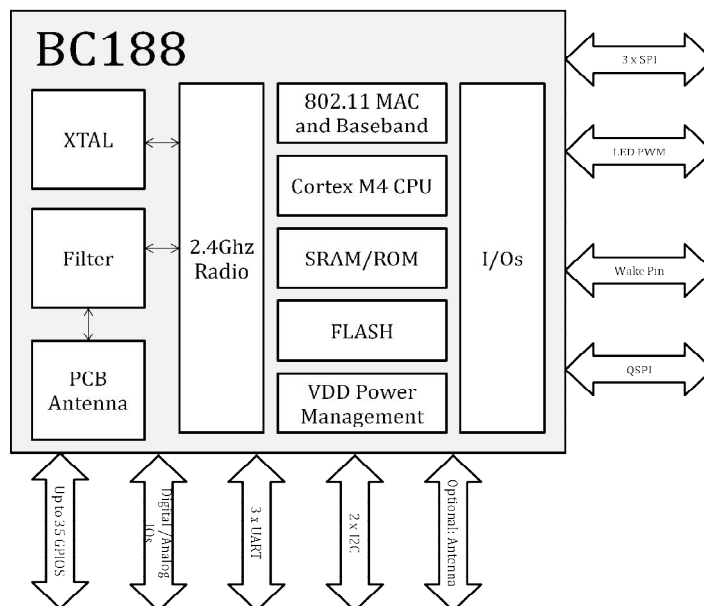
- Low Power Wi-Fi module with Microcontroller and Antenna
- Cortex-M4F CPU with integrated 512KB RAM, 128KB RAM
- Ultra Low Power modes (Deep Sleep, Standby)
- IEEE 802.11n/g/b, 1x1 SISO, 2.4 GHz and HT20
- Antenna Diversity
- Embedded Stack and TCP/IP, Simple UART interface
- 3xI2S, 3xSPI, 2xI2C, 3xUART, QSPI, Up to 35 GPIOs, 2 x Wake
- 2 Step ADC with PGA, 2 Channel or 1 Diff channel DAC
- Small form factor (22mm x 15.5mm x 1.5mm)

Applications

- White Goods/Appliances
- Consumer Devices and Accessories
- Home Automation
- Personal Health Devices
- IoT and Wearables
- Commercial and Industrial

Description

BC188 is a highly flexible, low power, small form factor self contained WiFi module. It comes preloaded with BlueCreation Melody-Wi-Fi software, and is ideal for developers who want to quickly and cost effectively integrate Wi-Fi functionality into their products.





General Specifications

Specifications	Description
Wi-Fi	802.11 b.g.n.d.e.h.i.k.r.w
Interfaces	UART, AIO, GPIO, SPI, PCM, I2S, SPDIF, I2C
Size	22mm x 15.5mm x 1.5mm
Weight	0.9g

Wi-Fi Specifications

Specifications	Description
Encryption	WEP 64 and 128 bit encryption (WPA), AES-CCMP, WAPI
Frequency Range	2400 to 2500 MHz
Maximum Data Rate	72.2Mbps, 20 MHz channels
Tx output saturation	26dBm
Rx input IP3	-15dBm
Phase Noise	-103dBc/Hz



Audio Specifications

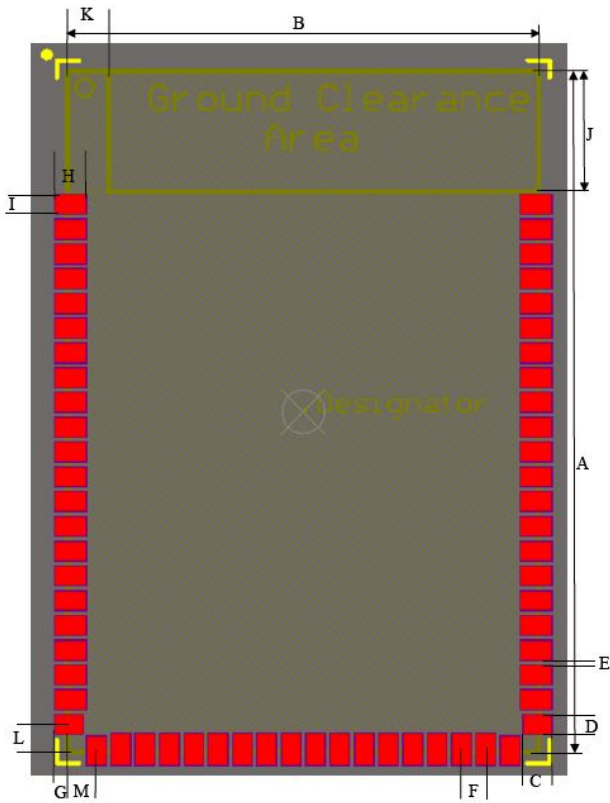
Specifications	Description
DAC output range	0.12V to 1.6V
Common ADC Input	0.9V (Typical)

Electric Specifications

Specifications	Description
Supply Voltage	3.0V to 3.6 V DC (Supports Li Ion battery voltage range)
Typical Current (Sleep)	36 μ A
Typical Current (PowerSave)	0.4mA
Operating Temperature	-40°C to 85°C



Module Footprint



Dimension	Description	Value
A	Module Length	22.0mm
B	Module Width	15.5mm
C	Corner Pad Length	0.9mm
D	Corner Pad Width	0.6mm
E	Pad to Pad Clearance	0.2mm
F	Pad Pitch	0.8mm
G	Module Edge to Pad Edge	0.6mm
H	Non-Corner Pads Length	1.0mm
I	Non-Corner Pads Width	0.8mm
J	Ground Clearance Width from Module Top Edge	3.9mm
K	Ground Clearance Gap from Module Left Edge	1.35mm
L	Corner Pad Centre to Module Edge Left column	0.9mm
M	Corner Pad Centre to Module Edge Bottom row	0.95mm



PIN Description

No	Pin Name	Primary Function	Secondary Function
1	GND	GND	GND
2	ANT_CTRL1	Output ANT_CTRL1	General Purpose IO44
3	ANT_CTRL0	Output ANT_CTRL0	General Purpose IO 45
4	GND	GND	GND
5	RF_EXT	External RF Connection	NA
6	GND	GND	GND
7	UART_CTS/GPIO_0	UART Clear To Send via	GPIO_0
8	UART_RTS/GPIO_1	UART Ready To Send via	GPIO_1
9	UART_TX/GPIO_2	UART Transmit via	GPIO_2
10	UART_RX/GPIO_3	UART Receive via	GPIO_3
11	VDDIO_0	Supply input for GPIOs	NA
12	VDDIO_1	Supply input for GPIO16	NA
13	GND	GND	GND
14	GND	GND	GND
15	GND	GND	GND
16	GPIO_16	General Purpose IO 16	CON5 Configuration Pin 5
17	GND	GND	GND
18	GND	GND	GND
19	GPIO23	General Purpose IO 23	Wake Up 1
20	GPIO22	General Purpose IO 22	Wake Up 0
21	GPIO24	General Purpose IO 24	General Purpose Timer 1 Channel 5
22	GND	GND	GND
23	GND	GND	GND
24	GND	GND	GND
25	VBAT	Battery Supply Input	NA
26	RST#	Module Reset (Active Low)	NA
27	GPIO25	XTAL_32k CLK IN	GPIO25
28	GPIO26	XTAL_32k CLK OUT	GPIO26
29	GND	GND	GND
30	QSPI_D1/GPIO31	Flash SPI Data I/O 1	GPIO31
31	QSPI_CLK/GPIO29	Flash SPI Clock	GPIO29
32	VDDIO_2	Supply input for QSPI I/O	NA
33	GND	GND	GND
34	QSPI_D2/GPIO32	Flash SPI Data I/O 2	GPIO32
35	QSPI_D3/GPIO33	Flash SPI Data I/O 3	GPIO33
36	QSPI_D0/GPIO30	Flash SPI Data I/O 0	GPIO30
37	QSPI_SSN/GPIO28	Flash SPI Chip Select	GPIO28
38	GPIO27	General Purpose IO 27	CON4 Configuration Pin 4



BC188 Datasheet

39	GND	GND	GND
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No	Pin Name	Pin Type	Pin Description
40	GND	GND	GND
41	GND	GND	GND
42	GND	GND	GND
43	VDDIO_3	Supply input for GPIO	NA
44	GPIO40	General Purpose IO 40	NA
45	GPIO39	General Purpose IO 39	General Purpose Timer 3 Clock Input
46	GND	GND	GND
47	GPIO41	General Purpose IO 41	NA
48	GPIO42	General Purpose IO 42	NA
49	GPIO43	General Purpose IO 43	NA
50	GPIO46	General Purpose IO 46	NA
51	GPIO47	General Purpose IO 47	NA
52	GPIO48	General Purpose IO 48	NA
53	GPIO49	General Purpose IO 49	NA
54	GPIO7	General Purpose IO 7	JTAG Test Clock
55	GPIO6	General Purpose IO 6	JTAG Test Data Output
56	GPIO5	General Purpose IO 5	I2C0_SCL
57	GPIO4	General Purpose IO 4	I2C0_SDA
58	GPIO8	General Purpose IO 8	JTAG Test Mode State
59	GPIO9	General Purpose IO 9	JTAG Test Data Input
60	GPIO10	General Purpose IO 10	JTAG Test Reset (Active Low)
61	3V3	3V3 Supply Input	NA
62	GND	GND	GND

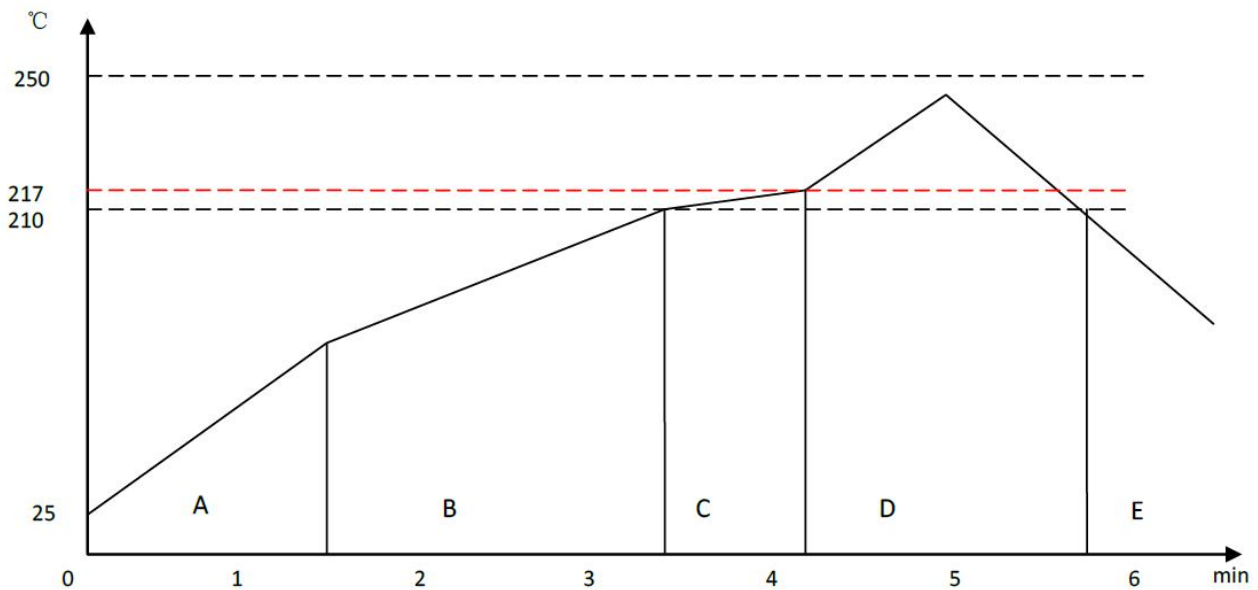
Notes

- All GPIO Pins are pull-up High after RESET
- QSPI Signals are used for external Flash only. All QSPI signals are muxed on GPIO Pins
- USB data positive with selectable internal 1.5kΩ pull up resistor
- UART are Bidirectional with weak pull up
- PCM_OUT, IN, SYNC and CLK can be used as SPI_MISO, MOSI, CSB and CLK respectively. SPI-PCM# high switches SPI/PCM lines to SPI, low switches to PCM/PIO use



Solder Reflow Profile

The solder profile is described below.



Zone A: Preheat: This raises the temperature at a controlled rate, typically 0.5 - 2C/s. This will preheat the component to 120°C to 150°C to distribute the heat uniformly to the PCB.

Zone B: Equilibrium1: In this zone, the flux becomes soft and uniformly spreads solder particles over the PCB board, preventing re-oxidisation. The recommended temperature for this zone is 150°C to 200°C for 60s to 120s.

Zone C: Equilibrium2: This is optional and in order to resolve the upright component issue. Temperature is 210°C to 217°C for 20s to 30s.

Zone D: Reflow zone: The temperature should be high enough to avoid wetting but low enough to avoid component deterioration. The recommended peak temperature is 230°C to 250°C. The soldering time should be 30s to 90s when the temperature is above 217°C.

Zone E: Cooling: The cooling rate should be fast to keep the solder grains small which will give a longer lasting joint. A typical cooling rate is 4°C/s.



Regulatory Certifications

BC188 is delivered with FCC, CE and IC certifications. This allows to integrate the module in an end product without the need to obtain subsequent and separate approvals from these regulatory agencies. This is valid in the case no other intentional or un-intentional radiator components are incorporated into the product. Without these certification, an end product cannot be marketed in the relevant regions.

United States - FCC

- In case no other intentional or un-intentional radiator is incorporated, the BC188's FCC certification allows users to integrate the module into products without the need to obtain subsequent and separate approval.
- The BC188 was approved as "intentional transmitter radio module" by the United States' Federal Communications Commission (FCC) with accordance to CFR47 Telecommunications Part 15, Subpart C, section 212. This certification is applicable in all the states in the United States.
- The certification allows products to be listed in the NRTL (National Recognized Test Laboratory) as appointed by OSHA (Occupational Safety and Health Administration).

Labelling

- The BC188 has been labelled with its own FCC ID number. In order to extend the certification granted to the BC188, its FCC ID number must be displayed on the finished product in which the module is integrated. The following wording should be used "Contains Transmitter Module FCC ID: SSSBC188-X" or "Contains FCC ID: SSSBC188-X".
- The user-manual for any product in which the BC188 is integrated in must include the following statements:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and receiver; Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; Consult the dealer or an experienced radio/TV technician for help.