**BlueCreation**

Fully Certified Bluetooth Version 4.0 Audio Module

Key Specifications

- Bluetooth Certified 4.0 Audio module
- Dual Mode: Bluetooth and Bluetooth Low Energy (BLE)
- Backwards compatible with 1.1, 2.0, 2.1 + EDR and 3.0
- Embedded Bluetooth Protocol Stack
- Supports HFP, A2DP, AVRCP, PBAP and SPP
- Supports IAP1/IAP2 profiles for connection to iOS devices and Apps
- Simple UART and GPIO interface for command and control
- Can connect to external Codecs with I2S, PCM, SPDIF interface
- Small form factor (11.8mm x 18mm x 3.2mm)
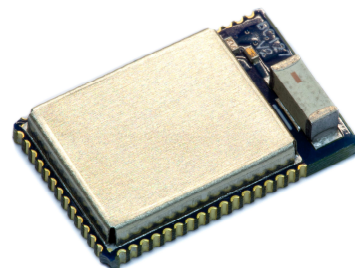
Applications

- Wireless Speakers, Docks and Headsets
- Smart-Phone Audio Systems
- Automotive Infotainment Systems
- Medical Devices
- High Quality Audio Streaming
- Gaming Accessories and MP3 Players
- Analog/USB Media dongles

Description

BC126 is a highly flexible, low power, small form factor Bluetooth Version 4.0 Certified Audio module. It comes preloaded with BlueCreation Melody software, and is ideal for developers who want to quickly and cost effectively integrate Bluetooth functionality into their products.

Block Diagram

BC126
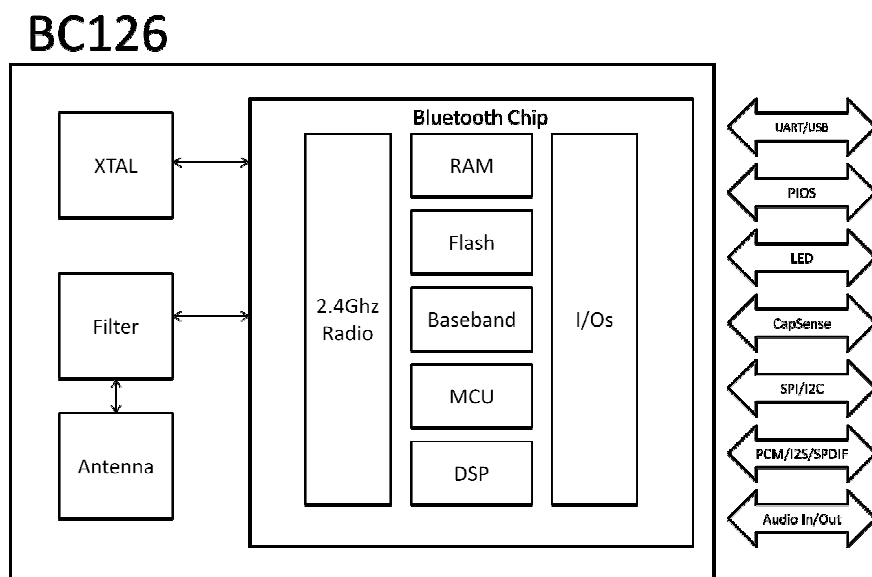
General Specifications

Specifications	Description
Bluetooth Standard	Bluetooth 4.0 Class 2
Interfaces	UART, AIO, GPIO, USB, SPI, Audio In, Mic In, PCM, I2C
Size	11.8mm x 18mm x 3.2mm
Weight	1.1g

RF Specifications

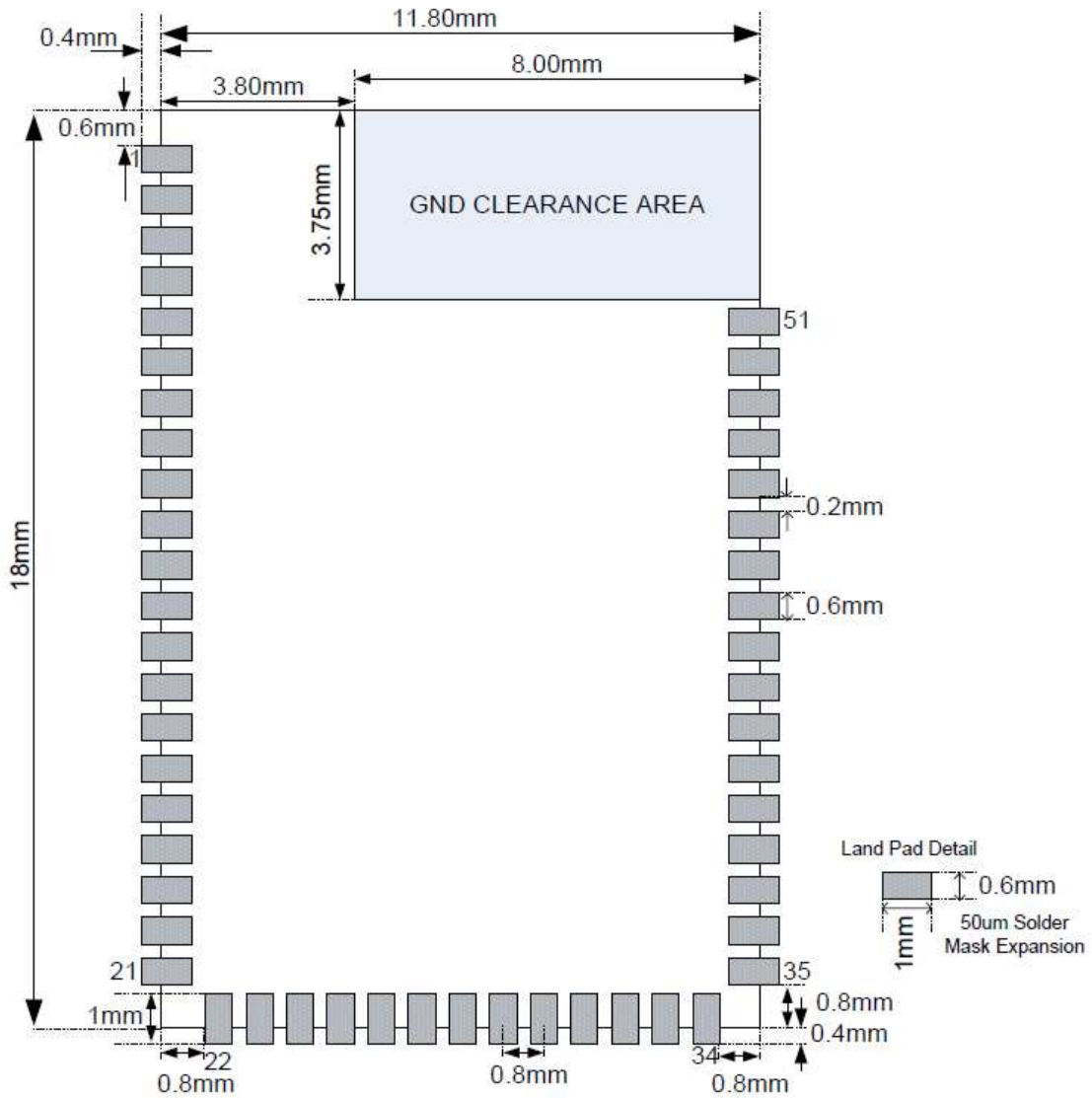| Specifications	Description
Frequency Band	2,402 MHz to 2,480 MHz
Modulation	8 DPSK, PI/4 DQPSK, GFSK
Maximum Data Rate	3Mbps (typical 1.6Mbps)
Operating Range	Up to 30m
RF Sensitivity	0.1% BER at -88dBm
Transmit Power	+4dBm

Audio Specifications

Specifications	Description
DAC resolution	16 bits
DAC Output Sample Rate	8 KHz to 90 KHz
DAC SNR	96dB
Stereo Separation (Cross Talk)	-87.7dB
RF Sensitivity	0.1% BER at -88dBm
Transmit Power	+4dBm

Electrical Specifications

Specifications	Description
Supply Voltage	1.8V to 3.7 V DC
Typical Current	20mA (Music streaming)
Typical Current Idle	<5mA (Connectable)
Operating Temperature	-40°C to 85°C

Module Footprint

Placement Considerations

GND CLEARANCE AREA

1

51

Place module on the RHS edge corner of the applications board, all ground should be removed from the hatched area on all layers of the PCB to avoid detuning the antenna.

21

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34

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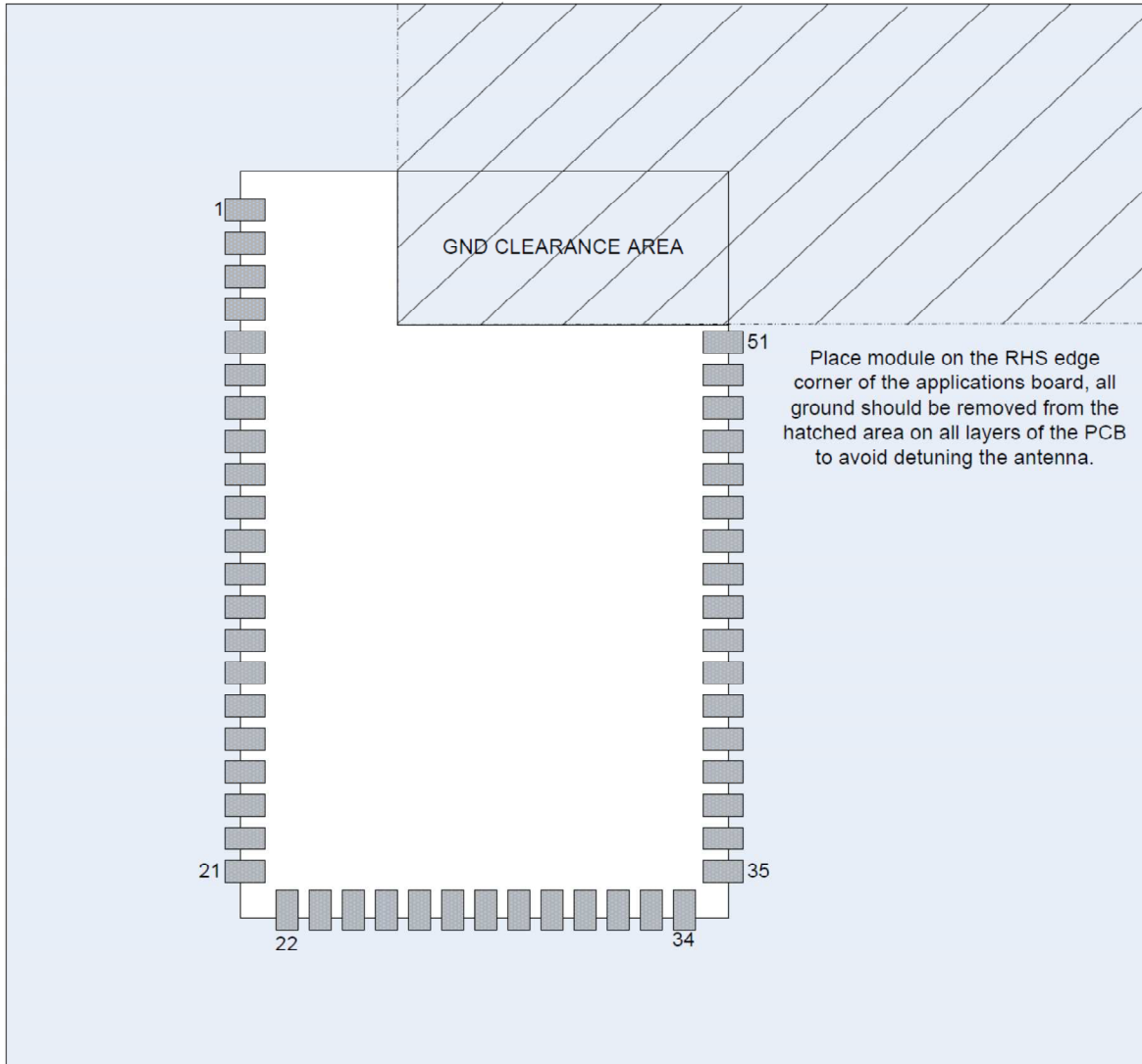
PIN Description

No.	Pin Name	Pin Type	Pin Description
1	GND	GND	Common Ground
2	GND	GND	Common Ground
3	GND	GND	Common Ground
4	GND	GND	Common Ground
5	PIO_6	Bi-directional	Programmable input/output line
6	PIO_7	Bi-directional	Programmable input/output line
7	CAP_SENSE_1	Analog Input	Capacitive Touch Sense Input
8	CAP_SENSE_4	Analog Input	Capacitive Touch Sense Input
9	CAP_SENSE_3	Analog Input	Capacitive Touch Sense Input
10	CAP_SENSE_2	Analog Input	Capacitive Touch Sense Input
11	GND	GND	Common Ground
12	AIO_1	Bi-directional	Analog programmable input/output line
13	SPKR_LN	Audio output	Speaker output negative, left
14	SPKR_LP	Audio output	Speaker output positive, left
15	SPKR_RN	Audio output	Speaker output negative, right
16	SPKR_RP	Audio output	Speaker output positive, right
17	MIC_BIAS_A	Analog input	Microphone bias
18	MIC_RN	Analog input	Microphone input negative, right
19	MIC_RP	Analog input	Microphone input positive, right
20	MIC_LN	Analog input	Microphone input negative, left
21	MIC_LP	Analog input	Microphone input positive, left
22	GND	GND	Common Ground
23	PIO_0	Bi-directional	Programmable input/output line
24	PIO_1	Bi-directional	Programmable input/output line
25	PIO5	Bi-directional	Programmable input/output line
26	PIO_4	Bi-directional	Programmable input/output line
27	GND	GND	Common Ground
28	VREGEN	Analogue	Take high to enable switch-mode regulator
29	CHG_EXT	Charger input	External battery charger control
30	VCHG	Charger input	Battery Charger Input

No.	Pin Name	Pin Type	Pin Description
31	VBAT_SENSE	Battery sense	Battery charger Sense
32	VBAT	Battery terminal +ve	Battery Positive
33	VDD_PADS	Supply	Positive Supply input
34	3V3_USB	Supply	Positive Supply input
35	USB_N	Bi-directional	USB data negative
36	USB_P	Bi-directional	USB data positive
37	LED_0	Open drain output	LED Driver
38	LED_1	Open drain output	LED Driver
39	LED_2	Open drain output	LED Driver
40	UART_CTS	Bi-directional	UART Clear to Send
41	UART_TX	Bi-directional	UART TX Data
42	UART_RX	Bi-directional	UART RX Data
43	UART_RTS	Bi-directional	UART request to send ,active low
44	RST#	Reset Input	Reset if low for more than 5ms
45	SPI_PCM#	Input	Select PCM/SPI
46	PCM_SYNC	Bi-directional	Synchronous data sync
47	PCM_CLK	Bi-directional	Synchronous data clock
48	PCM_OUT	CMOS output	Synchronous data output
49	PCM_IN	CMOS input,	Synchronous data input
50	PIO_2	Bi-directional	Programmable input/output line
51	PIO_3	Bi-directional	Programmable input/output line

Notes:
- PIO_X can be customized according to functionality. PIO_X are bidirectional with weak pull down
- Reset Input is with strong pull-up
- USB data positive is 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

- Preheat Temperature: 150°C for 100 seconds
- Temperature: 220°C for 40 seconds.
- Single Pass

Ordering Information

Part number: BC126-A01-MEL40

Order number	Description
BC126-A01-MEL40	Class2 Dual Mode Bluetooth Version 4.0 Module with integrated chip Antenna
BC127-A01-MEL40	Class2 Dual Mode Bluetooth Version 4.0 Module with integrated Antenna and connection to iOS devices
BC126-DEVKIT-001	Development kit for the BC126 module
BC127-DEVKIT-001	Development kit for the BC127 module

General Notes

- BlueCreation's products are not authorised for use in life-support or safety-critical applications. Use in such applications is done at the sole discretion of the customer. BlueCreation will not warrant the use of its devices in such applications.

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Blue Creation
BC127 Applications Schematic
www.Blue-Creation.com

Enables

USB Power and Data Input

USB Power and Data Input

Reset Circuit

PIO Push Buttons

VDD_PADS Generation

Battery and Battery On Switch

Battery Temperature Sensor

Supply Selection

PIO HEADER

U1 BC127 LGA51 Module

R1= 400mR 500mA Fast Charge

Stability circuit for high ESR batteries

Q1 BCX51

MAX9722AETE

U7

Audio Out

CON4 3.5mm Stereo Jack - Schurter