CC2640S1

Overview

Radioland would like to announce a low-cost and low-power consumption module which has all of the Bluetooth Smart 4.1 functionalities. The CC2640S1 module fully supports the single mode Bluetooth Low Energy operation, and the output power can support class 2. The module provides the ability to either put your entire application into the integrated ARM Cortex M3 microcontroller, or use the module in Network Processor mode in conjunction with the microcontroller of your choice. RF Core's dedicated ARM Cortex M0 improves system performance and frees up FLASH memory for custom applications.

Feature

- Built in CC2650F128 Bluetooth Smart
- (BLE 4.1) System-On-Chip (SOC)
- 128 kB Flash / 20 kB SRAM
- RF Receive Sensitivity: -96 dBm
- Size: 11.8mm x 15.8mm
- Operating Voltage: 1.8V to 3.8V
- Operating Temperature: -40 to +85C
- 8.4 mA Transmit Mode
- 7.4 mA Receive Mode
- 1 μA Standby (SRAM/CPU retention and RTC running) with quick 100 μs start up
- 200nA Shutdown
- 61 μA/MHz Active CPU Current
- Drivers, Bluetooth Low Energy
- Controller, and bootloader in ROM
- Flexible peripheral set
- On board 32 kHZ and 24 MHz Crystals
- Worldwide Acceptance:

Applications

- Consumer electronics
- Mobile phone accessories
- Sports & Fitness equipment
- HID applications
- Home and Building Automation, Lighting
- Control, Alarm and Security
- Electronic Shelf Labeling, Proximity
- Tags

Electrical Characteristics

ITEM	TEST REQUIREMENT	REMARKS
Voltage supply	1.8－3.8V	DC
Center frequency	2402－2480MHz	Programmable
Frequency error	±50KHz	
Modulation	O-QPSK	
Receiving sensitivity	-97dBm	High gain Mode
Receiving current	5.9mA	
Transmitting current	9.1mA	TX Power 5dBm
Sleep consumption At power mode2	1uA	Sleep Timer ON
Sleep consumption At power mode3	0.1uA	External interrupts
Transmit distance	>60M	BER<0.1%
Antenna	50ohm	
Module size	11.8mm*15.8mm	

RECOMMENDED OPERATING CONDITIONS
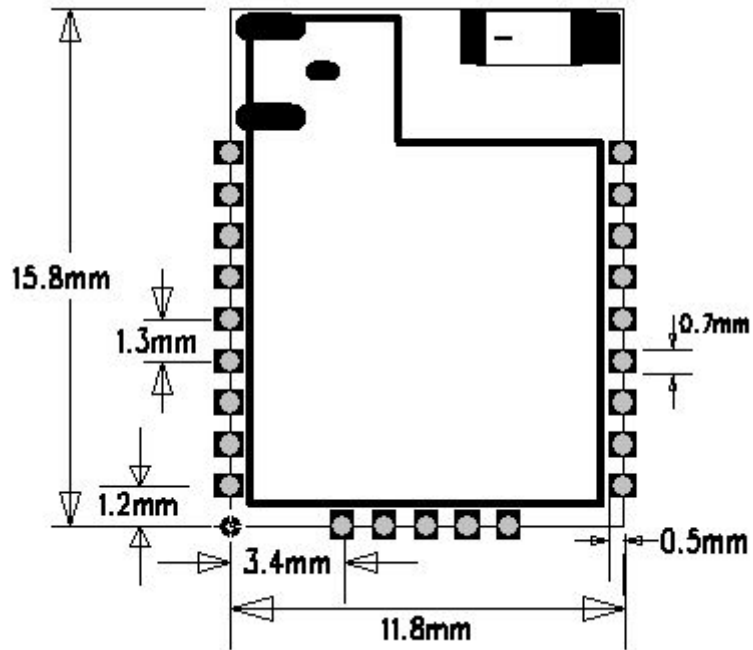
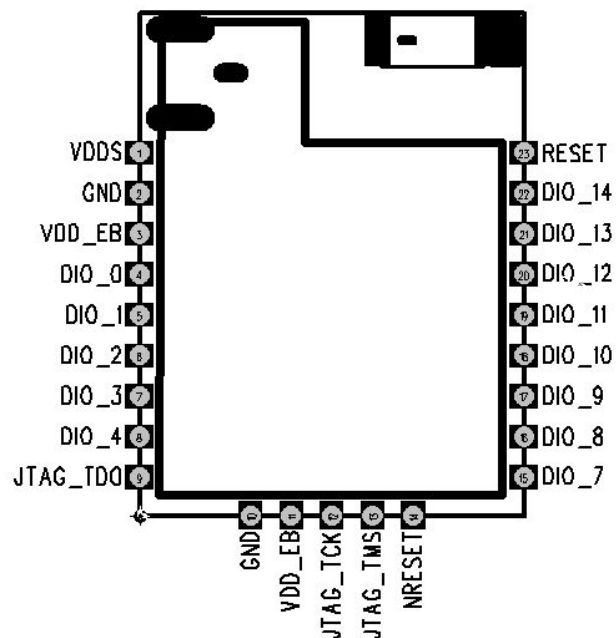|	MIN	MAX	UNIT
Operating ambient temperature range, TA	-30	85	°C
Operating supply voltage	1.8	3.8	V

CAUTION:

ESD sensitive device. Precautions should be used when handing the device in order to prevent permanent damage.

Dimensions

Pin Assignment

Pin Num.	Pin Name	Pin Type	Description
1	VDDS	Power	1.8 V to 3.8 V GPIO supply(1)
2	GND	Ground	ground
3	VDD_EB	Power	1.8 V to 3.8 V main chip supply(1)
4	DIO_0	Digital I/O	GPIO, Sensor Controller
5	DIO_1	Digital I/O	GPIO, Sensor Controller
6	DIO_2	Digital I/O	GPIO, Sensor Controller, High drive capability
7	DIO_3	Digital I/O	GPIO, Sensor Controller, High drive capability
8	DIO_4	Digital I/O	GPIO, Sensor Controller, High drive capability
9	DIO_5	Digital I/O	GPIO, High drive capability, JTAG_TDO
10	GND	Ground	ground
11	VDD_EB	Power	1.8 V to 3.8 V main chip supply(1)
12	JTAG_TCK	Digital I/O	JTAG TCKC
13	JTAG_TMS	Digital I/O	JTAG TMSC, High drive capability
14	nREST	Digital input	Reset, active-low. No internal pullup
15	DIO_7	Digital/Analog I/O	GPIO, Sensor Controller, Analog
16	DIO_8	Digital/Analog I/O	GPIO, Sensor Controller, Analog
17	DIO_9	Digital/Analog I/O	GPIO, Sensor Controller, Analog
18	DIO_10	Digital/Analog I/O	GPIO, Sensor Controller, Analog
19	DIO_11	Digital/Analog I/O	GPIO, Sensor Controller, Analog
20	DIO_12	Digital/Analog I/O	GPIO, Sensor Controller, Analog
21	DIO_13	Digital/Analog I/O	GPIO, Sensor Controller, Analog
22	DIO_14	Digital/Analog I/O	GPIO, Sensor Controller, Analog
23	nREST	Digital input	Reset, active-low. No internal pullup

Layout Suggestion

- CC2640S1   bluetooth module serial level should be 3.3 V, if the connection and 5V level system need to increase the level conversion chip.
- **B**luetooth signal is highly affected by the surrounding,such as trees, metal, wall can have certain absorption on the bluetooth signal or block, so the installation is not recommended in the metal case.
- **D**ue to metal will weaken the function of antenna, it is suggested that Lay in the module board,don't lay GND and a line under the antenna module, it is best to hollow out.

NOTE:

Additional information on the Texas Instruments CC2650
device can be found in the company's latest datasheet release at
http://www.ti.com/product/CC2650

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FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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.

FCC Radiation Exposure Statement

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AGUT-CC2640S1 Or Contains FCC ID: 2AGUT-CC2640S1"

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

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

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product

Any company of the host device which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C : 15.247 and 15.209 requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 requirement，then the host can be sold legally.