

Bluetooth 4.0 Low Energy Module

Bluetooth 4.0 Low Energy Module

2. Features

- A single chip radio and baseband IC for Bluetooth applications
- Fully Qualified Bluetooth Smart (V4.0 Low Energy single mode) specification
- Enhanced 8051 MCU core with 256k flash memory
- Support 3 simultaneous live connections in central role
- Coin battery friendly 2.0V – 3.6V operation
- Hardware I2C master / slave interface
- Low power consumption, < 30uA on the average of once-a-second communication
- 10mS data transfer latency
- Programmable transmitter power
- Support BLE stack including GAP, GATT, SM and L2CAP

3. Applications

- Proximity and Lost-prevention key fob
- Wireless Keyboard and Mouse
- RC and Interactive Toy
- Medical and Healthcare monitoring
- Sports and Fitness equipment

Bluetooth 4.0 Low Energy Module

7. Electrical Specification

7.1. Absolute Maximum Rating

Item	Symbol	Rating	Unit
Power Supply Voltage	VDD	-0.4 to 3.7	V
Peak Current	I _{pk}	0 - 70	mA
Storage Temperature	T _{STG}	-40 to 85	°C

7.2. Recommended Operating Condition

Item	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	VDD	2.0	3.0	3.6	V
RF Operating Temperature		0	25	80	°C
Operating Temperature		-20	25	70	°C

7.3. Digital Input / Output Port Characteristics

VDD=3.0V, operating temperature = 25 °C unless specified otherwise

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Input Voltage Levels						
V _{IL}	Input low voltage				0.5	V
V _{IH}	Input high voltage		2.5			V
Output Voltage Levels						
V _{OL}	Output low voltage	I _{OL} = -4mA			0.5	V
V _{OH}	Output high voltage	I _{OH} = 4mA	2.4			V
Input and Tri-state Current with						
	I/O Pad leakage current		-1	0	1	uA
	Input Capacitance		1		5	pF
Current Consumption						
	Operating Current, RX active			18		mA
	Operating Current, TX active	0 dBm TX Power		18		mA
	Standby Current, TX & RX inactive			50		uA

Bluetooth 4.0 Low Energy Module

VDD=3.3V, operating temperature = 25 °C unless specified otherwise

Receiver	Units	Min	Typ	Max	Bluetooth Spec
Sensitivity at 0.1% BER	dBm		-75		≤ -70

VDD=3.3V, operating temperature = 25 °C unless specified otherwise

Transmitter	Units	Condition	Value	Bluetooth Spec
RF Output Power	dBm	2402MHz	-5.17	-20 to +10
		2440MHz	-4.90	
		2480MHz	-4.41	
In Band Emission (+/- 2MHz)	dBm	2406MHz	-29.5	≤ -20
		2440MHz	-31.5	
		2476MHz	-35.1	
In Band Emission (+/- 3MHz)	dBm	2406MHz	-36.3	≤ -30
		2440MHz	-37.9	
		2476MHz	-39.1	
Carrier Frequency Offset	kHz	2402MHz	30	-150 to +150
		2440MHz	30	
		2480MHz	30	

Bluetooth 4.0 Low Energy Module

This device complies with Part 15 of the FCC Rules / Industry Canada licence-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

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.

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with "Contains FCC ID:ARG-OS-868 and IC:10142A-OS868".