Bluetooth 4.0 Module
(ACT-BT560M)

1. GENERAL DESCRIPTION:

Bluetooth low energy Module is a Bluetooth module using TI Bluetooth low energy controller CC254x. This module is ideal for low power wireless sensing device applications including mobile phone accessories, sports and leisure equipment, consumer electronics, HID, health care, etc.. This module is integrated with PCB antenna, crystal to reduce the external BOM cost. It has been designed to provide ultra low power, low cost and robust communications and compliant with Bluetooth V 4.0 single mode BLE solution.

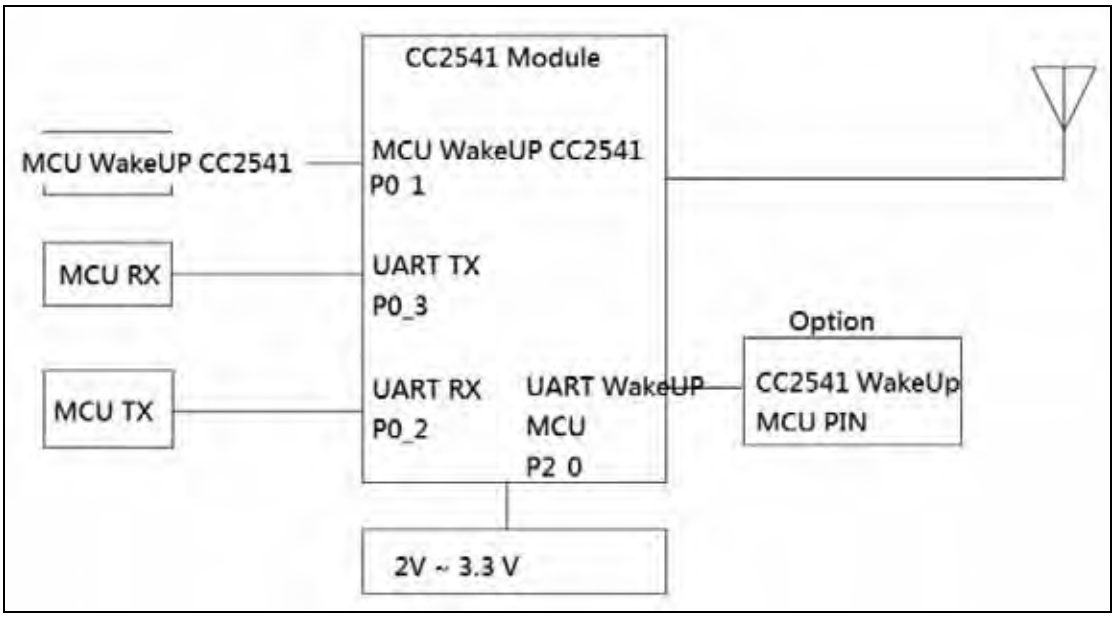
2. APPLICATION:

- 2.4GHz Bluetooth 4.0 low energy system
- Mobile device accessories
- Sports and leisure equipment
- Consumer electronics
- HID devices
- Health care and Medical
- Remote sensors

3. FEATURES:

- Bluetooth V 4.0 low energy single mode compliant.
- On-chip low power microcontroller.
- In system programmable flash.
- 12-bit ADC with 8 channels.
- 21 general purpose I/O
- Two powerful USARTS for serial protocols.
- On board crystal and PCB Antenna..
- Excellent Receiver Sensitivity.

4. BLOCK DIAGRAM:



5. SPECIFICATIONS:

Functional Specifications Standard	Bluetooth V4.0LE
Bus Interface	SPI,UART,I2C
Data Rate	1 Mbps, 2Mbps
Modulation Scheme	GFSK, MSK
RF Frequency Range	2.402~2.480 GHz
Data Encryption	128-bit AES
Transmit Output Power	-23 ≤ Output Power ≤ +0 dbm;
Receiver Sensitivity	< 0.1% BER at -90 dBm
Operating Voltage	3.3V± 0.3V
Power Consumption	TX : 18.2 mA (0 dbm) RX: 17.9 mA Power Mode 1 (4-μ s Wake-Up): 270 μ A Power Mode 2 (Sleep Timer On): 1 μ A Power Mode 3 (External Interrupts): 0.5 μ A
Antenna Type	Printed Antenna

*Environmental factors dependent

6. ENVIRONMENTAL:

Operating

Operating Temperature: -40 to 85 ℃

Relative Humidity: 5-90% (non-condensing)

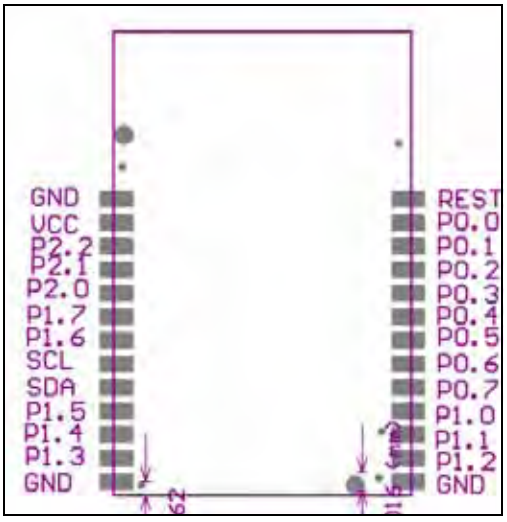
Storage

Temperature: -40 to 85 ℃

Relative Humidity: 5-95% (non-condensing)

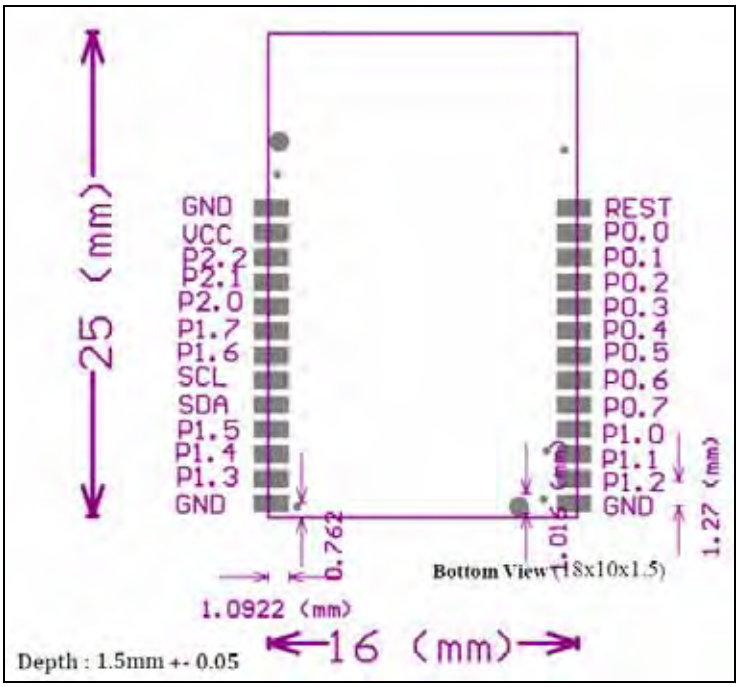
7. PIN DEFINITION:

Pin No.	Symbol(uP)	I/O	Function Notes
1	GND	P	GND
2	3.3Vdc	I/O	Power Input 2Vdc to 3.6Vdc
3	P2_2	I/O	GPIO
4	P2_1	I/O	GPIO
5	**P2_0**	**I/O**	**GPIO / WakeUP to MCU**
6	P1_7	I/O	GPIO
7	P1_6	I/O	GPIO
8	SCL	I/O	USB P(cc2540)/SCL(cc2541)
9	SDA	I/O	USB N(cc2540)/SDA(cc2541)
10	P1_5	I/O	GPIO
11	P1_4	I/O	GPIO
12	P1_3	I/O	GPIO
13	P1_0	I/O	GPIO/Drive 20mA current
13	GND	P	GND
14	RESET_N	I	Reset, Active Low
15	P0_0	I/O	GPIO/AD0
16	**P0_1**	**I/O**	**GPIO/AD1/UART WakeUP from MCU**
17	**P0_2**	**I/O**	**GPIO/AD2/ UART RX**
18	**P0_3**	**I/O**	**GPIO/AD3 / UART TX**
19	P0_4	I/O	GPIO/AD4
20	P0_5	I/O	GPIO/AD5
21	P0_6	I/O	GPIO/AD6
22	P0_7	I/O	GPIO/AD7
23	P1_0	I/O	GPIO/Drive 20mA current
24	P1_1	I/O	GPIO/Drive 20mA current
25	P1_2	I/O	GPIO



Periphery/ Function	P0								P1								P2				
	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	4	3	2	1	0
ADC	A7	A6	A5	A4	A3	A2	A1	A0													T
Operational amplifier						O	–	+													
Analog comparator			+	–																	
USART 0 SPI			C	SS	MO	MI															
Alt. 2											M0	MI	C	SS							
USART 0 UART			RT	CT	TX	RX															
Alt. 2											TX	RX	RT	CT							
USART 1 SPI			MI	M0	C	SS															
Alt. 2									MI	M0	C	SS									
USART 1 UART			RX	TX	RT	CT															
Alt. 2									RX	TX	RT	CT									
TIMER 1		4	3	2	1	0															
Alt. 2	3	4												0	1	2					
TIMER 3												1	0								
Alt. 2									1	0											
TIMER 4															1	0					
Alt. 2																		1			0
32-kHz XOSC																	Q1	Q2			
DEBUG																			DC	DD	
OBSSEL											5	4	3	2	1	0					

8. LAYOUT GUIDE:



Remark: All contents are subject to change without notice.

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