

BTA-C1010-2

Preliminary Datasheet

Issued date: July 1, 2016

EnzyTek Bluetooth® Low Energy Module With on Board Antenna

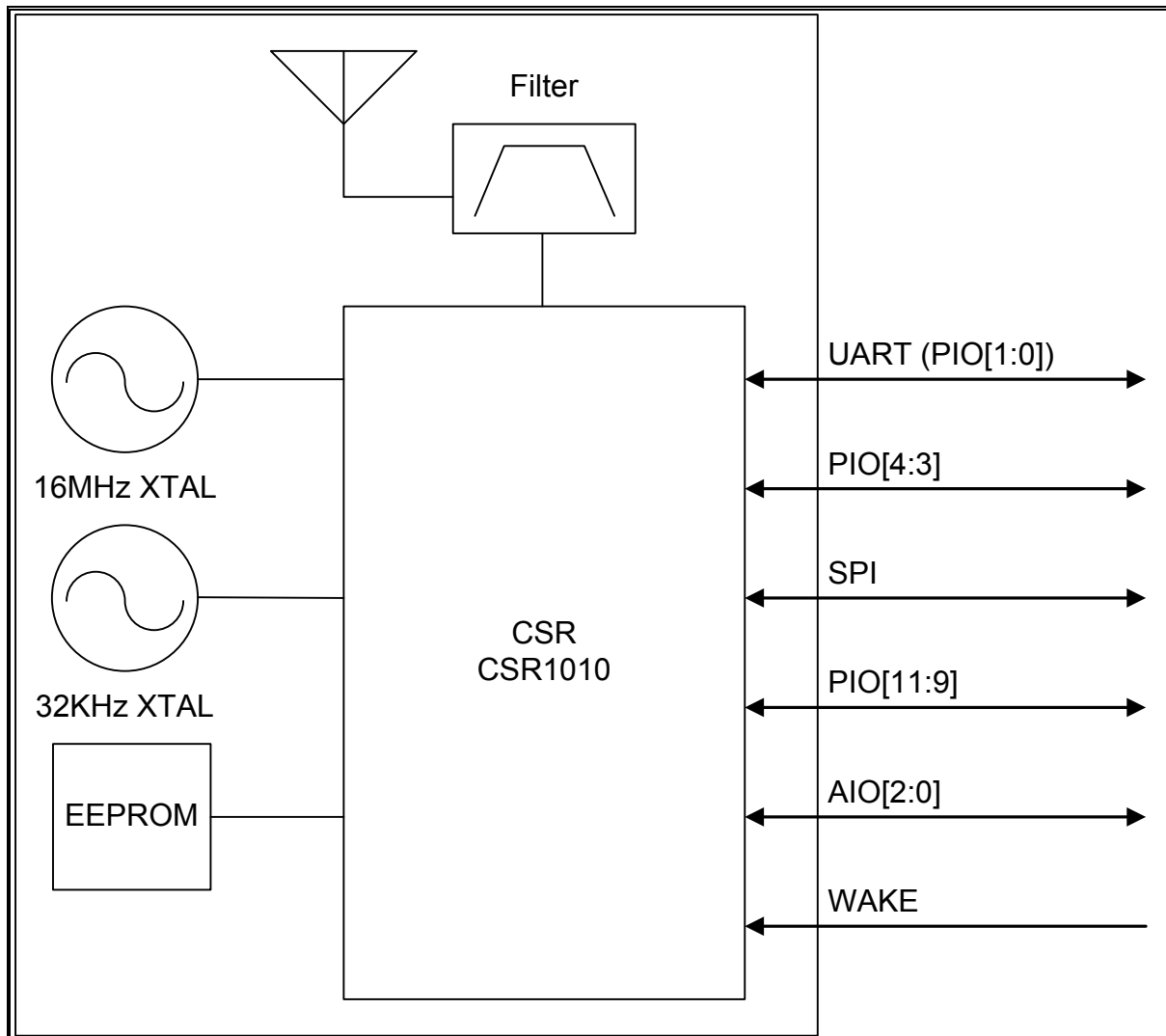
BTA-C1010-2



OVERVIEW

- ▶ Highly integration BT 4.0 Low Energy Class II module, CSR CSR1010 + Memory + Filter + X'Tal + Chip Antenna.
 - ▶ Wireless communications module conforming to Bluetooth Version 4.0.
 - ▶ UART, SPI interfaces available to various applications.
 - ▶ 5 GPIO ports available for user's application.
 - ▶ 3 Analog IO ports available for user's application.
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- | | |
|-----------------------|--|
| ▶ BT Chipset | : CSR CSR1010 |
| ▶ Standards | : Bluetooth 4.0 Low Energy. |
| ▶ Frequency | : 2402 ~ 2480 MHz |
| ▶ RX Sensitivity | : -88 dBm (min) |
| ▶ Range | : > 10 m (line-of-sight at open space) |
| ▶ Memory | : EEPROM (512K bits) |
| ▶ Operation Voltage | : 1.8V ~ 3.6V |
| ▶ Dimension | : 18 x 13 x 2.2 _(max) mm ³ (L×W×H) |
| ▶ Environmental Range | : Operation Temperature : 0~+85°C, Relative humidity : 0~95% |

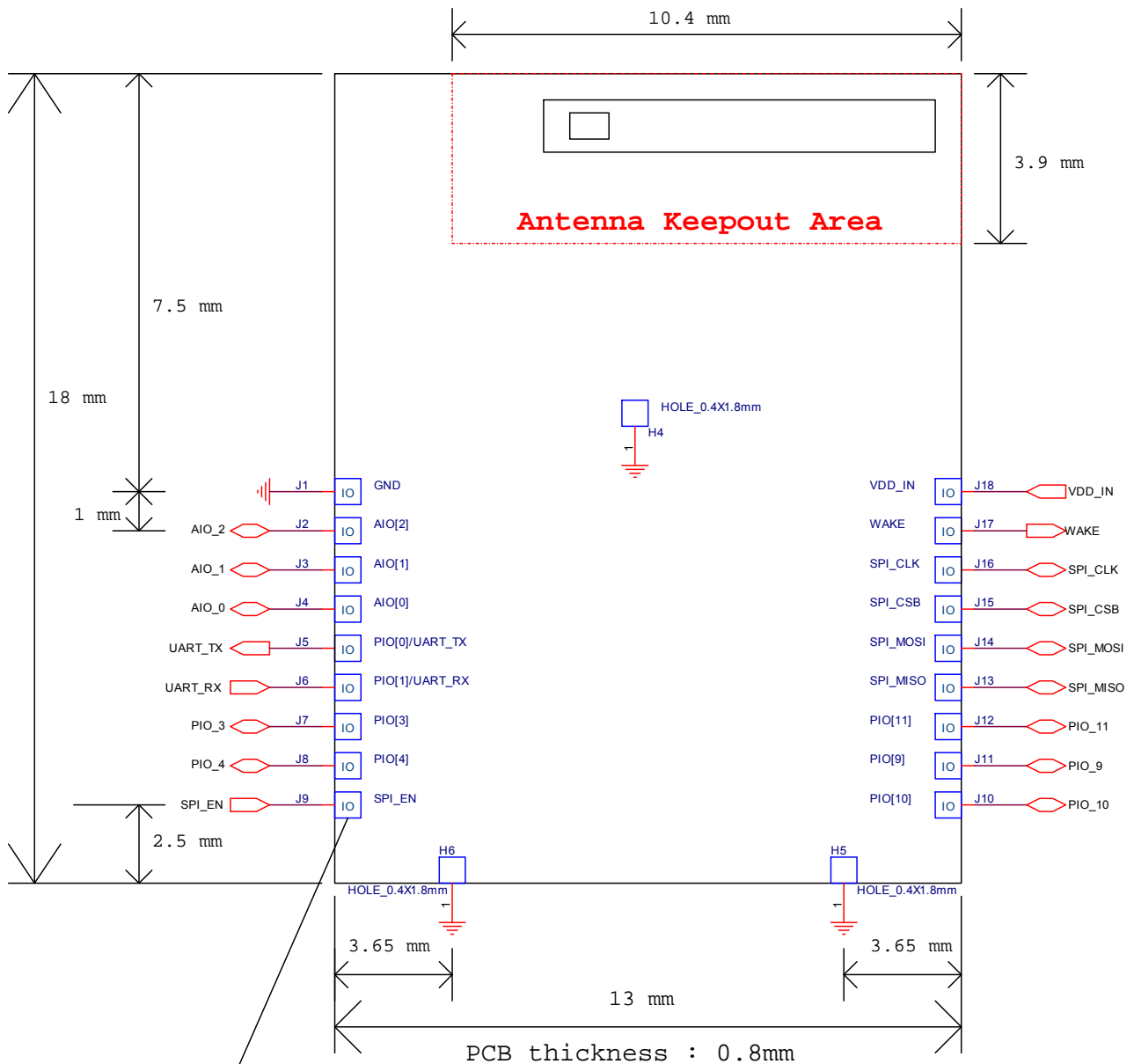
System Block Diagram



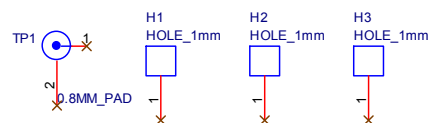
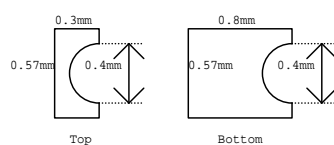
Pinout Diagram / Dimension

Unit : mm

Note: Please contact EnzyTek to get the detail footprint of the module to do the PCB design.



PAD Size



I/O PIN LISTING

Pin No.	Pin Name	Type	Description
J1	GND	Power	Ground
J2	AIO_2	Analog bi-directional	Programmable input/output line
J3	AIO_1	Analog bi-directional	Programmable input/output line
J4	AIO_0	Analog bi-directional	Programmable input/output line
J5	UART_TX (PIO_0)	CMOS output, tri-state, with weak internal pull-up	UART data output t, optional PIO0 which is defined by FW.
J6	UART_RX (PIO_1)	CMOS input with weak internal pull-down	UART data input, optional PIO1 which is defined by FW.
J7	PIO_3	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
J8	PIO_4	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
J9	SPI_EN	Input with internal pull-down	Selects SPI debug, NC.
J10	PIO_10	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
J11	PIO_9	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
J12	PIO_11	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
J13	SPI_MISO	CMOS output, tri-state, with weak internal pull-down	Serial Peripheral Interface data output
J14	SPI_MOSI	CMOS input with weak internal pull-down	Serial Peripheral Interface data input
J15	SPI_CSB	CMOS input with weak internal pull-up	Chip select for Synchronous Serial Interface active low
J16	SPI_CLK	CMOS input with weak internal pull-down	Serial Peripheral Interface clock
J17	WAKE	Input has no internal pull-up or pull-down, use external pull-down.	Input to wake the module from hibernate or dormant.
J18	VDD_IN	Power	3.3V input

Electrical Characteristics

Absolute Maximum Ratings :

	Min.	Typ.	Max.	Unit
Supply Voltage	-	-	3.6	V
Storage Temperature	-40	-	85	°C

Recommend Operation Conditions :

	Min.	Typ.	Max.	Unit
Supply Voltage	1.8	-	3.6	V
Operating Temperature	0	-	85	°C

Input/Output Terminal Characteristics :

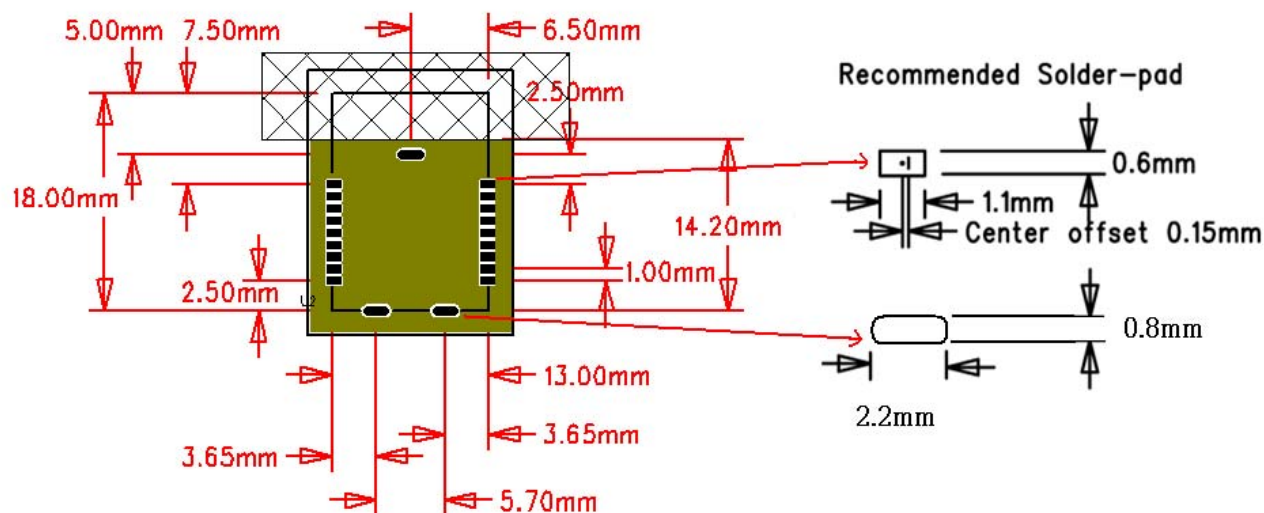
	Min.	Typ.	Max.	Unit
Digital (UART, PIO)				
V _{IL} Input Voltage Low	-0.4	-	+0.4	V
V _{IH} Input Voltage High	0.7xVDD	-	VDD+0.4	V
V _{OL} Output Voltage Low, (I _O is 4mA)	-	-	0.4	V
V _{OH} Output Voltage High, (I _O is -4mA)	0.75xVDD	-	-	V

Current Consumption

HW	BTA-C1010-2	
FW version	F-Serial_Port-v003	
FW configuration	Role	Gatt Server, device side
	Service	SPS Service
	Baud Rate	2400
	Default Power	Scale 0
BT BLE Host	iPhone 4S (ios5)	
Current Meter	Fluke 189	

	Min.	Avg.	Max.
Power On No connection	5.93 uA	6.79 uA	39.90uA
Power On advertising	202 uA	365 uA	567 uA
Connected No Data Transfer	15 uA	69 uA	143 uA
Connected TX Data/sec (from module to host)	17 uA	184 uA	1210 uA
Connected TX Data/500ms (from module to host)	17 uA	275 uA	1213 uA

PCB Layout Guide



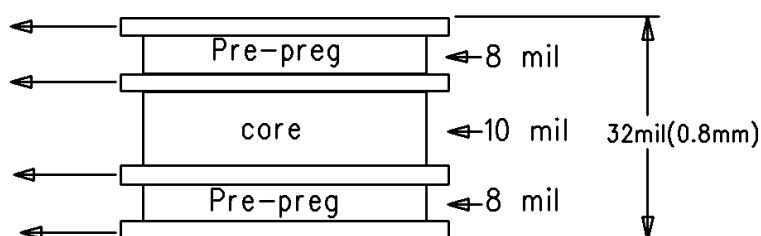
The 4-Layer Stackup

Component side(Layer 1), 1oz Cu.

GND side(Layer 2), 1oz Cu.

VCC/GND side(Layer 3), 1oz Cu.

Bottom side (Layer 4), 1oz Cu.

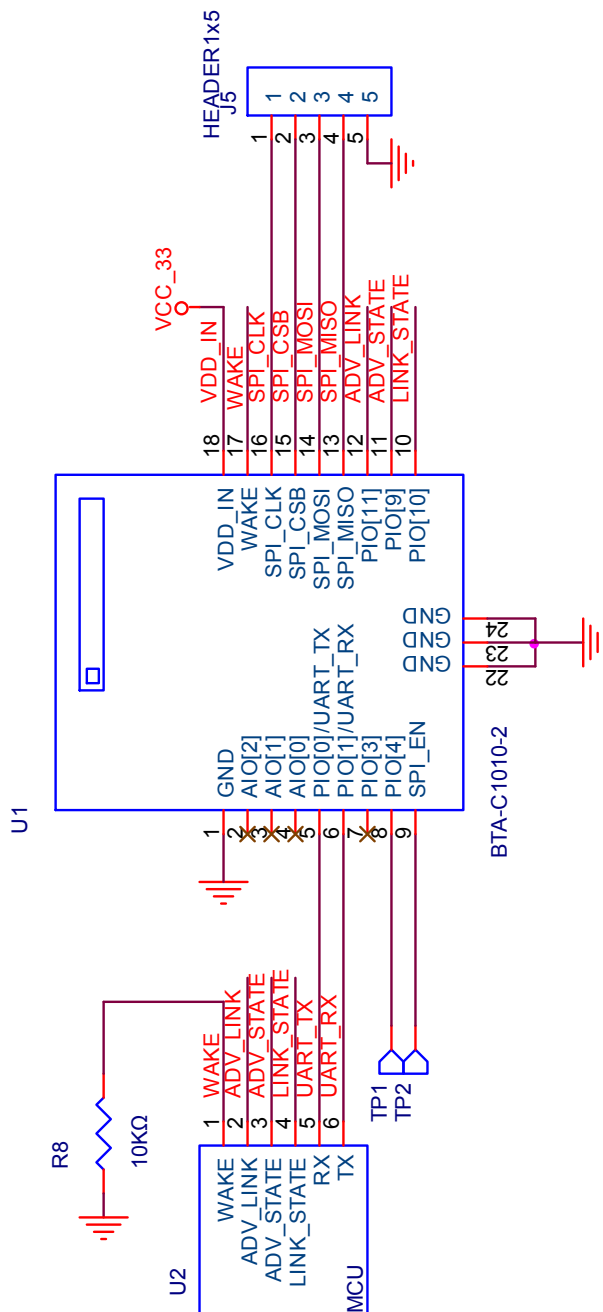


Material : FR4

DR=4.2+/-10%@1GHz and,DF=0.014+/-10%@1GHz

CPWG - 50-ohm Transmission Line: Gap=10mil, W=14mil

Application Schematic



FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

FCC statement**IMPORTANT NOTE:**

- This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product which integrates this module.
- Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

- In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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.