

26.9 x 13.0 x 2.5 mm SMT Bluetooth Module

ABBTM-2.4GHz-T

FCC ID# A8RABBTM2-4G

Compliant to MSL level 3



RoHS
Compliant



26.9 x 13.0 x 2.5 mm SMT

FEATURES:

- Bluetooth Spec v2.0+EDR Compliant
- Class 2, up to 10-meter range
- Complete 2.4GHz Bluetooth® System
- Power management: low power 1.8V operation for Bluetooth® core
- Compact size: 26.9mm (L) x 13 (W) mm x 2.5mm (H)
- Bluetooth® Profile Supported: SPP
- Internal antenna
- On-board flash memory (8Mbits)
- Surface mount module for embedded applications
- Several firmware options
- Rewritable flash memory for easy upgrade route
- Custom firmware production available

APPLICATIONS:

- Hand-held devices
- Printers
- Personal Navigation Devices
- PDAs and other portable terminals

GENERAL DESCRIPTION

Abrakon's ABBTM is a complete Bluetooth® solution. It is built on CSR BC04-External Core and 8Mbit Flash memory. It's a short range, compact and cost effective module. Designed to be embedded into electronic devices needing Bluetooth® connectivity.

The ABBTM module is a power class2 Bluetooth® device, and is in compliance with version 2.0+EDR of the Bluetooth® specification. It includes CSR BC04-External Core and 8Mbit Flash memory, internal antenna, supporting circuitry, together with higher-level software protocols and applications such as L2CAP, SDP and GAP are resident in the flash memory.

Operating Frequency Band	2.4GHz ~ 2.48GHz Unlicensed ISM Band
Bluetooth Specification	V2.0 + EDR
Output Power Class	Class 2
Operating Voltage	+3.3V
Host Interface	UART
Audio Interface	PCM Interface
Flash Memory Size	8 MB

ELECTRICAL SPECIFICATIONS:

Absolute Maximum Ratings		
	Minimum	Maximum
Storage temperature	-40°C	+150°C
Supply voltage: VBAT	-0.4V	5.6V
Other terminal voltages	VSS-0.4V	VDD+0.4V

Recommended Operating Conditions		
	Minimum	Maximum
Operating temperature range	-40°C	+85°C
Guaranteed RF performance range	-40°C	+85°C
Supply voltage: VBAT	2.2V	4.2V

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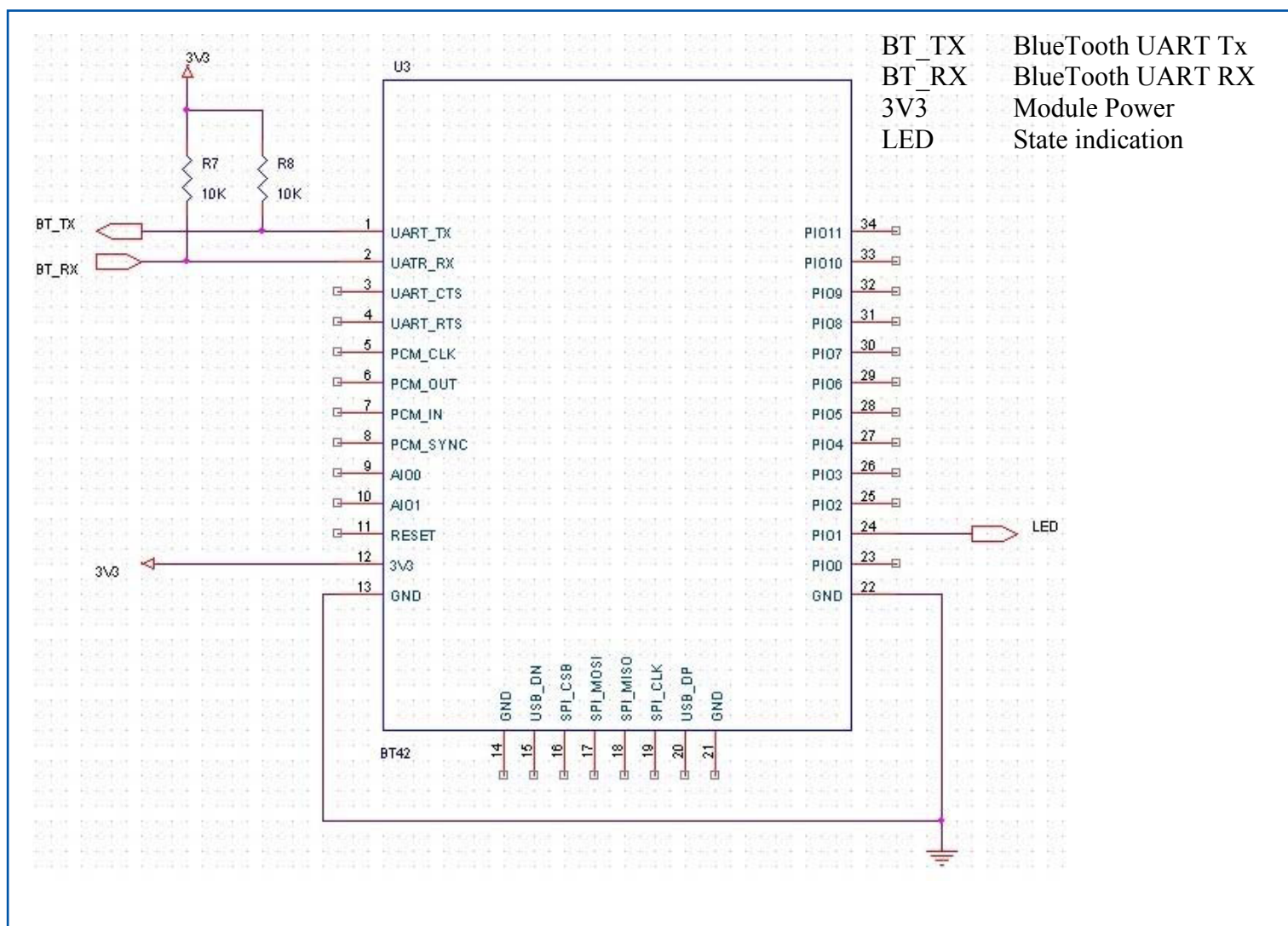
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POWER CONSUMPTION

Operation Mode	Connection Type	UART Rate (kbps)	Average	Unit
Page scan	-	115.2	0.42	mA
ACL No traffic	Master	115.2	4.60	mA
ACL With file transfer	Master	115.2	10.3	mA
ACL 1.28s sniff	Master	38.4	0.37	mA
ACL 1.28s sniff	Slave	38.4	0.42	mA
SCO HV3 30ms sniff	Master	38.4	19.8	mA
SCO HV3 30ms sniff	Slave	38.4	19.0	mA
Standby Host connection	-	38.4	40	μA

Note: Low power mode on the linear regulator is entered and exited automatically when the chip enters/leaves Deep Sleep mode.

REFERENCE CIRCUIT



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Firmware Configuration

- a) UART Baud: 115200 , N, 8, 1
- b) BlueTooth Name: ABBTM
- c) Pin Code: 0000

Software Description

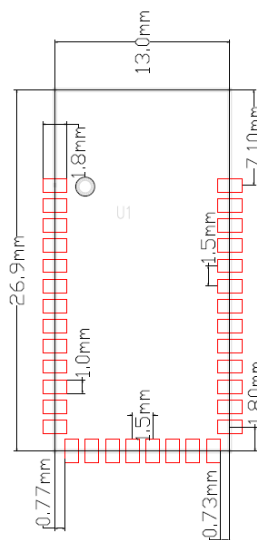
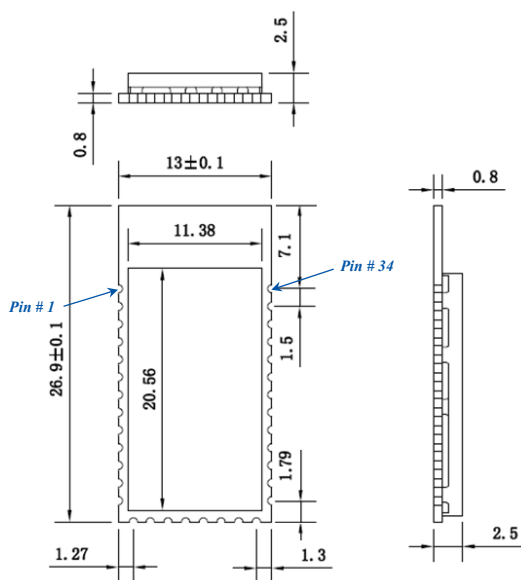
1. After Power on 3V3, the module is connectable and Pairing
2. ABBTM-2.4GHz-T can be found with the name “ABBTM” via any Bluetooth device
3. Input the Pincode “0000”, you can pair with the module named “ABBTM”
4. Then the ABBTM can be connected
5. Data can be transferred between the ABBTM and any other Bluetooth device

State Indicator

- a) Connectable and discoverable LED: 100mS High Level per 2S
- b) Connected LED: always on

MECHANICAL DIMENSIONS

Recommended Land Pattern



No.	Pin Name	No.	Pin Name	No.	Pin Name
1	UART-TX	13	GND	25	PIO (2)
2	UART-RX	14	GND	26	PIO (3)
3	UART-CTS	15	NC	27	PIO (4)
4	UART-RTS	16	SPI-CSB	28	PIO (5)
5	PCM-CLK	17	SPI-MOSI	29	PIO (6)
6	PCM-OUT	18	SPI-MISO	30	PIO (7)
7	PCM-IN	19	SPI-CLK	31	PIO (8)
8	PCM-SYNC	20	NC	32	PIO (9)
9	AIO (0)	21	GND	33	PIO (10)
10	AIO (1)	22	GND	34	PIO (11)
11	RESET	23	PIO (0)		
12	+3.3V	24	PIO (1)		

Note: Specified dimensions without tolerance are listed for reference purposes only.

Dimensions: mm.

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PIN DESCRIPTION

Pin #	Name	Type	Function
1	UART-TX	CMOS Output	UART Data Output
2	UART-RX	CMOS Input	UART Data Input
3	UART-CTS	CMOS Input	UART Clear To Send Active Low
4	UART-RTS	CMOS Output	UART Request To Send Active Low
5	PCM-CLK	Bi-directional	Synchronous Data Clock
6	PCM-OUT	CMOS Output	Synchronous Data Output
7	PCM-IN	CMOS Input	Synchronous Data Input
8	PCM-SYNC	Bi-directional	Synchronous Data Sync
9	AIO(0)	Bi-directional	Programmable Input/Output Line
10	AIO(1)	Bi-directional	Programmable Input/Output Line
11	RESETB	CMOS Input	Reset if low. Input debounced so must be low for >5ms to cause a reset
12	3.3V	POWER	+3.3V Supply
13	GND	GND	Ground
14	GND	GND	Ground
15	NC	NC	
16	SPI-CSB	CMOS Input	Chip Select For Synchronous Serial Interface
17	SPI-MOSI	CMOS Input	Serial Peripheral Interface Data Input
18	SPI-MISO	CMOS Output	Serial Peripheral Interface Data Output
19	SPI-CLK	CMOS Input	Serial Peripheral Interface Clock
20	NC	NC	
21	GND	GND	Ground
22	GND	GND	Ground
23	PIO(0)	Bi-directional with programmable strength	Control output for external LNA (if fitted)
24	PIO(1)	Bi-directional with programmable strength	Control output for external PA (if fitted)
25	PIO(2)	Bi-directional	Programmable Input/Output Line
26	PIO(3)	Bi-directional	Programmable Input/Output Line
27	PIO(4)	Bi-directional with programmable strength	Programmable Input/Output Line or optional BT_Priority/CH_Clk output for co-
28	PIO(5)	Bi-directional with programmable strength	Programmable Input/Output Line or optional BT_Active output for co-existence
29	PIO(6)	Bi-directional with programmable strength	Programmable Input/Output Line or optional WLAN_Active/Ch_Data input for co-
30	PIO(7)	Bi-directional	Programmable Input/Output Line
31	PIO(8)	Bi-directional	Programmable Input/Output Line
32	PIO(9)	Bi-directional	Programmable Input/Output Line
33	PIO(10)	Bi-directional	Programmable Input/Output Line
34	PIO(11)	Bi-directional	Programmable Input/Output Line

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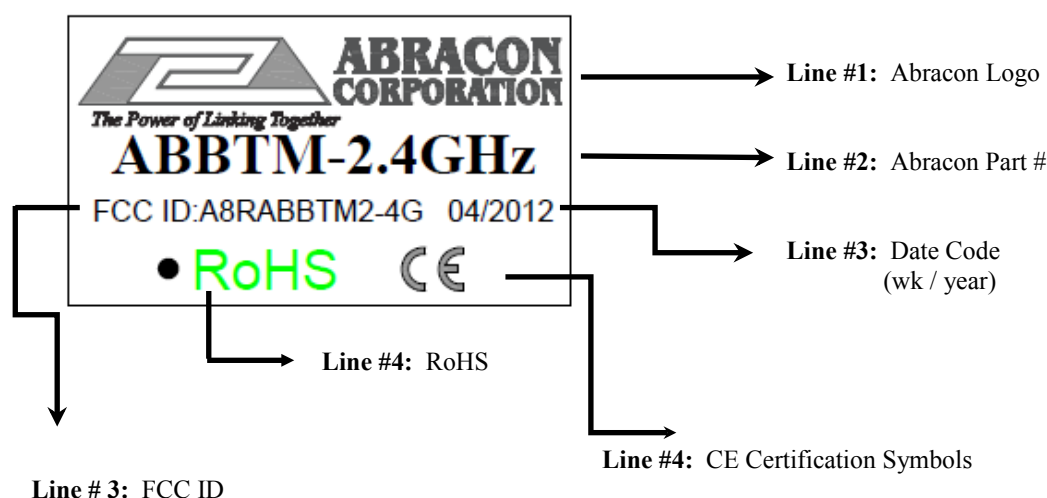
PART IDENTIFICATION:

ABBTM-2.4GHz -

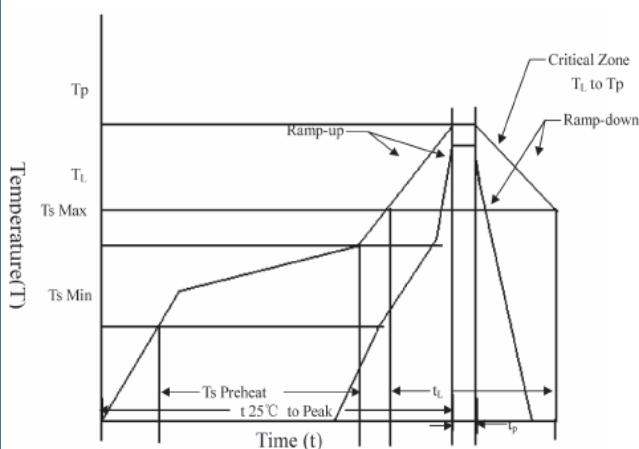
Packaging Options

Blank	Bulk
T	500 units per reel
T2	250 units per reel

MARKING



REFLOW PROFILE



T_s max to T_L (Ramp-up Rate)	3°C/second max.
Preheat	
Temperature Min. (T_s Min.)	150°C
Temperature Typical (T_s Typ.)	175°C
Temperature Max. (T_s Max.)	200°C
Time (t_s)	60 ~ 180 seconds
Ramp-up rate (T_L to T_p)	3°C/second max.
Time Maintained Above: --Temperature (T_L)/Time (T_L)	217°C/60 ~ 150 seconds
Peak Temperature (T_p)	250°C max. for 10 seconds
Target Peak Temperature (T_p Target)	250°C +0/-5°C
Time within 5°C of actual peak (t_p)	20 ~ 40 seconds
Ramp-down Rate	6°C/second max.
Tune 25°C to Peak Temperature (t)	8 minutes max.

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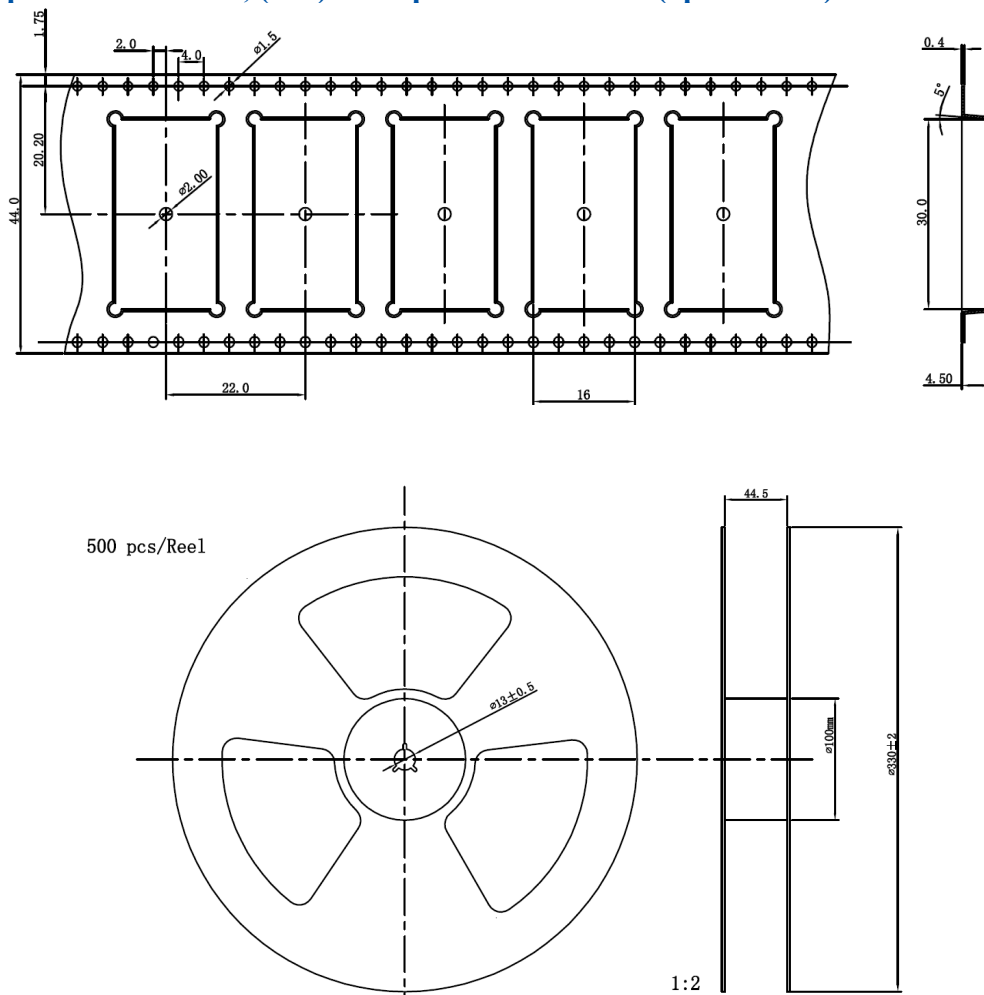
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PACKAGING:

(500) units per reel standard, (250) units per reel available (option # T2)



- a) Unless otherwise specified, the tolerance is $\pm 0.1\text{mm}$
- b) The carrier tape material thickness is 0.4mm
- c) Unless otherwise specified, the round corner is R0.3; the peeling angle is no greater than 5°
- d) The finished products has no rough edges and no damage; cover tape should be sealed
- e) Material is ROHS compliant

Packaging:

ABBTM-2.4GHz-T and ABBTM-2.4GHz-T2 devices will be packaged per MSL level-3 requirements; Labeled as MSL 3, Tape-Packed + Vacuum-Packed with Antistatic bag, Desiccant, Humidity Indicator Card (HIC). Ref: IPC/JEDEC J-STD-033B.1

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