

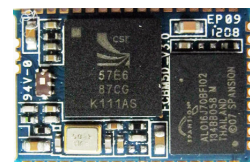
# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T

Compliant to MSL level 3



RoHS  
Compliant



29.0 x 25.5 x 2.8 mm SMT

## FEATURES:

- Bluetooth Spec v1.2 Compliant
- Class 2, up to 10-meter range
- Complete 2.4GHz Bluetooth® System
- Power management: low power 1.5V operation for Bluetooth® core
- Compact size: 20.0mm (L) x 13.4 (W) mm x 2.2mm (H)
- Bluetooth® Profile Supported: HSP, HFP, A2DP, AVRCP, OPP, PBAP
- Built-in 16-bit stereo codec – 92dB SNR for DAC
- On-board flash memory (16 MB)
- Optional echo cancellation software library
- Support multiple connections
- Support 802.11 co-existence
- Surface mount module for embedded applications
- Several firmware options
- Rewritable flash memory for easy upgrade route
- Custom firmware production available

## APPLICATIONS:

- Stereo Bluetooth® headset/headphone
- Automotive car kit applications
- Personal Navigation Devices
- PDAs and other portable terminals
- MP3 headset
- High-end noise cancellation mono headset
- AV Dongle

## GENERAL DESCRIPTION

Abracon's ABBTM-2.4GHz-51-T module is a complete Bluetooth® solution built on CSR BC05 MultiMedia External Core, supported by 16 MB on-board Flash Memory. ABBTM-2.4GHz-51-T is a short range, compact, cost effective solution designed to facilitate Bluetooth® connectivity for applications including PND, Car & Home Audio and other Handsfree solutions.

ABBTM-2.4GHz-51-T module is a Power Class-2 Bluetooth® device, compliant with version 2.1 specification. The overall architecture comprises of a radio front-end, antenna interface & supporting circuitry for software protocols including L2CAP, SDP, GAP, HSP, HFP, A2DP, AVRCP, OPP and PBAP, resident in the on-board Flash Memory.

## ELECTRICAL SPECIFICATIONS:

|                          |                                      |
|--------------------------|--------------------------------------|
| Operating Frequency Band | 2.4GHz ~ 2.48GHz Unlicensed ISM Band |
| Bluetooth Specification  | V2.1                                 |
| Output Power Class       | Class 2                              |
| Operating Voltage        | +3.3V                                |
| Host Interface           | USB 1.1 or UART                      |
| Audio Interface          | PCM, I2S, SPDIF, Analog              |
| Flash Memory Size        | 16 MB                                |

### Absolute Maximum Ratings

|                      | Minimum | Maximum |
|----------------------|---------|---------|
| Storage temperature  | -40°C   | +105°C  |
| Supply voltage: VBAT | -0.30V  | 3.6V    |

### Recommended Operating Conditions

|                             | Minimum | Maximum |
|-----------------------------|---------|---------|
| Operating temperature range | -40°C   | +85°C   |
| Supply voltage: Vcc         | +3.0V   | +3.6V   |
| Supply voltage: Vdd         | +1.42V  | +1.57V  |

Test Conditions: Vcc=3.3V; F=2.45GHz; T=20°C

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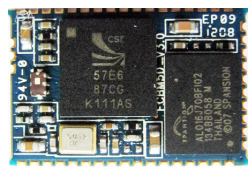
Revised: 07.17.12

# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T



RoHS  
Compliant



29.0 x 25.5 x 2.8 mm SMT

## RF CHARACTERISTICS:

| RF Characteristics<br>@ Core Vdd=1.5V                                                |                 | Min.  | Typ.               | Max.  | Bluetooth<br>Specification | Unit     |
|--------------------------------------------------------------------------------------|-----------------|-------|--------------------|-------|----------------------------|----------|
| Maximum RF transmit power <sup>(a)(b)(c)</sup>                                       |                 | ----- | 4                  | ----- | -6 to 4 <sup>(d)</sup>     | dBm      |
| RF power variation over temperature range with compensation enabled. <sup>(e)</sup>  |                 | ----  | ±0.5               | ----- | -----                      | dB       |
| RF power variation over temperature range with compensation disabled. <sup>(e)</sup> |                 | ----- | ±2.5               | ----- | -----                      | dB       |
| RF power control range                                                               |                 | 16    | 24                 | ----- | ≥16                        | dB       |
| RF power range control resolution <sup>(f)</sup>                                     |                 | ----- | 0.5                | ----- | -----                      | dB       |
| 20dB bandwidth for modulated carrier                                                 |                 | ----- | 940                | 1000  | ≤1000                      | kHz      |
| ACP <sup>(g)</sup><br>(h)                                                            | F = Fo ± 2MHz   | ----- | -36                | -20   | ≤-20                       | dBm      |
|                                                                                      | F = Fo ± 3 MHz  | ----- | -45                | -40   | ≤-40                       | dBm      |
|                                                                                      | F = Fo ± > 3MHz | ----- | <-50               | -40   | ≤-40                       | dBm      |
| Δf1avg Maximum modulation                                                            |                 | 140   | 165                | 175   | 140<f1avg<175              | kHz      |
| Δf2max Minimum modulation                                                            |                 | 115   | 142                | ----- | ≥115                       | kHz      |
| Δf1avg /Δf2avg                                                                       |                 | 0.80  | 0.92               | ----- | ≥0.80                      | -----    |
| Initial carrier frequency tolerance <sup>(i)</sup>                                   |                 | -75   | 6                  | 75    | ±75                        | kHz      |
| Drift rate                                                                           |                 | ----- | 6                  | 20    | ≤20                        | kHz/50μs |
| Drift(single slot packet)                                                            |                 | -25   | 8                  | 25    | ≤25                        | kHz      |
| Drift(five slot packet)                                                              |                 | -40   | 10                 | 40    | ≤40                        | kHz      |
| 2 <sup>nd</sup> Harmonic content                                                     |                 | ----- | -32 <sup>(j)</sup> | ----- | -----                      | dBm      |
| 3 <sup>rd</sup> Harmonic content                                                     |                 | ----- | -32 <sup>(j)</sup> | ----- | -----                      | dBm      |

- (a) Results are referenced to the single ended port of the balun.  
 (b) The Bluecore5-Multimedia External firmware maintains the transmit power within Bluetooth v2.1 + EDR specification limits.  
 (c) Measurement made using appropriate PS Key settings.  
 (d) Class 2 RF transmit power range, Bluetooth v2.1 + EDR specification.  
 (e) Parameters depend on matching circuit used and behaviour over temperature. These parameters may be beyond CSR's direct control.  
 (f) Resolution guaranteed over the range -5dB to -25dB relative to maximum power for TX level > 8dBm.  
 (g) Measured at F<sub>0</sub> = 2441MHz.  
 (h) BlueCore5-Multimedia External guaranteed to meet ACP performance in Bluetooth v2.1 + EDR specification.  
 (i) Ignores any frequency error in the reference.  
 (j) Filter will attenuate the harmonics.

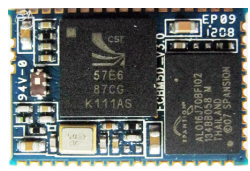


# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T



**RoHS**  
Compliant



29.0 x 25.5 x 2.8 mm SMT

| Ratio Characteristics<br>@ Core Vdd=1.5V                    |                        | Modulation    | Min   | Typ     | Max  | Bluetooth<br>Specification | Unit |
|-------------------------------------------------------------|------------------------|---------------|-------|---------|------|----------------------------|------|
| Sensitivity at 0.01%<br>BER <sup>(a)</sup>                  | Ch 0                   | $\Pi/4$ DQPSK | ----- | -93     | -70  | $\leq -70$                 | dBm  |
|                                                             | Ch 39                  |               | ----- | -93     | -70  |                            |      |
|                                                             | Ch 78                  |               | ----- | -92     | -70  |                            |      |
|                                                             | Ch 0                   | 8 DPSK        | ----- | -85     | -70  | $\leq -70$                 | dBm  |
|                                                             | Ch 39                  |               | ----- | -85     | -70  |                            |      |
|                                                             | Ch 78                  |               | ----- | -84     | -70  |                            |      |
| Maximum received signal at<br>0.1% BER                      |                        | $\Pi/4$ DQPSK | -20   | $> -10$ | ---- | $\geq -20$                 | dBm  |
|                                                             |                        | 8 DPSK        | -20   | $> -10$ | ---- | $\geq -20$                 | dBm  |
| C/I co-channel at 0.1% BER <sup>(b)(c)</sup>                |                        | $\Pi/4$ DQPSK | ----- | 10      | 13   | $\leq 13$                  | dB   |
|                                                             |                        | 8 DPSK        | ----- | 18      | 21   | $\leq 21$                  | dB   |
| Adjacent<br>channel<br>selectivity<br>C/I <sup>(b)(c)</sup> | $F = F_0 + 1$ MHz      | $\Pi/4$ DQPSK | ----- | -9      | 0    | $\leq 0$                   | dB   |
|                                                             |                        | 8 DPSK        | ----- | -2      | 5    | $\leq 5$                   | dB   |
|                                                             | $F = F_0 - 1$ MHz      | $\Pi/4$ DQPSK | ----- | -10     | 0    | $\leq 0$                   | dB   |
|                                                             |                        | 8 DPSK        | ----- | -5      | 5    | $\leq 5$                   | dB   |
|                                                             | $F = F_0 + 2$ MHz      | $\Pi/4$ DQPSK | ----- | -25     | -20  | $\leq -20$                 | dB   |
|                                                             |                        | 8 DPSK        | ----- | -22     | -13  | $\leq -13$                 | dB   |
|                                                             | $F = F_0 - 2$ MHz      | $\Pi/4$ DQPSK | ----- | -41     | -30  | $\leq -30$                 | dB   |
|                                                             |                        | 8 DPSK        | ----- | -34     | -25  | $\leq -25$                 | dB   |
|                                                             | $F = F_0 - 3$ MHz      | $\Pi/4$ DQPSK | ----- | -46     | -40  | $\leq -40$                 | dB   |
|                                                             |                        | 8 DPSK        | ----- | -38     | -33  | $\leq -33$                 | dB   |
|                                                             | $F = F_0 + 5$ MHz      | $\Pi/4$ DQPSK | ----- | -48     | -40  | $\leq -40$                 | dB   |
|                                                             |                        | 8 DPSK        | ----- | -41     | -33  | $\leq -33$                 | dB   |
|                                                             | $F = F_{\text{image}}$ | $\Pi/4$ DQPSK | ----- | -12     | -7   | $\leq -7$                  | dB   |
|                                                             |                        | 8 DPSK        | ----- | -12     | 0    | $\leq 0$                   | dB   |

(a) Dirty transmitter used.

(b) BlueCore5-Multimedia External is guaranteed to meet the C/I performance as specified by the Bluetooth v2.1 + EDR RF Test specification.

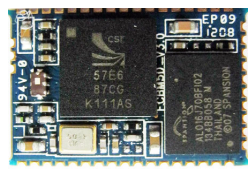
(c) Measured at  $F_0 = 2441$  MHz. However, depending on crystal frequency and channel number, then image may switch to the opposite side of the carrier. When this occurs,  $F_{\text{Image}} = F_0 - 3$  MHz and the offsets in the table equations associated with C/I are also reversed.

# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T



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Compliant



29.0 x 25.5 x 2.8 mm SMT

## Firmware Configuration

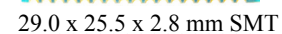
- a) UART Baud: 115200 , N, 8, 1
- b) BlueTooth Name: BlueAudio
- c) Pin Code: 0000

## Software Description

1. After Power on 3V3, the module is connectable and Pairing
2. ABBTM-2.4GHz-51-T can be found with the name “BlueAudio” via any Bluetooth device
3. Input the Pincode “0000”, you can pair with the module named “BlueAudio”
4. Then the BlueAudio can be connected
5. Data can be transferred between the BlueAudio and any other Bluetooth device

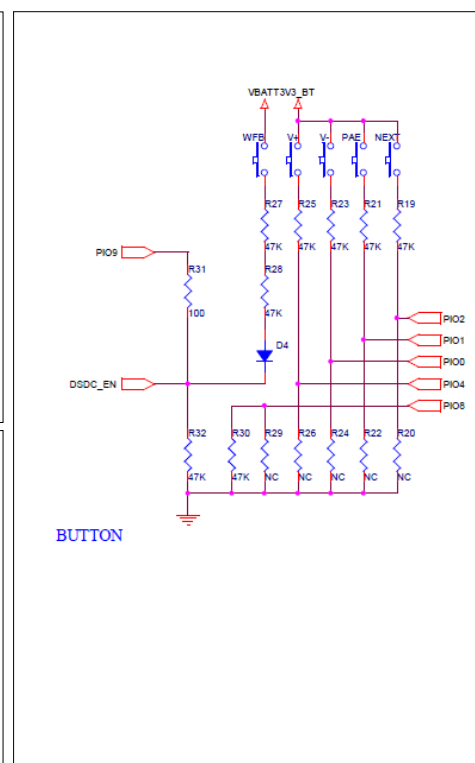
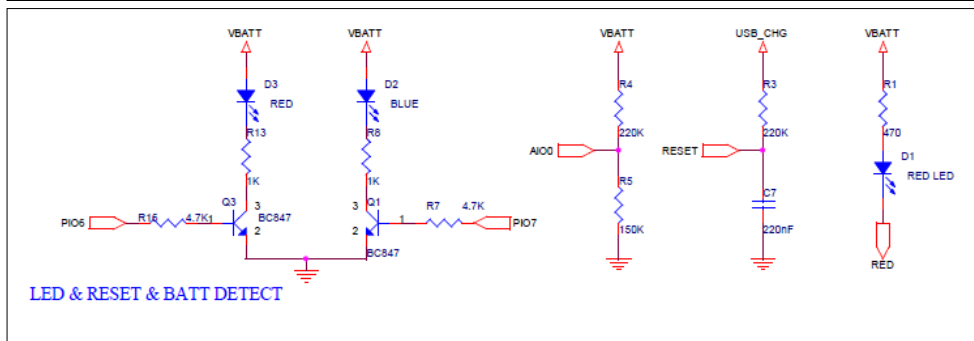
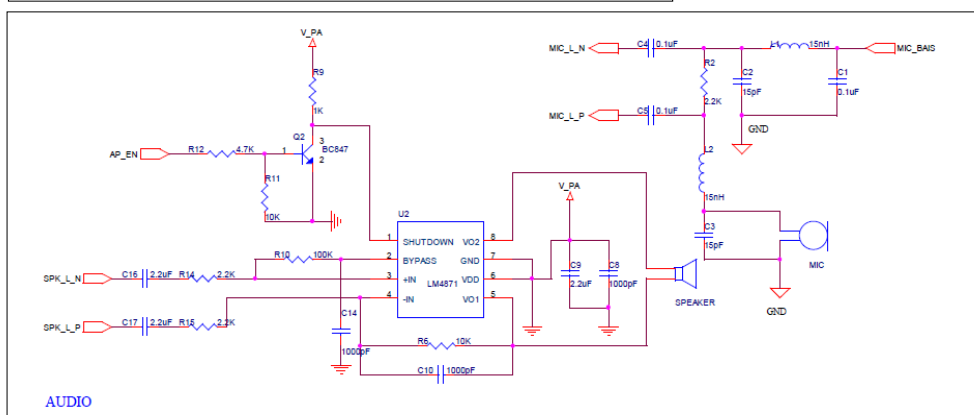
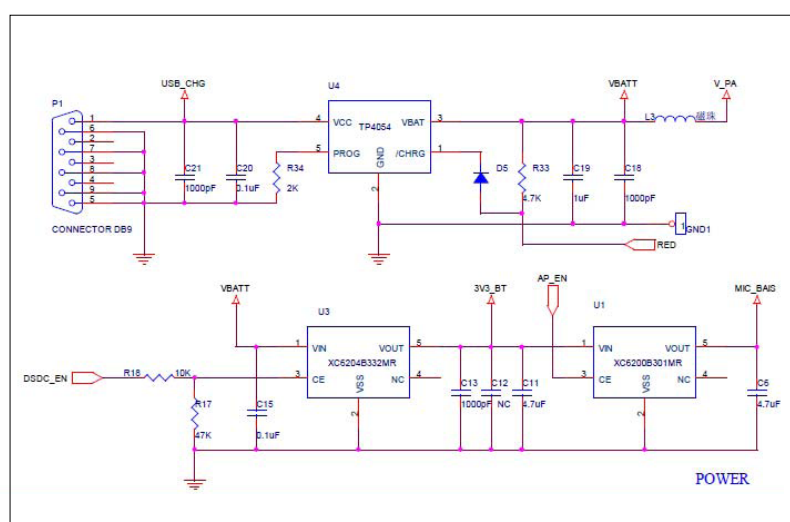


ABBTM-2.4GHz-51-T



The PCB layout shows the BT module with the following components and connections:

- BT31 Chip:** A blue square chip with pins 1 through 27.
- Antenna:** A small antenna labeled "ANTENNA" with a label "磁珠" (magnetic bead) near the connection point. It is connected to pin 1 (E1) and ground.
- Power and Ground:**
  - Pin 18 is connected to 3V3\_BT.
  - Pin 19 is connected to 3V3.
  - Pin 20 is connected to USB\_D+.
  - Pin 21 is connected to USB\_D-.
  - Pin 22 is connected to RTS.
  - Pin 23 is connected to CTS.
  - Pin 24 is connected to TX.
  - Pin 25 is connected to RX.
  - Pin 26 is connected to RESET.
  - Pin 27 is connected to GND.
- Other Connections:**
  - Pins 1-4 (SPK\_L\_P, SPK\_L\_N, SPK\_R\_P, SPK\_R\_N) are connected to the main board.
  - Pins 5-8 (MIC\_L\_N, MIC\_L\_P, MIC\_R\_P, MIC\_R\_N) are connected to the main board.
  - Pins 9-17 (1\_8V, PCM\_IN, PCM\_SYNC, PCM\_CLK, PCM\_OUT, AIO0, AIO1, AIO2) are connected to the main board.
  - Pins 44-47 (GND3, GND4, GND5, GND6) are connected to the main board.
  - Pins 48-51 (PIO9, PIO8, PIO6, PIO5) are connected to the main board.
  - Pins 52-55 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 56-59 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 60-63 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 64-67 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 68-71 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 72-75 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 76-79 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 80-83 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 84-87 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 88-91 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 92-95 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 96-99 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 100-103 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 104-107 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 108-111 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 112-115 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 116-119 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 120-123 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 124-127 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 128-131 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 132-135 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 136-139 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 140-143 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 144-147 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 148-151 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 152-155 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 156-159 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 160-163 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 164-167 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 168-171 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 172-175 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 176-179 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 180-183 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 184-187 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 188-191 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 192-195 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 196-199 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 200-203 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 204-207 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 208-211 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 212-215 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 216-219 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 220-223 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 224-227 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 228-231 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 232-235 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 236-239 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 240-243 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 244-247 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 248-251 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 252-255 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 256-259 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 260-263 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 264-267 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 268-271 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 272-275 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 276-279 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 280-283 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 284-287 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 288-291 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 292-295 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 296-299 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 300-303 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 304-307 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 308-311 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 312-315 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 316-319 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 320-323 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 324-327 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 328-331 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 332-335 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 336-339 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 340-343 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 344-347 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 348-351 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 352-355 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 356-359 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 360-363 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 364-367 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 368-371 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 372-375 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 376-379 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 380-383 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 384-387 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 388-391 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 392-395 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 396-399 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 400-403 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 404-407 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 408-411 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 412-415 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 416-419 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 420-423 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 424-427 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 428-431 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 432-435 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 436-439 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 440-443 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 444-447 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 448-451 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 452-455 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 456-459 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 460-463 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 464-467 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 468-471 (PIO0, PIO1, PIO2, PIO3) are connected to the main board.
  - Pins 472-475 (PIO4, PIO3, PIO2, PIO1) are connected to the main board.
  - Pins 476-47

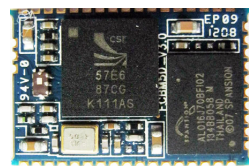


# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T

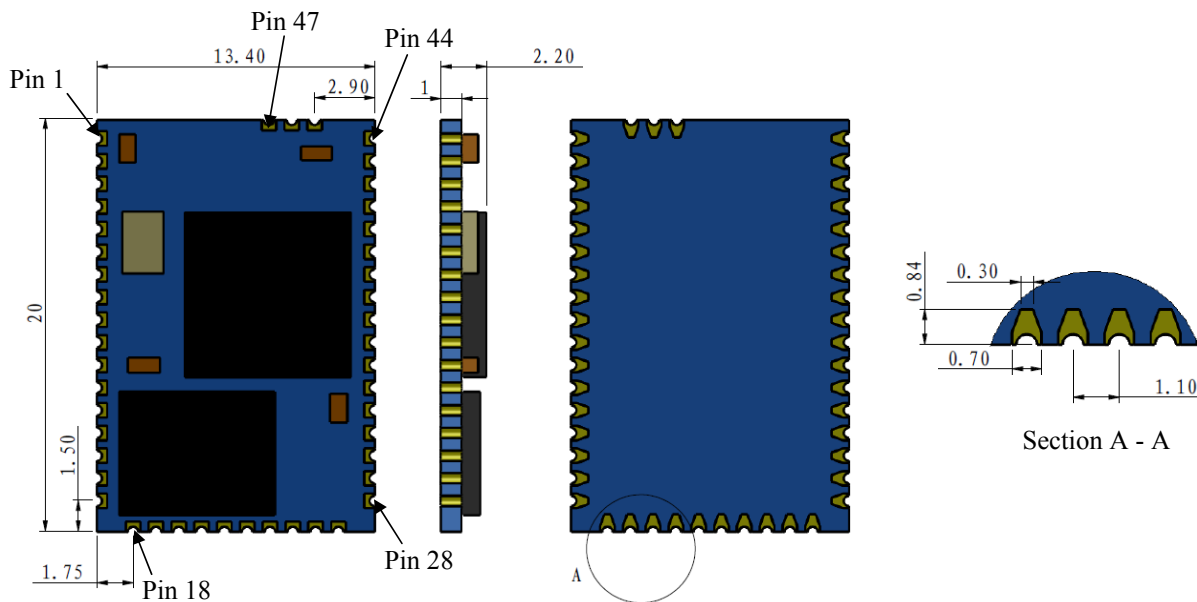


RoHS  
Compliant

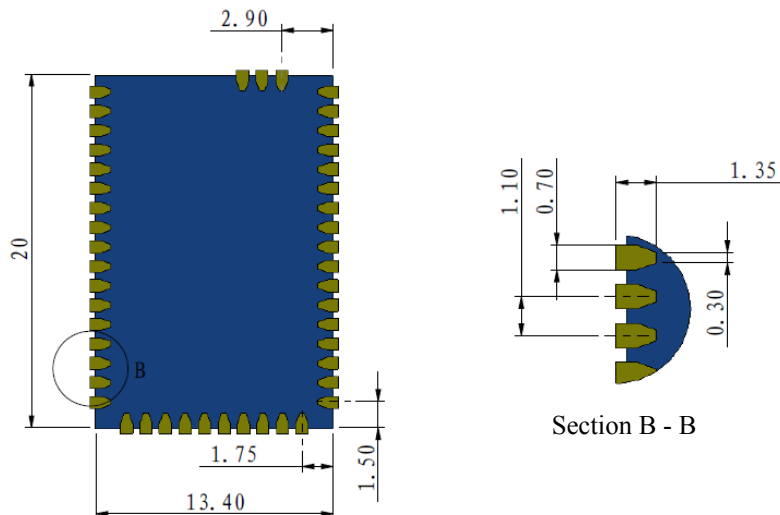


29.0 x 25.5 x 2.8 mm SMT

## MECHANICAL DIMENSIONS



Recommended Land Pattern



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

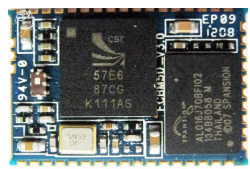
Dimensions: mm.

# 20.0 x 13.4 x 2.2 mm SMT Bluetooth Module

ABBTM-2.4GHz-51-T



RoHS  
Compliant

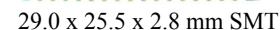


29.0 x 25.5 x 2.8 mm SMT

## PIN DESCRIPTION

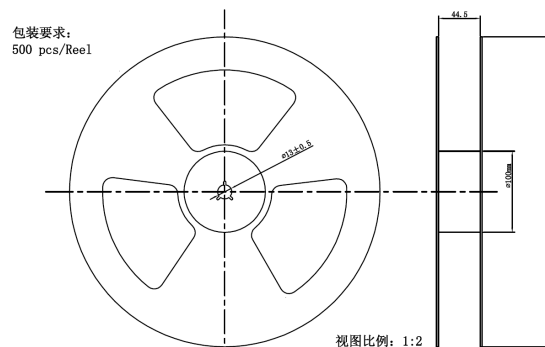
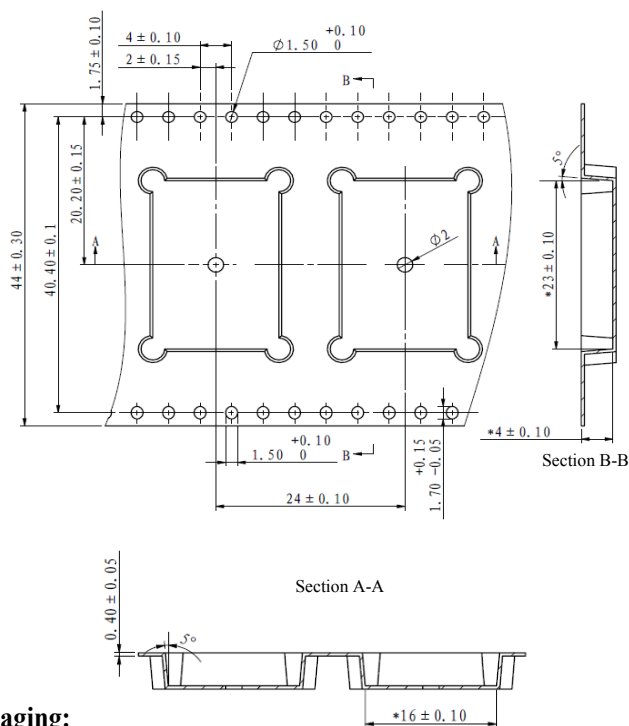
| Pin No. | Name     | Type                                               | Function                                                                                            |
|---------|----------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1       | SPK L-   | Analogue                                           | Speaker output negative(left side)                                                                  |
| 2       | SPK L+   | Analogue                                           | Speaker output positive(left side)                                                                  |
| 3       | SPK R-   | Analogue                                           | Speaker output negative(right side)                                                                 |
| 4       | SPK R+   | Analogue                                           | Speaker output positive(right side)                                                                 |
| 5       | GND      | GND                                                | Ground                                                                                              |
| 6       | MIC L+   | Bi-directional                                     | Programmable input/output line                                                                      |
| 7       | MIC L-   | Bi-directional                                     | Programmable input/output line                                                                      |
| 8       | MIC R+   | Bi-directional                                     | Programmable input/output line                                                                      |
| 9       | MIC R-   | Bi-directional                                     | Programmable input/output line                                                                      |
| 10      | 1.8V     | Power                                              | Power output                                                                                        |
| 11      | PCM-IN   | CMOS Input                                         | Synchronous Data Input                                                                              |
| 12      | PCM-SYNC | Bi-directional                                     | Synchronous Data Sync                                                                               |
| 13      | PCM-CLK  | Bi-directional                                     | Synchronous Data Clock                                                                              |
| 14      | PCM-OUT  | CMOS Output                                        | Synchronous Data Output                                                                             |
| 15      | AIO0     | Bi-directional                                     | Programmable input/output line                                                                      |
| 16      | AIO1     | Bi-directional                                     | Programmable input/output line                                                                      |
| 17      | AIO3     | Bi-directional                                     | Programmable input/output line                                                                      |
| 18      | GND      | GND                                                | Ground                                                                                              |
| 19      | 3.3V     | Power                                              | +3.3V Supply                                                                                        |
| 20      | USB D+   | Bi-directional                                     | USB Data Plus                                                                                       |
| 21      | USB D-   | Bi-directional                                     | USB Data Minus                                                                                      |
| 22      | RTS      | CMOS Output, tri-state, with weak internal pull-up | UART request to send active low                                                                     |
| 23      | CTS      | CMOS Input with weak internal pull-down            | UART clear to send active low                                                                       |
| 24      | TX       | CMOS Output, tri-state, with weak internal pull-up | UART data output                                                                                    |
| 25      | RX       | CMOS Input with weak internal pull-down            | UART data input                                                                                     |
| 26      | RESET    | CMOS Input                                         | Reset if High                                                                                       |
| 27      | GND      | GND                                                | Ground                                                                                              |
| 28      | PIO4     | Bi-directional with programmable strength          | PIO or USB on (input senses when VBUS is high, wakes BlueCore5-Multimedia)                          |
| 29      | PIO5     | Bi-directional with programmable strength          | PIO line or chip detaches from USB when this input is high                                          |
| 30      | PIO6     | Bi-directional with programmable strength          | PIO line or clock request output to enable external clock for external clock line                   |
| 31      | PIO7     | Bi-directional with programmable strength          | Programmable input/output line or programmable frequency clock output                               |
| 32      | MOSI     | CMOS Input                                         | Serial Peripheral Interface Data Input                                                              |
| 33      | CSB      | CMOS Input                                         | Chip Select for Synchronous Serial Interface (active low)                                           |
| 34      | CLK      | CMOS Input                                         | Serial Peripheral Interface Clock                                                                   |
| 35      | MISO     | CMOS Output                                        | Serial Peripheral Interface Data Output                                                             |
| 36      | PIO10    | Bi-directional                                     | Programmable input/output line                                                                      |
| 37      | PIO11    | Bi-directional                                     | Programmable input/output line                                                                      |
| 38      | PIO3     | Bi-directional with programmable strength          | PIO or output goes high to wake up PC, when in USB mode or clock request input from host controller |
| 39      | PIO2     | Bi-directional with programmable strength          | PIO or external clock request                                                                       |
| 40      | PIO1     | Bi-directional with programmable strength          | Control output for external PA (if fitted)                                                          |
| 41      | PIO0     | Bi-directional with programmable strength          | Control output for external Tx/Rx switch (if fitted)                                                |
| 42      | PIO8     | Bi-directional                                     | Programmable input/output line                                                                      |
| 43      | PIO9     | Bi-directional                                     | Programmable input/output line                                                                      |
| 44      | GND      | GND                                                | Ground                                                                                              |
| 45      | GND      | GND                                                | Ground                                                                                              |
| 46      | ANT      | RF                                                 | RF Interface                                                                                        |
| 47      | GND      | GND                                                | Ground                                                                                              |

# ABBTM-2.4GHz-51-T



|                                                                                                                                                                    |                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| T <sub>S</sub> max to T <sub>L</sub> (Ramp-up Rate)                                                                                                                | 3°C/second max.                             |
| Preheat<br>Temperature Min. (T <sub>S</sub> Min.)<br>Temperature Typical (T <sub>S</sub> Typ.)<br>Temperature Max. (T <sub>S</sub> Max.)<br>Time (t <sub>s</sub> ) | 150°C<br>175°C<br>200°C<br>60 ~ 180 seconds |
| Ramp-up rate (T <sub>L</sub> to T <sub>p</sub> )                                                                                                                   | 3°C/second max.                             |
| Time Maintained Above:<br>--Temperature (T <sub>L</sub> )/Time (T <sub>L</sub> )                                                                                   | 217°C/60 ~ 150 seconds                      |
| Peak Temperature (T <sub>p</sub> )                                                                                                                                 | 250°C max. for 10 seconds                   |
| Target Peak Temperature (T <sub>p</sub> Target)                                                                                                                    | 250°C +0/-5°C                               |
| Time within 5°C of actual peak (t <sub>p</sub> )                                                                                                                   | 20 ~ 40 seconds                             |
| Ramp-down Rate                                                                                                                                                     | 6°C/second max.                             |
| Tune 25°C to Peak Temperature (t)                                                                                                                                  | 8 minutes max.                              |

**500pcs/reel**



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

**Packaging:**

ABBTM-2.4GHz-51-T 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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- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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