

LC-RTL8852BE

DATASHEET

Software :

客 户 Customer	客户承认 Approve（请盖印章）	日 期 Date

拟制 Design	审核 Check	批准 Approve	版本 Version	日期 Date
			V1.0	2022. 11. 21

更改记录:

Reversion History:

版本 Version	日期 Date	更改内容 Modification
1.0	2022.11.21	First release

1. Overview

The LC-8852BE is a Mini PCIE module .that support 2-stream 802.11ax solutions with Multi-user MIMO (Multiple-Input , Multiple-Output) STA mode with Wireless LAN (WLAN) PCI Express network interface controller with integrated Bluetooth Smart Ready USB interface controller. The LC-8852BE provides a complete solution for a high-performance integrated wireless and Bluetooth device.

2. Features

WLAN

- IEEE 802.11a/b/g/n/ac/ax compliant WLAN
- 5MHz / 10MHz / 20MHz / 40MHz / 80MHz bandwidth transmission
- Complies with PCI Express Base Specification Revision 2.1
- Dual-band 2T2R mode with data rate up to 1201Mbps
- Supports 802.11ac/ax 2*2 Wave-2 compliant with MU-MIMO
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble, OFDM with BPSK, QPSK, 16QAM, 64QAM, 256QAM and 1024QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g, 300Mbps in 802.11n and 866.7Mbps in 802.11ac, 1201Mbps in 802.11ax

Bluetooth

- Supports Bluetooth 5 system (BT5.2 Logo Compliant)
- Compatible with Bluetooth v2.1+EDR
- Integrated MCU to execute Bluetooth protocol stack
- Enhanced BT/WIFI Coexistence Control to improve transmission quality in different Profiles
- Dual Mode support: Simultaneous LE and BR/ED
- Supports multiple Low Energy states
- Supports Enhanced Power Control
- Supports all packet types in basic rate and enhanced data rate
- Supports Secure Simple Pairing

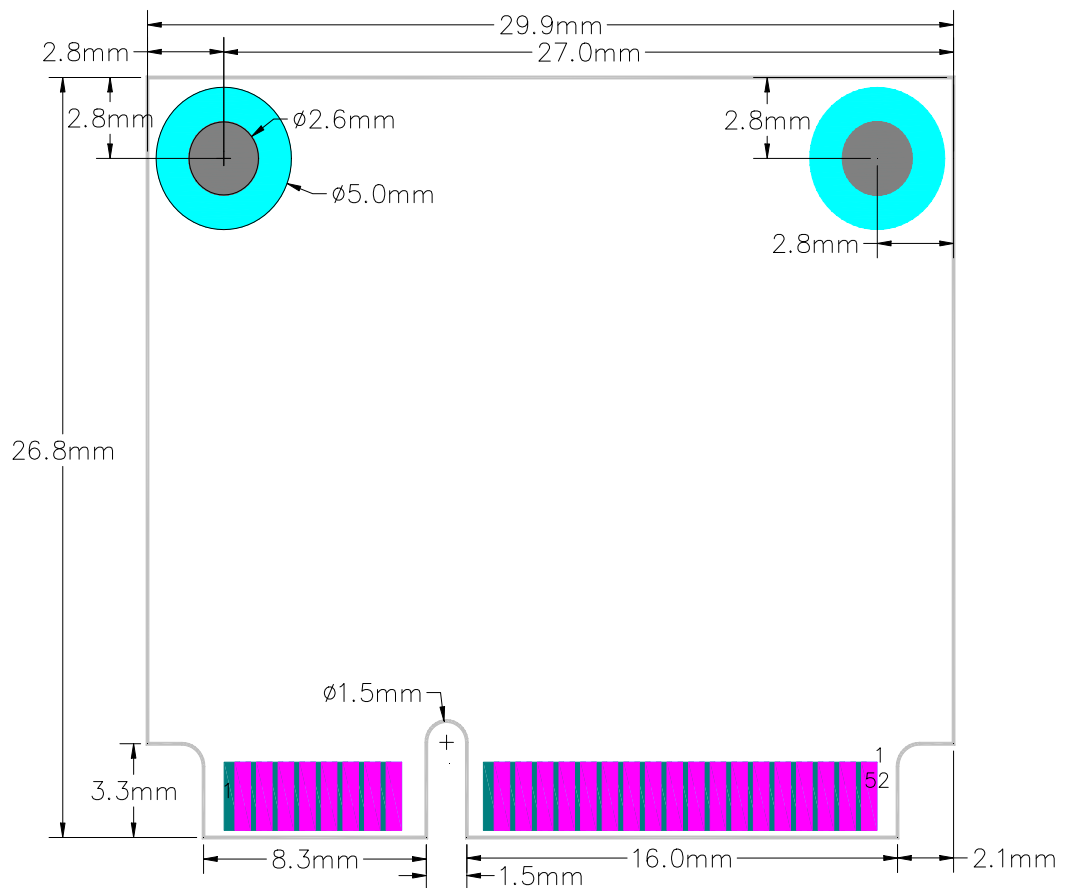
3. General Specification

Model	LC-8852BE
Product Name	WiFi 11a/b/g/n/ac/ax 2T2R and BT5.2 Module
Major Chipset	Realtek RTL8852BE-CG
Standard	IEEE802.11a/b/g/n/ac/ax, BT V2.1+EDR/ 4.2 /5.2
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60, 90,120 and maximum of 1201Mbps
Modulation Method	DSSS/DBPSK/DQPSK/16-QAM/ 64-QAM/256QAM/1024QAM
Frequency Band	2.4~2.4835GHz , 5.0~5.8 GHz
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE802.11a/g/n/ac/ax: OFDM (Orthogonal rthogonal Frequency Division Multiplexing)
Operation Mode	Ad hoc, Infrastructure
Interface	WEP, TKIP, AES, WPA, WPA2
Operating Temperature	Wi-Fi : PCI-E , Bluetooth : USB2.0
Storage Temperature	-10~ +70° C ambient temperature
Humidity	-40 ~+85°C ambient temperature
Dimension	26.8mm x29.9 mm x 3.2mm (LxWxH)±0.15mm

4. DC Characteristics

Symbol	Parameter	Min.	Typ.	Max	Units
VD33	3.3V I/O supply Voltage	3.0	3.3	3.6	V
VD10	1.05V Core Supply Voltage	0.945	1.05	1.155	V
V _{IH}	Input high Voltage	2.0	3.3	3.6	V
V _{IL}	Input low Voltage	--	0	0.9	V
V _{OH}	output high Voltage	2.97	--	3.3	V
V _{OL}	output low Voltage	0	--	0.33	V

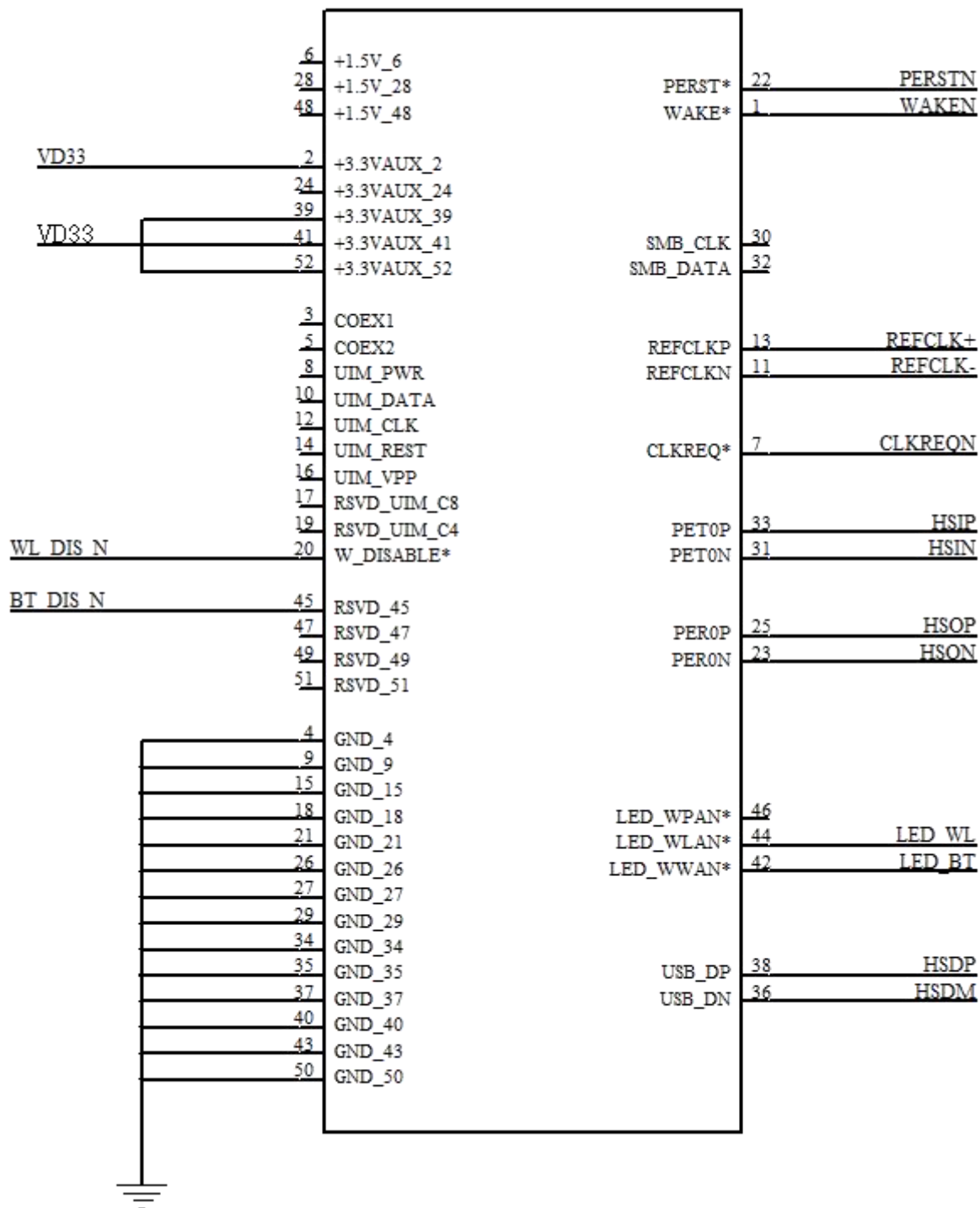
5. Dimension & Pin Assignments



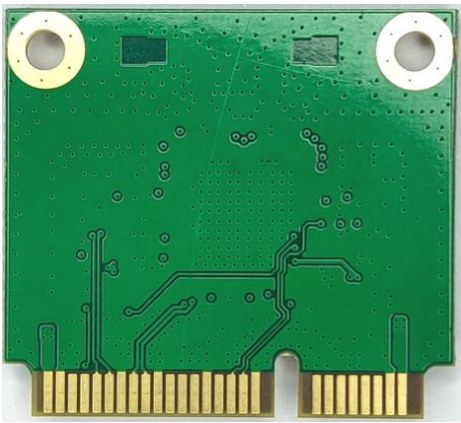
NO	Name	Description
1	WAKE	pen Drain active Low signal. This signal is used to request that the system return from a sleep/susp
2	3.3V	3.3V power supply
3	NC	Floating Pin, No connect to anything.
4	GND	Ground connections
5	NC	Floating Pin, No connect to anything.
6	NC	Floating Pin, No connect to anything.
7	CLKREQN	Reference clock request
8	NC	Floating Pin, No connect to anything.
9	GND	Ground connections
10	NC	Floating Pin, No connect to anything.
11	REFCLKN	Differential reference clock.
12	NC	Floating Pin, No connect to anything.
13	REFCLKP	Differential reference clock.
14	NC	Floating Pin, No connect to anything.
15	GND	Ground connections
16	NC	Floating Pin, No connect to anything.
17	NC	Floating Pin, No connect to anything.
18	GND	Ground connections
19	NC	Floating Pin, No connect to anything.
20	WL_DIS_N	WLAN disable control.
21	GND	Ground connections
22	PERSTN	PCI express fundamental reset
23	PER0N	Differential transmit
24	NC	Floating Pin, No connect to anything.
25	PER0P	Differential transmit
26	GND	Ground connections
27	GND	Ground connections
28	NC	Floating Pin, No connect to anything.
29	GND	Ground connections
30	NFC_CLK	RSVD
31	PET0N	Differential receive
32	NFC_DATA	RSVD
33	PET0P	Differential receive
34	GND	Ground connections

35	GND	Ground connections
36	USB_DN	USB Differential signal USB D-
37	GND	Ground connections
38	USB_DP	USB Differential signal USB D+
39	3.3V	3.3V power supply
40	GND	Ground connections
41	3.3V	3.3V power supply
42	LED_BT	Active low signal.The signal is used to provide
43	GND	Ground connections
44	NC	Floating Pin, No connect to anything.
45	NC	Floating Pin, No connect to anything.
46	NC	Floating Pin, No connect to anything.
47	BT_DIS_N	BT disable control.
48	NC	Floating Pin, No connect to anything.
49	NC	Floating Pin, No connect to anything.
50	GND	Ground connections
51	NC	Floating Pin, No connect to anything.
52	3.3V	3.3V power supply

6. Schematics



7. Modular photo

	
TOP View	Botttom View
Dimension: 26.8mm x29.9mm x 3.2mm (LxWxH)±0.15mm	

8. Supplier

Material list		
Diplexer	DPX165900DT-8025A1 SLFD18-5R950G-08T RFDIP1607L898D1T LD18D2450LAN-D40/M	Sunlord,TDK,PSA, GLEAD
Crystal	40M 3225	JWT , FK , SFJ
IC	RTL8852BE	RTL
Inductor		Sunlord
PCB		O A P T

9. Electrical Characteristics

WiFi Section:

9.1 2.4GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/b/g/n/ax WiFi compliant
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)
Number of Channels	2.4GHz: Ch1 ~ Ch14
Modulation	802.11b : DQPSK, DBPSK, CCK 802.11 g/n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ax:OFDM /1024-QAM/256-QAM/64-QAM,16-QAM,QPSK, BPSK
Output Power	802.11b /11Mbps : 17dBm $\pm$ 2 dB @ EVM $\leq$ -15dB
	802.11g /54Mbps : 15 dBm $\pm$ 2 dB @ EVM $\leq$ -28dB
	802.11n /MCS7 : 14 dBm $\pm$ 2 dB @ EVM $\leq$ -30dB
	802.11ax /MCS11 : 14 dBm $\pm$ 2 dB @ EVM $\leq$ -35dB
Receive Sensitivity (11b,20MHz)	- 1Mbps PER $\leq$ 8% $\leq$ -90 dBm
	- 11Mbps PER $\leq$ 8% $\leq$ -85 dBm
Receive Sensitivity (11g,20MHz)	- 6Mbps PER $\leq$ 10% $\leq$ -82 dBm
	- 54Mbps PER $\leq$ 10% $\leq$ -72 dBm
Receive Sensitivity (11n,20MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -82 dBm
	- MCS=7 PER $\leq$ 10% $\leq$ -68dBm
Receive Sensitivity (11n,40MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -79dBm
	- MCS=7 PER $\leq$ 10% $\leq$ -65dBm
Receive Sensitivity (11ax,20MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -82 dBm
	- MCS=11 PER $\leq$ 10% $\leq$ -52dBm
Receive Sensitivity (11ax,40MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -79dBm
	- MCS=11 PER $\leq$ 10% $\leq$ -49dBm
Maximum Input Level	802.11b : -10 dBm
	802.11g/n/ax : -20 dBm
Antenna Reference	

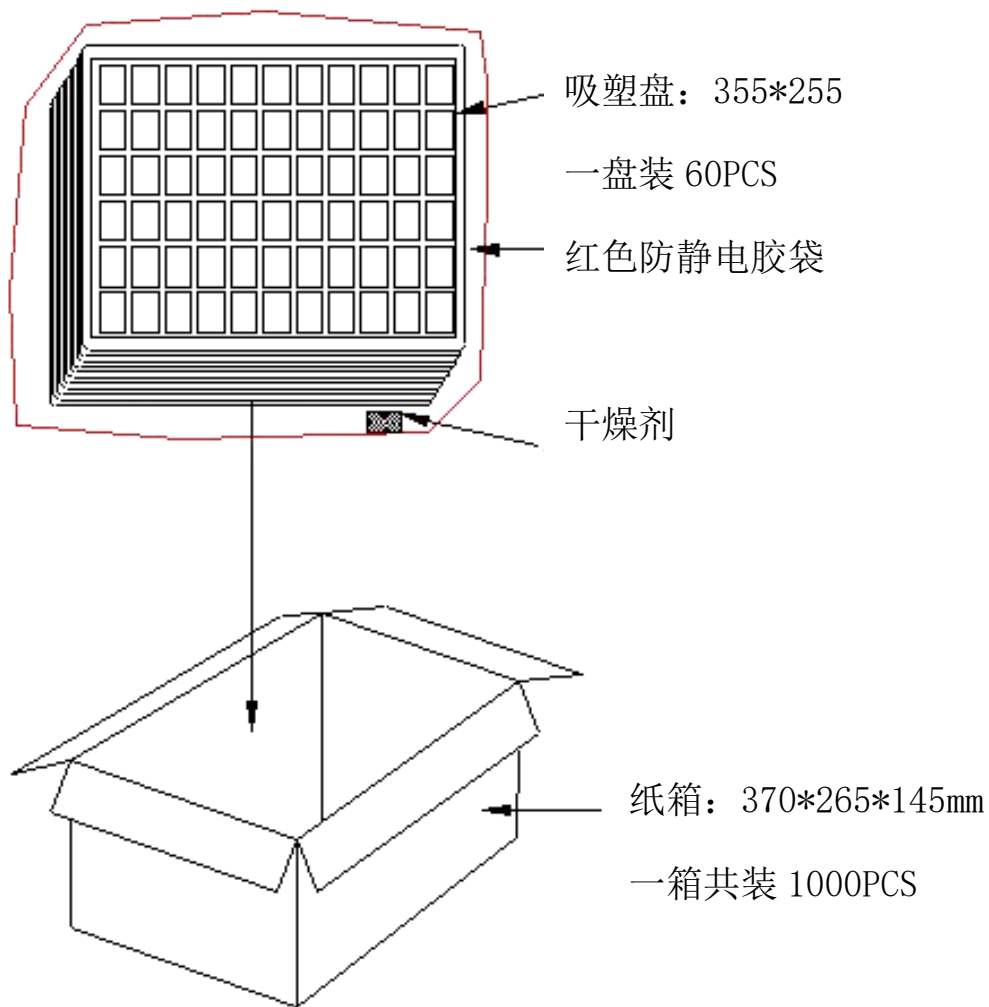
9.2 5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/n/ac 2x2, WiFi compliant
Frequency Range	4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)
Number of Channels	CH36-CH165
Modulation	802.11a : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM/64-QAM,16-QAM, QPSK, BPSK 802.11ax:OFDM /1024-QAM/256-QAM/64-QAM,16-QAM,QPSK, BPSK
Output Power	802.11a /54Mbps : 14 dBm $\pm$ 2 dB @ EVM $\leq$ -25dB 802.11n HT20 /MCS7 : 13 dBm $\pm$ 2 dB @ EVM $\leq$ -28dB 802.11n HT40 /MCS7 : 12 dBm $\pm$ 2 dB @ EVM $\leq$ -28dB 802.11ac VHT20 /MCS8 : 12 dBm $\pm$ 2 dB @ EVM $\leq$ -30dB 802.11ac VHT40 /MCS9 : 11 dBm $\pm$ 2 dB @ EVM $\leq$ -32dB 802.11ac VHT80 /MCS9 : 11 dBm $\pm$ 2 dB @ EVM $\leq$ -32dB 802.11ax HE20 /MCS11 : 12 dBm $\pm$ 2 dB @ EVM $\leq$ -35dB 802.11ax HE40 /MCS11 : 11 dBm $\pm$ 2 dB @ EVM $\leq$ -35dB 802.11ax HE80 /MCS11 : 11 dBm $\pm$ 2 dB @ EVM $\leq$ -35dB
Receive Sensitivity (11a,20MHz)	- 6Mbps PER $\leq$ 10% $\leq$ -85 dBm - 54Mbps PER $\leq$ 10% $\leq$ -68 dBm
Receive Sensitivity (11n,20MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -85 dBm - MCS=7 PER $\leq$ 10% $\leq$ -67 dBm
Receive Sensitivity (11n,40MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -82 dBm - MCS=7 PER $\leq$ 10% $\leq$ -64dBm
Receive Sensitivity (11ac,20MHz)	- MCS=0, NSS1 PER $\leq$ 10% $\leq$ -82 dBm - MCS=8, NSS1 PER $\leq$ 10% $\leq$ -60 dBm
Receive Sensitivity (11ac,40MHz)	- MCS=0, NSS1 PER $\leq$ 10% $\leq$ -79 dBm - MCS=9, NSS1 PER $\leq$ 10% $\leq$ -55 dBm
Receive Sensitivity (11ac,80MHz)	- MCS=0, NSS1 PER $\leq$ 10% $\leq$ -79 dBm - MCS=9, NSS1 PER $\leq$ 10% $\leq$ -54 dBm
Receive Sensitivity (11ax,20MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -82 dBm - MCS=11 PER $\leq$ 10% $\leq$ -52 dBm
Receive Sensitivity (11ax,40MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -79 dBm - MCS=11 PER $\leq$ 10% $\leq$ -49 dBm
Receive Sensitivity (11ax,80MHz)	- MCS=0 PER $\leq$ 10% $\leq$ -73 dBm - MCS=11 PER $\leq$ 10% $\leq$ -43 dBm
Maximum Input Level	802.11a/n/ac/ax : -20 dBm
Antenna Reference	

9.3 Bluetooth Section:

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V2.1+EDR /4.2/5.2		
Host Interface	USB2.0		
Antenna Reference			
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min	Typical	Max
Output Power		5 dBm	
Output Power (BLE 1M)		4 dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-88 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-83 dBm	
Sensitivity Sent 1000 packets @ PER≤ 30.8%		-98 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π/4-DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

10.Packing information



ESD CAUTION

The LC-8852BE is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although LC-8852BE is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.