Lierda Science & Technology Group Co., Ltd

L- Series BLE Module

DATASHEET

Version: V 1.0

Contents

Chapter 1:Introduction

L-Series Low Power Consumption High performance Bluetooth transceiver Module is designed based on TI CC254X chip. The Module has PCB-integrate antenna, and adopts SMT attachment interface. It has a complete open port which reduces hardware design difficulties and also provide high structural and software flexibility for users. The module has low power consumption, a compact size and have high resistance to disturbance.

Product Model:

| Product Name	Model number	Chip
L-series BLE Module	LSD4BT-L44MSTD0	CC2540F256
	LSD4BT-L54MSTD0	CC2540F128
	LSD4BT-L74MSTD0	CC2541F256
	LSD4BT-L84MSTD0	CC2541F128

L-series Module is applicable to many occasions：

➢ 2.4GHz low power consumption Bluetooth system

➢ PC, Tablet and other BLE Handheld devices (HID device, Remote Control)

➢ Physical, and medical consumers electronics

➢ Smart meters and data collection wireless network system

Chapter 2:Parameters

|	Parameters			Remarks
Working voltage	2.0 ~ 3.6 V（classic 3.3V）			Low power may cause failure. Over power may damage device
frequency	2402 ~ 2480 MHz			
Power consumption	Emitting	CC2540	≤ 35 mA	Full power, MCU-32MHz
		CC2541	≤ 25 mA	
	Receiving	CC2540	≤ 26 mA	MCU-32MHz
		CC2541	≤ 25 mA	
	Sleep	CC2554X	≤ 1 uA	Sleep Mode
Emission power	CC2540		-23dBm ~ 4dBm	Programmable
	CC2541		-23dBm ~0dBm	
Channels	40 Channels			3 Broadcasting + 37 Data
Modulation	GFSK			Support frequency hopping
Communication	BLE			Support Multi Mode Profile
I/O Control	0 ~ VCC			
Baud rate	1Mbps			
Channel tech.	Support frequency hopping			
Transmission distance	CC2540		30m	Open space
	CC2541		20m	
Port type	1.10 mm Single row * 3			SMT
Application	Support GAP、L2CAP agreements and HIDS、FMP、HRT Profiles (Ref Ch5)			Customizable

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Chapter 3:Hardware configuration
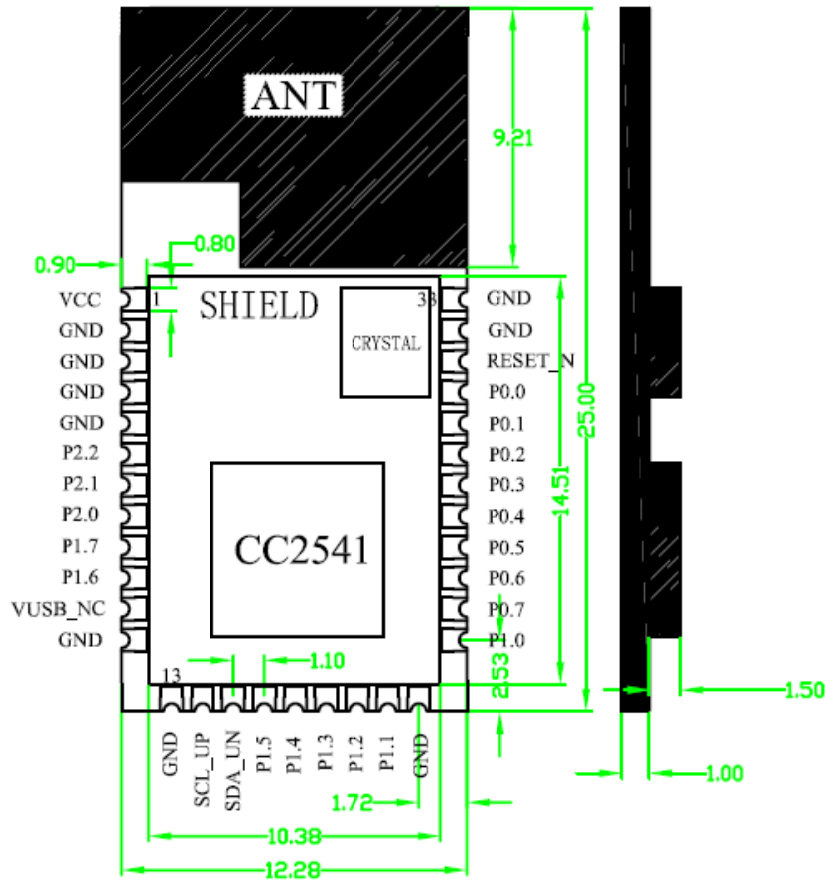
Units ： mm

Pin Definition：

	Function	Remarks
VCC	Power IN	
GND	Ground	All Grounding needed
P0.0-P0.7	I/O port	
P1.0-P1.7	I/O port	
P2.1-P2.2	I/O port	
SCL_UP	I2C port	SCL
SDA_UN	I2C port	SDA
VBUS_NC	USB power	
REST_N	Reset	

Chapter 4:Circuit Diagram
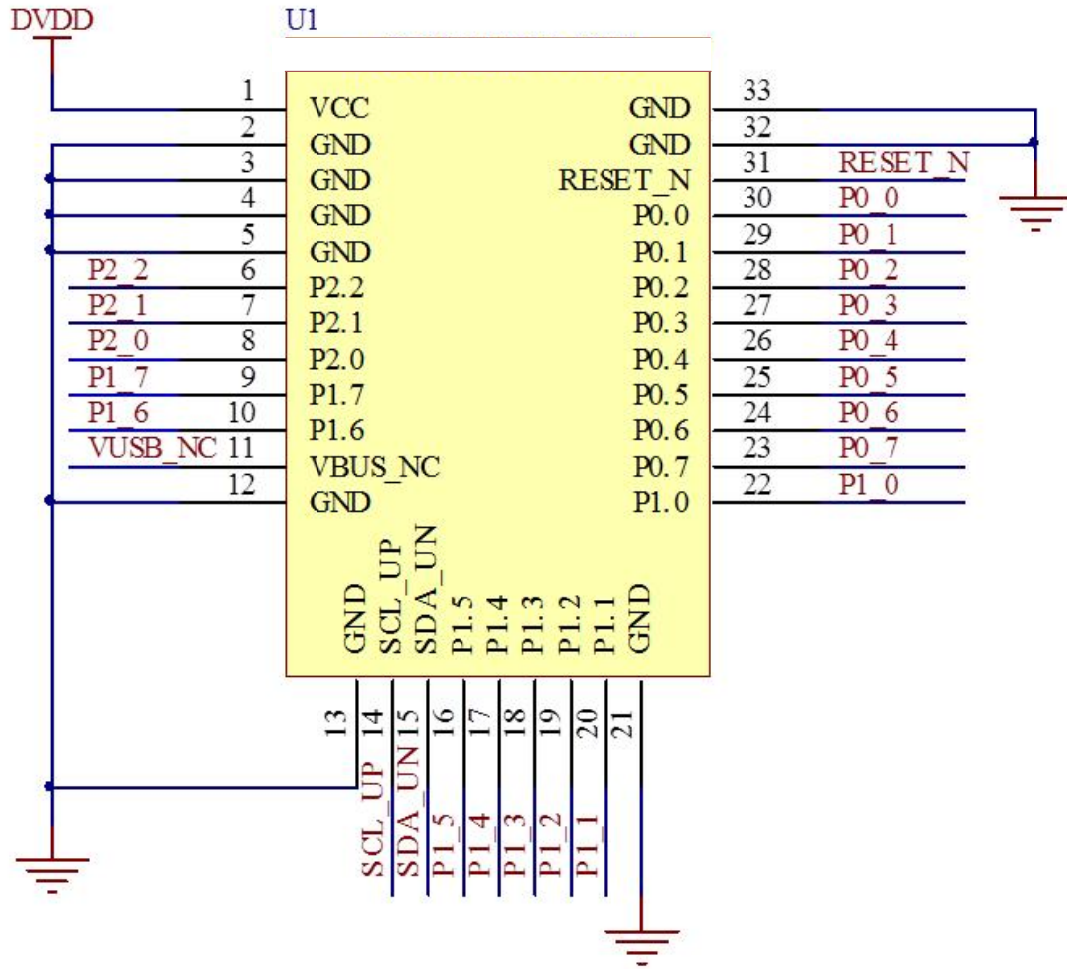
Chapter 5:BLE Profile Description

Bluetooth 4.0 Applications are classified into two types, The classic BR/EDR system and the BLE System. The BLE system was designed aimed to lower the power consumption and to extend the battery life of the Bluetooth system.

Those module that support both BR/EDR and BLE are called the "Dual Mode Bluetooth", whereas those that only support BLE is called the "Single Mode Bluetooth" . The L-series Bluetooth module are the Single Mode modules. For dual mode Bluetooth device, the BLE system integrates with the classic Bluetooth system to share the transceiver functions. And for the single mode Bluetooth device, they can only communicate with BLE 4.0 communication, but not with the classic Bluetooth such as 2.0, 2.1, 3.0.

The following are the Bluetooth application Profile

Table 4   Classic Bluetooth Application Profile

Name	Function	Remarks
A2DP	Advanced Audio Distribution Profile	
AVRCP	A/V Remote Control Profile	
BIP	Basic Imaging Profile	
BPP	Basic Printing Profile	
DI	Device ID Profile	
DUN	Dial-Up Networking Profile	
FTP	File Transfer Profile	
GAVDP	Generic A/V Distribution Profile	
GOEP	Generic Object Exchange Profile	
GNSS	Global Navigation Satellite System Profile	
HCRP	Hardcopy Cable Replacement Profile	
HDP	Health Device Profile	

Name	Function	Remarks
HFP	Hands-Free Profile	
HSP	Headset Profile	
HID	Human Interface Device Profile	
MAP	Message Access Profile	
OPP	Object Push Profile	
PAN	Personal Area Networking Profile	
PBAP	Phone Book Access Profile	
SAP	SIM Access Profile	
SDAP	Service Discovery Application Profile	
SPP	Serial Port Profile	Bluetooth-® serial
SYNCH	Synchronization Profile	
VDP	Video Distribution Profile	

Table 5　BLE Application Profile

Name	Function	Remarks
ANP	Alert Notification Profile	
ANS	Alert Notification Service	
BAS	Battery Service	
BLP	Blood Pressure Profile	
BLS	Blood Pressure Service	
CSCP	Cycling Speed and Cadence Profile	
CSCS	Cycling Speed and Cadence Service	
CTS	Current Time Service	

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Name	Function	Remarks
DIS	Device Information Service	
FMP	Find Me Profile	
GLP	Glucose Profile	
GLS	Glucose Service	
HIDS	HID Service	
HOGP	HID over GATT Profile	
HTP	Health Thermometer Profile	
HTS	Health Thermometer Service	
HRP	Heart Rate Profile	
HRS	Heart Rate Service	
IAS	Immediate Alert Service	
LLS	Link Loss Service	
NDCS	Next DST Change Service	
PASP	Phone Alert Status Profile	
PASS	Phone Alert Status Service	
PXP	Proximity Profile	
RSCP	Running Speed and Cadence Profile	
RSCS	Running Speed and Cadence Service	
RTUS	Reference Time Update Service	
ScPP	Scan Parameters Profile	
ScPS	Scan Parameters Service	
TIP	Time Profile	
TPS	Tx Power Service	

To user：

1. Thanks for choosing LSD products. Please read through this Manual before using the products. By using the products, you have understood and accept the terms and instructions in this Manual.

2. LSD Science & Technology Co., LTD reserves all legal rights to revise and explain the terms and information provided, without prior notices.

FCC Caution：

Any changes or modifications not expressly approved by the responsible party could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with Part 15 of the 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.

OEM Labeling Requirements

NOTICE: The OEM or final integrator must ensure that FCC labeling requirements are met. This includes an additional label on the outside of the final product housing with the following contents:

Company Name

MODEL:

Contains Model: LSD4BT-L74MSTD0,   FCC ID: N8NLSD4BTL

This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions: (1) This device may not cause harmful interferences, and (2) this device must accept any interference received, including interference that may cause undesired operation.